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MAIN LINE BETWEEN CGW AND M&A CIRCUIT 569
Diagnosis Procedure 569

MAIN LINE BETWEEN M&A AND AV CIRCUIT 570
Diagnosis Procedure 570

MAIN LINE BETWEEN AV AND TPMS CIRCUIT 571
Diagnosis Procedure 571

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 572
Diagnosis Procedure 572

MAIN LINE BETWEEN DLC AND DIFF CIRCUIT 573
Diagnosis Procedure 573

ECM BRANCH LINE CIRCUIT 574
Diagnosis Procedure 574

4WD BRANCH LINE CIRCUIT 575
Diagnosis Procedure 575

ABS BRANCH LINE CIRCUIT 576
Diagnosis Procedure 576

IPDM-E BRANCH LINE CIRCUIT 577
Diagnosis Procedure 577

TCM BRANCH LINE CIRCUIT 578
Diagnosis Procedure 578

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) 580
Diagnosis Procedure 580

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2) 581
Diagnosis Procedure 581

STRG BRANCH LINE CIRCUIT 582
Diagnosis Procedure 582

A-BAG BRANCH LINE CIRCUIT 583
Diagnosis Procedure 583

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) 584
Diagnosis Procedure 584

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2) 585
Diagnosis Procedure 585

M&A BRANCH LINE CIRCUIT 586
Diagnosis Procedure 586

AV BRANCH LINE CIRCUIT 587
Diagnosis Procedure 587

TPMS BRANCH LINE CIRCUIT 588
Diagnosis Procedure 588

HVAC BRANCH LINE CIRCUIT 589
Diagnosis Procedure 589

BCM BRANCH LINE CIRCUIT 590
Diagnosis Procedure 590

DIFF BRANCH LINE CIRCUIT 591
Diagnosis Procedure 591

CAN COMMUNICATION CIRCUIT 1 593
Diagnosis Procedure 593

CAN COMMUNICATION CIRCUIT 2 595

Diagnosis Procedure 595

CAN SYSTEM (TYPE 11)

DTC/CIRCUIT DIAGNOSIS 597

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT 597
Diagnosis Procedure 597

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT 598
Diagnosis Procedure 598

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT 599
Diagnosis Procedure 599

MAIN LINE BETWEEN TCM AND ADP CIRCUIT 600
Diagnosis Procedure 600

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 601
Diagnosis Procedure 601

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 602
Diagnosis Procedure 602

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 603
Diagnosis Procedure 603

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT 604
Diagnosis Procedure 604

MAIN LINE BETWEEN CGW AND M&A CIRCUIT 605
Diagnosis Procedure 605

MAIN LINE BETWEEN M&A AND AV CIRCUIT 606
Diagnosis Procedure 606

MAIN LINE BETWEEN AV AND TCU CIRCUIT 607
Diagnosis Procedure 607

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT 608
Diagnosis Procedure 608

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 609
Diagnosis Procedure 609

MAIN LINE BETWEEN DLC AND SONAR CIRCUIT 610
Diagnosis Procedure 610

ECM BRANCH LINE CIRCUIT 611
Diagnosis Procedure 611

4WD BRANCH LINE CIRCUIT 612
Diagnosis Procedure 612

ABS BRANCH LINE CIRCUIT 613
Diagnosis Procedure 613

IPDM-E BRANCH LINE CIRCUIT 614
Diagnosis Procedure 614

TCM BRANCH LINE CIRCUIT 615
Diagnosis Procedure 615

ADP BRANCH LINE CIRCUIT 617
Diagnosis Procedure 617

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) 618
Diagnosis Procedure 618

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2) 619
Diagnosis Procedure 619

STRG BRANCH LINE CIRCUIT 620
Diagnosis Procedure 620

A-BAG BRANCH LINE CIRCUIT 621
Diagnosis Procedure 621

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) 622
Diagnosis Procedure 622

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2) 623
Diagnosis Procedure 623

M&A BRANCH LINE CIRCUIT 624
Diagnosis Procedure 624

AV BRANCH LINE CIRCUIT 625
Diagnosis Procedure 625

TCU BRANCH LINE CIRCUIT 626
Diagnosis Procedure 626

TPMS BRANCH LINE CIRCUIT 627
Diagnosis Procedure 627

HVAC BRANCH LINE CIRCUIT 628
Diagnosis Procedure 628

BCM BRANCH LINE CIRCUIT 629
Diagnosis Procedure 629

SONAR BRANCH LINE CIRCUIT 630
Diagnosis Procedure 630

CAN COMMUNICATION CIRCUIT 1 632
Diagnosis Procedure 632

CAN COMMUNICATION CIRCUIT 2 634
Diagnosis Procedure 634

CAN SYSTEM (TYPE 12)

DTC/CIRCUIT DIAGNOSIS 636

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT 636
Diagnosis Procedure 636

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT 637
Diagnosis Procedure 637

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT 638
Diagnosis Procedure 638

MAIN LINE BETWEEN TCM AND DLC CIRCUIT 639
Diagnosis Procedure 639

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 640
Diagnosis Procedure 640

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 641
Diagnosis Procedure 641

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 642
Diagnosis Procedure 642

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 643
Diagnosis Procedure 643

MAIN LINE BETWEEN M&A AND AV CIRCUIT 644
Diagnosis Procedure 644

MAIN LINE BETWEEN AV AND TPMS CIRCUIT 645
Diagnosis Procedure 645

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 646
Diagnosis Procedure 646

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 647
Diagnosis Procedure 647

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 649
Diagnosis Procedure 649

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT 650
Diagnosis Procedure 650

ECM BRANCH LINE CIRCUIT 652
Diagnosis Procedure 652

4WD BRANCH LINE CIRCUIT 653
Diagnosis Procedure 653

ABS BRANCH LINE CIRCUIT 654
Diagnosis Procedure 654

IPDM-E BRANCH LINE CIRCUIT 655
Diagnosis Procedure 655

TCM BRANCH LINE CIRCUIT 656
Diagnosis Procedure 656

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 658
Diagnosis Procedure 658

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 659
Diagnosis Procedure 659

STRG BRANCH LINE CIRCUIT 660
Diagnosis Procedure 660

A-BAG BRANCH LINE CIRCUIT 661
Diagnosis Procedure 661

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 662
Diagnosis Procedure 662

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 663
Diagnosis Procedure 663

M&A BRANCH LINE CIRCUIT 664
Diagnosis Procedure 664

AV BRANCH LINE CIRCUIT 665
Diagnosis Procedure 665

TPMS BRANCH LINE CIRCUIT 666
Diagnosis Procedure 666

HVAC BRANCH LINE CIRCUIT 667
Diagnosis Procedure 667

BCM BRANCH LINE CIRCUIT 668
Diagnosis Procedure 668

RDR-R BRANCH LINE CIRCUIT 669
Diagnosis Procedure 669

RDR-L BRANCH LINE CIRCUIT 670
Diagnosis Procedure 670

SONAR BRANCH LINE CIRCUIT 671
Diagnosis Procedure 671

CAN COMMUNICATION CIRCUIT 673
Diagnosis Procedure 673

ITS COMMUNICATION CIRCUIT 675
Diagnosis Procedure 675

CAN SYSTEM (TYPE 13)

DTC/CIRCUIT DIAGNOSIS 677

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT 677
Diagnosis Procedure 677

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT 678
Diagnosis Procedure 678

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT 679
Diagnosis Procedure 679

MAIN LINE BETWEEN TCM AND DLC CIRCUIT 680
Diagnosis Procedure 680

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 681
Diagnosis Procedure 681

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 682
Diagnosis Procedure 682

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT 683
Diagnosis Procedure 683

MAIN LINE BETWEEN CGW AND M&A CIRCUIT 684
Diagnosis Procedure 684

MAIN LINE BETWEEN M&A AND AV CIRCUIT 685
Diagnosis Procedure 685

MAIN LINE BETWEEN AV AND TPMS CIRCUIT 686
Diagnosis Procedure 686

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 687
Diagnosis Procedure 687

MAIN LINE BETWEEN DLC AND DIFF CIRCUIT 688
Diagnosis Procedure 688

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT 689
Diagnosis Procedure 689

ECM BRANCH LINE CIRCUIT 690
Diagnosis Procedure 690

4WD BRANCH LINE CIRCUIT 691
Diagnosis Procedure 691

ABS BRANCH LINE CIRCUIT 692
Diagnosis Procedure 692

IPDM-E BRANCH LINE CIRCUIT 693
Diagnosis Procedure 693

TCM BRANCH LINE CIRCUIT 694
Diagnosis Procedure 694

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) 696
Diagnosis Procedure 696

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2) 697
Diagnosis Procedure 697

STRG BRANCH LINE CIRCUIT 698
Diagnosis Procedure 698

A-BAG BRANCH LINE CIRCUIT 699
Diagnosis Procedure 699

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) 700
Diagnosis Procedure 700

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2) 701
Diagnosis Procedure 701

M&A BRANCH LINE CIRCUIT 702
Diagnosis Procedure 702

AV BRANCH LINE CIRCUIT 703
Diagnosis Procedure 703

TPMS BRANCH LINE CIRCUIT 704
Diagnosis Procedure 704

HVAC BRANCH LINE CIRCUIT 705
Diagnosis Procedure 705

BCM BRANCH LINE CIRCUIT 706
Diagnosis Procedure 706

DIFF BRANCH LINE CIRCUIT 707
Diagnosis Procedure 707

SONAR BRANCH LINE CIRCUIT 709
Diagnosis Procedure 709

CAN COMMUNICATION CIRCUIT 1 711
Diagnosis Procedure 711

CAN COMMUNICATION CIRCUIT 2 713
Diagnosis Procedure 713

CAN SYSTEM (TYPE 14)

DTC/CIRCUIT DIAGNOSIS 715

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT 715
Diagnosis Procedure 715

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT 716
Diagnosis Procedure 716

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT 717
Diagnosis Procedure 717

MAIN LINE BETWEEN TCM AND DLC CIRCUIT 718
Diagnosis Procedure 718

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 719
Diagnosis Procedure 719

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 720
Diagnosis Procedure 720

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 721
Diagnosis Procedure 721

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 722
Diagnosis Procedure 722

MAIN LINE BETWEEN M&A AND AV CIRCUIT 723
Diagnosis Procedure 723

MAIN LINE BETWEEN AV AND TPMS CIRCUIT 724
Diagnosis Procedure 724

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 725
Diagnosis Procedure 725

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 726
Diagnosis Procedure 726

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 728
Diagnosis Procedure 728

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT 729
Diagnosis Procedure 729

ECM BRANCH LINE CIRCUIT 731
Diagnosis Procedure 731

4WD BRANCH LINE CIRCUIT 732
Diagnosis Procedure 732

ABS BRANCH LINE CIRCUIT 733
Diagnosis Procedure 733

IPDM-E BRANCH LINE CIRCUIT 734
Diagnosis Procedure 734

TCM BRANCH LINE CIRCUIT 735
Diagnosis Procedure 735

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 737
Diagnosis Procedure 737

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 738
Diagnosis Procedure 738

STRG BRANCH LINE CIRCUIT 739
Diagnosis Procedure 739

A-BAG BRANCH LINE CIRCUIT 740
Diagnosis Procedure 740

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 741
Diagnosis Procedure 741

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 742
Diagnosis Procedure 742

M&A BRANCH LINE CIRCUIT 743
Diagnosis Procedure 743

AV BRANCH LINE CIRCUIT 744
Diagnosis Procedure 744

TPMS BRANCH LINE CIRCUIT 745
Diagnosis Procedure 745

HVAC BRANCH LINE CIRCUIT 746
Diagnosis Procedure 746

BCM BRANCH LINE CIRCUIT 747
Diagnosis Procedure 747

RDR-R BRANCH LINE CIRCUIT 748
Diagnosis Procedure 748

RDR-L BRANCH LINE CIRCUIT 749
Diagnosis Procedure 749

DIFF BRANCH LINE CIRCUIT 750
Diagnosis Procedure 750

CAN COMMUNICATION CIRCUIT 752
Diagnosis Procedure 752

ITS COMMUNICATION CIRCUIT 754
Diagnosis Procedure 754

CAN SYSTEM (TYPE 15)

DTC/CIRCUIT DIAGNOSIS 756

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT 756
Diagnosis Procedure 756

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT 757
Diagnosis Procedure 757

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT 758
Diagnosis Procedure 758

MAIN LINE BETWEEN TCM AND ADP CIRCUIT 759
Diagnosis Procedure 759

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 760
Diagnosis Procedure 760

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 761
Diagnosis Procedure 761

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 762
Diagnosis Procedure 762

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 763
Diagnosis Procedure 763

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 764
Diagnosis Procedure 764

MAIN LINE BETWEEN M&A AND AV CIRCUIT 765
Diagnosis Procedure 765

MAIN LINE BETWEEN AV AND TCU CIRCUIT 766
Diagnosis Procedure 766

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT 767
Diagnosis Procedure 767

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 768
Diagnosis Procedure 768

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 769
Diagnosis Procedure 769

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 771
Diagnosis Procedure 771

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT 772
Diagnosis Procedure 772

ECM BRANCH LINE CIRCUIT 774
Diagnosis Procedure 774

4WD BRANCH LINE CIRCUIT 775
Diagnosis Procedure 775

ABS BRANCH LINE CIRCUIT 776
Diagnosis Procedure 776

IPDM-E BRANCH LINE CIRCUIT 777
Diagnosis Procedure 777

TCM BRANCH LINE CIRCUIT 778
Diagnosis Procedure 778

ADP BRANCH LINE CIRCUIT 780
Diagnosis Procedure 780

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 781
Diagnosis Procedure 781

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 782
Diagnosis Procedure 782

STRG BRANCH LINE CIRCUIT 783
Diagnosis Procedure 783

A-BAG BRANCH LINE CIRCUIT 784
Diagnosis Procedure 784

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 785
Diagnosis Procedure 785

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 786
Diagnosis Procedure 786

M&A BRANCH LINE CIRCUIT 787
Diagnosis Procedure 787

AV BRANCH LINE CIRCUIT 788
Diagnosis Procedure 788

TCU BRANCH LINE CIRCUIT 789
Diagnosis Procedure 789

TPMS BRANCH LINE CIRCUIT 790
Diagnosis Procedure 790

HVAC BRANCH LINE CIRCUIT 791
Diagnosis Procedure 791

BCM BRANCH LINE CIRCUIT 792
Diagnosis Procedure 792

RDR-R BRANCH LINE CIRCUIT 793

Diagnosis Procedure 793

RDR-L BRANCH LINE CIRCUIT 794
Diagnosis Procedure 794

SONAR BRANCH LINE CIRCUIT 795
Diagnosis Procedure 795

CAN COMMUNICATION CIRCUIT 797
Diagnosis Procedure 797

ITS COMMUNICATION CIRCUIT 799
Diagnosis Procedure 799

CAN SYSTEM (TYPE 16)

DTC/CIRCUIT DIAGNOSIS 801

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT 801
Diagnosis Procedure 801

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT 802
Diagnosis Procedure 802

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT 803
Diagnosis Procedure 803

MAIN LINE BETWEEN TCM AND ADP CIRCUIT 804
Diagnosis Procedure 804

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 805
Diagnosis Procedure 805

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 806
Diagnosis Procedure 806

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 807
Diagnosis Procedure 807

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT 808
Diagnosis Procedure 808

MAIN LINE BETWEEN CGW AND M&A CIRCUIT 809
Diagnosis Procedure 809

MAIN LINE BETWEEN M&A AND AV CIRCUIT 810
Diagnosis Procedure 810

MAIN LINE BETWEEN AV AND TCU CIRCUIT 811
Diagnosis Procedure 811

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT 812
Diagnosis Procedure 812

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 813
Diagnosis Procedure 813

MAIN LINE BETWEEN DLC AND AVM CIRCUIT 814
Diagnosis Procedure 814

MAIN LINE BETWEEN AVM AND SONAR CIRCUIT 815
Diagnosis Procedure 815

ECM BRANCH LINE CIRCUIT 816
Diagnosis Procedure 816

4WD BRANCH LINE CIRCUIT 817
Diagnosis Procedure 817

ABS BRANCH LINE CIRCUIT 818
Diagnosis Procedure 818

IPDM-E BRANCH LINE CIRCUIT 819
Diagnosis Procedure 819

TCM BRANCH LINE CIRCUIT 820
Diagnosis Procedure 820

ADP BRANCH LINE CIRCUIT 822
Diagnosis Procedure 822

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) 823
Diagnosis Procedure 823

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2) 824
Diagnosis Procedure 824

STRG BRANCH LINE CIRCUIT 825
Diagnosis Procedure 825

A-BAG BRANCH LINE CIRCUIT 826
Diagnosis Procedure 826

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) 827
Diagnosis Procedure 827

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2) 828
Diagnosis Procedure 828

M&A BRANCH LINE CIRCUIT 829
Diagnosis Procedure 829

AV BRANCH LINE CIRCUIT 830
Diagnosis Procedure 830

TCU BRANCH LINE CIRCUIT 831
Diagnosis Procedure 831

TPMS BRANCH LINE CIRCUIT 832
Diagnosis Procedure 832

HVAC BRANCH LINE CIRCUIT 833
Diagnosis Procedure 833

BCM BRANCH LINE CIRCUIT 834
Diagnosis Procedure 834

AVM BRANCH LINE CIRCUIT 835
Diagnosis Procedure 835

SONAR BRANCH LINE CIRCUIT 837
Diagnosis Procedure 837

CAN COMMUNICATION CIRCUIT 1 839
Diagnosis Procedure 839

CAN COMMUNICATION CIRCUIT 2 841
Diagnosis Procedure 841

CAN SYSTEM (TYPE 17)

DTC/CIRCUIT DIAGNOSIS 843

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT 843
Diagnosis Procedure 843

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT 844
Diagnosis Procedure 844

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT 845
Diagnosis Procedure 845

MAIN LINE BETWEEN TCM AND DLC CIRCUIT 846
Diagnosis Procedure 846

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 847
Diagnosis Procedure 847

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 848
Diagnosis Procedure 848

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 849
Diagnosis Procedure 849

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 850
Diagnosis Procedure 850

MAIN LINE BETWEEN M&A AND AV CIRCUIT 851
Diagnosis Procedure 851

MAIN LINE BETWEEN AV AND TPMS CIRCUIT 852
Diagnosis Procedure 852

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 853
Diagnosis Procedure 853

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 854
Diagnosis Procedure 854

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 856
Diagnosis Procedure 856

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT 857
Diagnosis Procedure 857

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT 859
Diagnosis Procedure 859

ECM BRANCH LINE CIRCUIT 860
Diagnosis Procedure 860

4WD BRANCH LINE CIRCUIT 861
Diagnosis Procedure 861

ABS BRANCH LINE CIRCUIT 862
Diagnosis Procedure 862

IPDM-E BRANCH LINE CIRCUIT 863
Diagnosis Procedure 863

TCM BRANCH LINE CIRCUIT 864
Diagnosis Procedure 864

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 866
Diagnosis Procedure 866

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 867
Diagnosis Procedure 867

STRG BRANCH LINE CIRCUIT 868
Diagnosis Procedure 868

A-BAG BRANCH LINE CIRCUIT 869
Diagnosis Procedure 869

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 870
Diagnosis Procedure 870

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 871
Diagnosis Procedure 871

M&A BRANCH LINE CIRCUIT 872

Diagnosis Procedure 872

AV BRANCH LINE CIRCUIT 873
Diagnosis Procedure 873

TPMS BRANCH LINE CIRCUIT 874
Diagnosis Procedure 874

HVAC BRANCH LINE CIRCUIT 875
Diagnosis Procedure 875

BCM BRANCH LINE CIRCUIT 876
Diagnosis Procedure 876

RDR-R BRANCH LINE CIRCUIT 877
Diagnosis Procedure 877

RDR-L BRANCH LINE CIRCUIT 878
Diagnosis Procedure 878

DIFF BRANCH LINE CIRCUIT 879
Diagnosis Procedure 879

SONAR BRANCH LINE CIRCUIT 881
Diagnosis Procedure 881

CAN COMMUNICATION CIRCUIT 883
Diagnosis Procedure 883

ITS COMMUNICATION CIRCUIT 885
Diagnosis Procedure 885

CAN SYSTEM (TYPE 18)

DTC/CIRCUIT DIAGNOSIS 887

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT 887
Diagnosis Procedure 887

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT 888
Diagnosis Procedure 888

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT 889
Diagnosis Procedure 889

MAIN LINE BETWEEN TCM AND ADP CIRCUIT 890
Diagnosis Procedure 890

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 891
Diagnosis Procedure 891

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 892
Diagnosis Procedure 892

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 893
Diagnosis Procedure 893

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT 894
Diagnosis Procedure 894

MAIN LINE BETWEEN CGW AND M&A CIRCUIT 895
Diagnosis Procedure 895

MAIN LINE BETWEEN M&A AND AV CIRCUIT 896
Diagnosis Procedure 896

MAIN LINE BETWEEN AV AND TCU CIRCUIT 897
Diagnosis Procedure 897

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT 898
Diagnosis Procedure 898

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 899
Diagnosis Procedure 899

MAIN LINE BETWEEN DLC AND DIFF CIRCUIT 900
Diagnosis Procedure 900

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT 901
Diagnosis Procedure 901

ECM BRANCH LINE CIRCUIT 902
Diagnosis Procedure 902

4WD BRANCH LINE CIRCUIT 903
Diagnosis Procedure 903

ABS BRANCH LINE CIRCUIT 904
Diagnosis Procedure 904

IPDM-E BRANCH LINE CIRCUIT 905
Diagnosis Procedure 905

TCM BRANCH LINE CIRCUIT 906
Diagnosis Procedure 906

ADP BRANCH LINE CIRCUIT 908
Diagnosis Procedure 908

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) 909
Diagnosis Procedure 909

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2) 910
Diagnosis Procedure 910

STRG BRANCH LINE CIRCUIT 911
Diagnosis Procedure 911

A-BAG BRANCH LINE CIRCUIT 912

Diagnosis Procedure 912

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) 913
Diagnosis Procedure 913

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2) 914
Diagnosis Procedure 914

M&A BRANCH LINE CIRCUIT 915
Diagnosis Procedure 915

AV BRANCH LINE CIRCUIT 916
Diagnosis Procedure 916

TCU BRANCH LINE CIRCUIT 917
Diagnosis Procedure 917

TPMS BRANCH LINE CIRCUIT 918
Diagnosis Procedure 918

HVAC BRANCH LINE CIRCUIT 919
Diagnosis Procedure 919

BCM BRANCH LINE CIRCUIT 920
Diagnosis Procedure 920

DIFF BRANCH LINE CIRCUIT 921
Diagnosis Procedure 921

SONAR BRANCH LINE CIRCUIT 923
Diagnosis Procedure 923

CAN COMMUNICATION CIRCUIT 1 925
Diagnosis Procedure 925

CAN COMMUNICATION CIRCUIT 2 927
Diagnosis Procedure 927

CAN SYSTEM (TYPE 19)

DTC/CIRCUIT DIAGNOSIS 929

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT 929
Diagnosis Procedure 929

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT 930
Diagnosis Procedure 930

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT 931
Diagnosis Procedure 931

MAIN LINE BETWEEN TCM AND ADP CIRCUIT 932
Diagnosis Procedure 932

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 933
Diagnosis Procedure 933

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 934
Diagnosis Procedure 934

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 935
Diagnosis Procedure 935

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 936
Diagnosis Procedure 936

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 937
Diagnosis Procedure 937

MAIN LINE BETWEEN M&A AND AV CIRCUIT 938
Diagnosis Procedure 938

MAIN LINE BETWEEN AV AND TCU CIRCUIT 939
Diagnosis Procedure 939

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT 940
Diagnosis Procedure 940

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 941
Diagnosis Procedure 941

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 942
Diagnosis Procedure 942

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 944
Diagnosis Procedure 944

MAIN LINE BETWEEN RDR-L AND AVM CIRCUIT 945
Diagnosis Procedure 945

MAIN LINE BETWEEN AVM AND SONAR CIRCUIT 947
Diagnosis Procedure 947

ECM BRANCH LINE CIRCUIT 948
Diagnosis Procedure 948

4WD BRANCH LINE CIRCUIT 949
Diagnosis Procedure 949

ABS BRANCH LINE CIRCUIT 950
Diagnosis Procedure 950

IPDM-E BRANCH LINE CIRCUIT 951
Diagnosis Procedure 951

TCM BRANCH LINE CIRCUIT 952
Diagnosis Procedure 952

ADP BRANCH LINE CIRCUIT 954
Diagnosis Procedure 954

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 955
Diagnosis Procedure 955

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 956
Diagnosis Procedure 956

STRG BRANCH LINE CIRCUIT 957
Diagnosis Procedure 957

A-BAG BRANCH LINE CIRCUIT 958
Diagnosis Procedure 958

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 959
Diagnosis Procedure 959

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 960
Diagnosis Procedure 960

M&A BRANCH LINE CIRCUIT 961
Diagnosis Procedure 961

AV BRANCH LINE CIRCUIT 962
Diagnosis Procedure 962

TCU BRANCH LINE CIRCUIT 963
Diagnosis Procedure 963

TPMS BRANCH LINE CIRCUIT 964
Diagnosis Procedure 964

HVAC BRANCH LINE CIRCUIT 965
Diagnosis Procedure 965

BCM BRANCH LINE CIRCUIT 966
Diagnosis Procedure 966

RDR-R BRANCH LINE CIRCUIT 967
Diagnosis Procedure 967

RDR-L BRANCH LINE CIRCUIT 968
Diagnosis Procedure 968

AVM BRANCH LINE CIRCUIT 969
Diagnosis Procedure 969

SONAR BRANCH LINE CIRCUIT 971
Diagnosis Procedure 971

CAN COMMUNICATION CIRCUIT 973
Diagnosis Procedure 973

ITS COMMUNICATION CIRCUIT 975
Diagnosis Procedure 975

CAN SYSTEM (TYPE 20)

DTC/CIRCUIT DIAGNOSIS 977

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT 977
Diagnosis Procedure 977

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT 978
Diagnosis Procedure 978

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT 979
Diagnosis Procedure 979

MAIN LINE BETWEEN TCM AND ADP CIRCUIT 980
Diagnosis Procedure 980

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 981
Diagnosis Procedure 981

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 982
Diagnosis Procedure 982

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 983
Diagnosis Procedure 983

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 984
Diagnosis Procedure 984

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 985
Diagnosis Procedure 985

MAIN LINE BETWEEN M&A AND AV CIRCUIT 986
Diagnosis Procedure 986

MAIN LINE BETWEEN AV AND TCU CIRCUIT 987
Diagnosis Procedure 987

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT 988
Diagnosis Procedure 988

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 989
Diagnosis Procedure 989

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 990
Diagnosis Procedure 990

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 992
Diagnosis Procedure 992

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT 993
Diagnosis Procedure 993

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT 995
Diagnosis Procedure 995

ECM BRANCH LINE CIRCUIT 996
Diagnosis Procedure 996

4WD BRANCH LINE CIRCUIT 997
Diagnosis Procedure 997

ABS BRANCH LINE CIRCUIT 998
Diagnosis Procedure 998

IPDM-E BRANCH LINE CIRCUIT 999
Diagnosis Procedure 999

TCM BRANCH LINE CIRCUIT 1000
Diagnosis Procedure 1000

ADP BRANCH LINE CIRCUIT 1002
Diagnosis Procedure 1002

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1003
Diagnosis Procedure 1003

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1004
Diagnosis Procedure 1004

STRG BRANCH LINE CIRCUIT 1005
Diagnosis Procedure 1005

A-BAG BRANCH LINE CIRCUIT 1006
Diagnosis Procedure 1006

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1007
Diagnosis Procedure 1007

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1008
Diagnosis Procedure 1008

M&A BRANCH LINE CIRCUIT 1009
Diagnosis Procedure 1009

AV BRANCH LINE CIRCUIT 1010
Diagnosis Procedure 1010

TCU BRANCH LINE CIRCUIT 1011
Diagnosis Procedure 1011

TPMS BRANCH LINE CIRCUIT 1012
Diagnosis Procedure 1012

HVAC BRANCH LINE CIRCUIT 1013
Diagnosis Procedure 1013

BCM BRANCH LINE CIRCUIT 1014
Diagnosis Procedure 1014

RDR-R BRANCH LINE CIRCUIT 1015
Diagnosis Procedure 1015

RDR-L BRANCH LINE CIRCUIT 1016
Diagnosis Procedure 1016

DIFF BRANCH LINE CIRCUIT 1017
Diagnosis Procedure 1017

SONAR BRANCH LINE CIRCUIT 1019
Diagnosis Procedure 1019

CAN COMMUNICATION CIRCUIT 1021
Diagnosis Procedure 1021

ITS COMMUNICATION CIRCUIT 1023
Diagnosis Procedure 1023

CAN SYSTEM (TYPE 21)

DTC/CIRCUIT DIAGNOSIS 1025

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT 1025
Diagnosis Procedure 1025

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT 1026
Diagnosis Procedure 1026

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT 1027
Diagnosis Procedure 1027

MAIN LINE BETWEEN TCM AND ADP CIRCUIT 1028
Diagnosis Procedure 1028

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 1029
Diagnosis Procedure 1029

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1030
Diagnosis Procedure 1030

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1031
Diagnosis Procedure 1031

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT 1032
Diagnosis Procedure 1032

MAIN LINE BETWEEN CGW AND M&A CIRCUIT 1033
Diagnosis Procedure 1033

MAIN LINE BETWEEN M&A AND AV CIRCUIT 1034

Diagnosis Procedure 1034

MAIN LINE BETWEEN AV AND TCU CIRCUIT 1035
Diagnosis Procedure 1035

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT 1036
Diagnosis Procedure 1036

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 1037
Diagnosis Procedure 1037

MAIN LINE BETWEEN DLC AND AVM CIRCUIT 1038
Diagnosis Procedure 1038

MAIN LINE BETWEEN AVM AND DIFF CIRCUIT 1039
Diagnosis Procedure 1039

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT 1040
Diagnosis Procedure 1040

ECM BRANCH LINE CIRCUIT 1041
Diagnosis Procedure 1041

4WD BRANCH LINE CIRCUIT 1042
Diagnosis Procedure 1042

ABS BRANCH LINE CIRCUIT 1043
Diagnosis Procedure 1043

IPDM-E BRANCH LINE CIRCUIT 1044
Diagnosis Procedure 1044

TCM BRANCH LINE CIRCUIT 1045
Diagnosis Procedure 1045

ADP BRANCH LINE CIRCUIT 1047
Diagnosis Procedure 1047

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) 1048
Diagnosis Procedure 1048

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2) 1049
Diagnosis Procedure 1049

STRG BRANCH LINE CIRCUIT 1050
Diagnosis Procedure 1050

A-BAG BRANCH LINE CIRCUIT 1051
Diagnosis Procedure 1051

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) 1052
Diagnosis Procedure 1052

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2) 1053
Diagnosis Procedure 1053

M&A BRANCH LINE CIRCUIT 1054
Diagnosis Procedure 1054

AV BRANCH LINE CIRCUIT 1055
Diagnosis Procedure 1055

TCU BRANCH LINE CIRCUIT 1056
Diagnosis Procedure 1056

TPMS BRANCH LINE CIRCUIT 1057
Diagnosis Procedure 1057

HVAC BRANCH LINE CIRCUIT 1058
Diagnosis Procedure 1058

BCM BRANCH LINE CIRCUIT 1059
Diagnosis Procedure 1059

AVM BRANCH LINE CIRCUIT 1060
Diagnosis Procedure 1060

DIFF BRANCH LINE CIRCUIT 1062
Diagnosis Procedure 1062

SONAR BRANCH LINE CIRCUIT 1064
Diagnosis Procedure 1064

CAN COMMUNICATION CIRCUIT 1 1066
Diagnosis Procedure 1066

CAN COMMUNICATION CIRCUIT 2 1068
Diagnosis Procedure 1068

CAN SYSTEM (TYPE 22)

DTC/CIRCUIT DIAGNOSIS 1070

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT 1070
Diagnosis Procedure 1070

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT 1071
Diagnosis Procedure 1071

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT 1072
Diagnosis Procedure 1072

MAIN LINE BETWEEN TCM AND ADP CIRCUIT 1073
Diagnosis Procedure 1073

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 1074
Diagnosis Procedure 1074

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1075

Diagnosis Procedure 1075

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1076
Diagnosis Procedure 1076

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 1077
Diagnosis Procedure 1077

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 1078
Diagnosis Procedure 1078

MAIN LINE BETWEEN M&A AND AV CIRCUIT 1079
Diagnosis Procedure 1079

MAIN LINE BETWEEN AV AND TCU CIRCUIT 1080
Diagnosis Procedure 1080

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT 1081
Diagnosis Procedure 1081

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT 1082
Diagnosis Procedure 1082

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 1083
Diagnosis Procedure 1083

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 1085
Diagnosis Procedure 1085

MAIN LINE BETWEEN RDR-L AND AVM CIRCUIT 1086
Diagnosis Procedure 1086

MAIN LINE BETWEEN AVM AND DIFF CIRCUIT 1088
Diagnosis Procedure 1088

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT 1089
Diagnosis Procedure 1089

ECM BRANCH LINE CIRCUIT 1090
Diagnosis Procedure 1090

4WD BRANCH LINE CIRCUIT 1091
Diagnosis Procedure 1091

ABS BRANCH LINE CIRCUIT 1092
Diagnosis Procedure 1092

IPDM-E BRANCH LINE CIRCUIT 1093
Diagnosis Procedure 1093

TCM BRANCH LINE CIRCUIT 1094
Diagnosis Procedure 1094

ADP BRANCH LINE CIRCUIT 1096
Diagnosis Procedure 1096

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1097
Diagnosis Procedure 1097

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1098
Diagnosis Procedure 1098

STRG BRANCH LINE CIRCUIT 1099
Diagnosis Procedure 1099

A-BAG BRANCH LINE CIRCUIT 1100
Diagnosis Procedure 1100

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1101
Diagnosis Procedure 1101

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1102
Diagnosis Procedure 1102

M&A BRANCH LINE CIRCUIT 1103
Diagnosis Procedure 1103

AV BRANCH LINE CIRCUIT 1104
Diagnosis Procedure 1104

TCU BRANCH LINE CIRCUIT 1105
Diagnosis Procedure 1105

TPMS BRANCH LINE CIRCUIT 1106
Diagnosis Procedure 1106

HVAC BRANCH LINE CIRCUIT 1107
Diagnosis Procedure 1107

BCM BRANCH LINE CIRCUIT 1108
Diagnosis Procedure 1108

RDR-R BRANCH LINE CIRCUIT 1109
Diagnosis Procedure 1109

RDR-L BRANCH LINE CIRCUIT 1110
Diagnosis Procedure 1110

AVM BRANCH LINE CIRCUIT 1111
Diagnosis Procedure 1111

DIFF BRANCH LINE CIRCUIT 1113
Diagnosis Procedure 1113

SONAR BRANCH LINE CIRCUIT 1115
Diagnosis Procedure 1115

CAN COMMUNICATION CIRCUIT 1117
Diagnosis Procedure 1117

ITS COMMUNICATION CIRCUIT 1119
Diagnosis Procedure 1119

CAN SYSTEM (TYPE 23)

DTC/CIRCUIT DIAGNOSIS 1121

MAIN LINE BETWEEN TCM AND IPDM-E CIRCUIT 1121
Diagnosis Procedure 1121

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT 1122
Diagnosis Procedure 1122

MAIN LINE BETWEEN ABS AND DLC CIRCUIT 1123
Diagnosis Procedure 1123

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1125
Diagnosis Procedure 1125

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1126
Diagnosis Procedure 1126

MAIN LINE BETWEEN A-BAG AND M&A CIRCUIT 1127
Diagnosis Procedure 1127

MAIN LINE BETWEEN M&A AND HVAC CIRCUIT 1128
Diagnosis Procedure 1128

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT 1129
Diagnosis Procedure 1129

ECM BRANCH LINE CIRCUIT 1130
Diagnosis Procedure 1130

ABS BRANCH LINE CIRCUIT 1131
Diagnosis Procedure 1131

IPDM-E BRANCH LINE CIRCUIT 1132
Diagnosis Procedure 1132

TCM BRANCH LINE CIRCUIT 1133
Diagnosis Procedure 1133

DLC BRANCH LINE CIRCUIT 1135
Diagnosis Procedure 1135

STRG BRANCH LINE CIRCUIT 1136
Diagnosis Procedure 1136

A-BAG BRANCH LINE CIRCUIT 1137
Diagnosis Procedure 1137

M&A BRANCH LINE CIRCUIT 1138
Diagnosis Procedure 1138

TPMS BRANCH LINE CIRCUIT 1139
Diagnosis Procedure 1139

HVAC BRANCH LINE CIRCUIT 1140
Diagnosis Procedure 1140

BCM BRANCH LINE CIRCUIT 1141
Diagnosis Procedure 1141

CAN COMMUNICATION CIRCUIT 1142
Diagnosis Procedure 1142

CAN SYSTEM (TYPE 24)

DTC/CIRCUIT DIAGNOSIS 1144

MAIN LINE BETWEEN TCM AND IPDM-E CIRCUIT 1144
Diagnosis Procedure 1144

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT 1145
Diagnosis Procedure 1145

MAIN LINE BETWEEN ABS AND DLC CIRCUIT 1146
Diagnosis Procedure 1146

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1148
Diagnosis Procedure 1148

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1149
Diagnosis Procedure 1149

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 1150
Diagnosis Procedure 1150

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 1151
Diagnosis Procedure 1151

MAIN LINE BETWEEN M&A AND AV CIRCUIT 1152
Diagnosis Procedure 1152

MAIN LINE BETWEEN AV AND HVAC CIRCUIT 1153
Diagnosis Procedure 1153

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT 1154
Diagnosis Procedure 1154

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 1155
Diagnosis Procedure 1155

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 1157

Diagnosis Procedure 1157

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT 1158
Diagnosis Procedure 1158

ECM BRANCH LINE CIRCUIT 1160
Diagnosis Procedure 1160

ABS BRANCH LINE CIRCUIT 1161
Diagnosis Procedure 1161

IPDM-E BRANCH LINE CIRCUIT 1162
Diagnosis Procedure 1162

TCM BRANCH LINE CIRCUIT 1163
Diagnosis Procedure 1163

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1165
Diagnosis Procedure 1165

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1166
Diagnosis Procedure 1166

STRG BRANCH LINE CIRCUIT 1167
Diagnosis Procedure 1167

A-BAG BRANCH LINE CIRCUIT 1168
Diagnosis Procedure 1168

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1169
Diagnosis Procedure 1169

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1170
Diagnosis Procedure 1170

M&A BRANCH LINE CIRCUIT 1171
Diagnosis Procedure 1171

AV BRANCH LINE CIRCUIT 1172
Diagnosis Procedure 1172

TPMS BRANCH LINE CIRCUIT 1173
Diagnosis Procedure 1173

HVAC BRANCH LINE CIRCUIT 1174
Diagnosis Procedure 1174

BCM BRANCH LINE CIRCUIT 1175
Diagnosis Procedure 1175

RDR-R BRANCH LINE CIRCUIT 1176
Diagnosis Procedure 1176

RDR-L BRANCH LINE CIRCUIT 1177
Diagnosis Procedure 1177

SONAR BRANCH LINE CIRCUIT 1178
Diagnosis Procedure 1178

CAN COMMUNICATION CIRCUIT 1180
Diagnosis Procedure 1180

ITS COMMUNICATION CIRCUIT 1182
Diagnosis Procedure 1182

CAN SYSTEM (TYPE 25)

DTC/CIRCUIT DIAGNOSIS 1184

MAIN LINE BETWEEN TCM AND IPDM-E CIRCUIT 1184
Diagnosis Procedure 1184

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT 1185
Diagnosis Procedure 1185

MAIN LINE BETWEEN ABS AND ADP CIRCUIT 1186
Diagnosis Procedure 1186

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 1187
Diagnosis Procedure 1187

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1188
Diagnosis Procedure 1188

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1189
Diagnosis Procedure 1189

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 1190
Diagnosis Procedure 1190

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 1191
Diagnosis Procedure 1191

MAIN LINE BETWEEN M&A AND AV CIRCUIT 1192
Diagnosis Procedure 1192

MAIN LINE BETWEEN AV AND TCU CIRCUIT 1193
Diagnosis Procedure 1193

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT 1194
Diagnosis Procedure 1194

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT 1195
Diagnosis Procedure 1195

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 1196
Diagnosis Procedure 1196

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 1198
Diagnosis Procedure 1198

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT 1199
Diagnosis Procedure 1199

ECM BRANCH LINE CIRCUIT 1201
Diagnosis Procedure 1201

ABS BRANCH LINE CIRCUIT 1202
Diagnosis Procedure 1202

IPDM-E BRANCH LINE CIRCUIT 1203
Diagnosis Procedure 1203

TCM BRANCH LINE CIRCUIT 1204
Diagnosis Procedure 1204

ADP BRANCH LINE CIRCUIT 1206
Diagnosis Procedure 1206

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1207
Diagnosis Procedure 1207

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1208
Diagnosis Procedure 1208

STRG BRANCH LINE CIRCUIT 1209
Diagnosis Procedure 1209

A-BAG BRANCH LINE CIRCUIT 1210
Diagnosis Procedure 1210

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1211
Diagnosis Procedure 1211

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1212
Diagnosis Procedure 1212

M&A BRANCH LINE CIRCUIT 1213
Diagnosis Procedure 1213

AV BRANCH LINE CIRCUIT 1214
Diagnosis Procedure 1214

TCU BRANCH LINE CIRCUIT 1215
Diagnosis Procedure 1215

TPMS BRANCH LINE CIRCUIT 1216
Diagnosis Procedure 1216

HVAC BRANCH LINE CIRCUIT 1217
Diagnosis Procedure 1217

BCM BRANCH LINE CIRCUIT 1218
Diagnosis Procedure 1218

RDR-R BRANCH LINE CIRCUIT 1219
Diagnosis Procedure 1219

RDR-L BRANCH LINE CIRCUIT 1220
Diagnosis Procedure 1220

SONAR BRANCH LINE CIRCUIT 1221
Diagnosis Procedure 1221

CAN COMMUNICATION CIRCUIT 1223
Diagnosis Procedure 1223

ITS COMMUNICATION CIRCUIT 1225
Diagnosis Procedure 1225

CAN SYSTEM (TYPE 26)

DTC/CIRCUIT DIAGNOSIS 1227

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT 1227
Diagnosis Procedure 1227

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT 1228
Diagnosis Procedure 1228

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT 1229
Diagnosis Procedure 1229

MAIN LINE BETWEEN ABS AND DLC CIRCUIT 1230
Diagnosis Procedure 1230

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1232
Diagnosis Procedure 1232

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1233
Diagnosis Procedure 1233

MAIN LINE BETWEEN A-BAG AND M&A CIRCUIT 1234
Diagnosis Procedure 1234

MAIN LINE BETWEEN M&A AND HVAC CIRCUIT 1235
Diagnosis Procedure 1235

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT 1236
Diagnosis Procedure 1236

ECM BRANCH LINE CIRCUIT 1237
Diagnosis Procedure 1237

4WD BRANCH LINE CIRCUIT 1238
Diagnosis Procedure 1238

ABS BRANCH LINE CIRCUIT 1239
Diagnosis Procedure 1239

IPDM-E BRANCH LINE CIRCUIT 1240
Diagnosis Procedure 1240

TCM BRANCH LINE CIRCUIT 1241
Diagnosis Procedure 1241

DLC BRANCH LINE CIRCUIT 1243
Diagnosis Procedure 1243

STRG BRANCH LINE CIRCUIT 1244
Diagnosis Procedure 1244

A-BAG BRANCH LINE CIRCUIT 1245
Diagnosis Procedure 1245

M&A BRANCH LINE CIRCUIT 1246
Diagnosis Procedure 1246

TPMS BRANCH LINE CIRCUIT 1247
Diagnosis Procedure 1247

HVAC BRANCH LINE CIRCUIT 1248
Diagnosis Procedure 1248

BCM BRANCH LINE CIRCUIT 1249
Diagnosis Procedure 1249

CAN COMMUNICATION CIRCUIT 1250
Diagnosis Procedure 1250

CAN SYSTEM (TYPE 27)

DTC/CIRCUIT DIAGNOSIS 1252

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT 1252
Diagnosis Procedure 1252

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT 1253
Diagnosis Procedure 1253

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT 1254
Diagnosis Procedure 1254

MAIN LINE BETWEEN ABS AND DLC CIRCUIT 1255
Diagnosis Procedure 1255

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1257
Diagnosis Procedure 1257

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1258
Diagnosis Procedure 1258

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 1259
Diagnosis Procedure 1259

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 1260
Diagnosis Procedure 1260

MAIN LINE BETWEEN M&A AND AV CIRCUIT 1261
Diagnosis Procedure 1261

MAIN LINE BETWEEN AV AND HVAC CIRCUIT 1262
Diagnosis Procedure 1262

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT 1263
Diagnosis Procedure 1263

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 1264
Diagnosis Procedure 1264

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 1266
Diagnosis Procedure 1266

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT 1267
Diagnosis Procedure 1267

ECM BRANCH LINE CIRCUIT 1269
Diagnosis Procedure 1269

4WD BRANCH LINE CIRCUIT 1270
Diagnosis Procedure 1270

ABS BRANCH LINE CIRCUIT 1271
Diagnosis Procedure 1271

IPDM-E BRANCH LINE CIRCUIT 1272
Diagnosis Procedure 1272

TCM BRANCH LINE CIRCUIT 1273
Diagnosis Procedure 1273

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1275
Diagnosis Procedure 1275

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1276
Diagnosis Procedure 1276

STRG BRANCH LINE CIRCUIT 1277
Diagnosis Procedure 1277

A-BAG BRANCH LINE CIRCUIT 1278
Diagnosis Procedure 1278

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1279
Diagnosis Procedure 1279

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1280
Diagnosis Procedure 1280

M&A BRANCH LINE CIRCUIT 1281
Diagnosis Procedure 1281

AV BRANCH LINE CIRCUIT 1282
Diagnosis Procedure 1282

TPMS BRANCH LINE CIRCUIT 1283
Diagnosis Procedure 1283

HVAC BRANCH LINE CIRCUIT 1284
Diagnosis Procedure 1284

BCM BRANCH LINE CIRCUIT 1285
Diagnosis Procedure 1285

RDR-R BRANCH LINE CIRCUIT 1286
Diagnosis Procedure 1286

RDR-L BRANCH LINE CIRCUIT 1287
Diagnosis Procedure 1287

SONAR BRANCH LINE CIRCUIT 1288
Diagnosis Procedure 1288

CAN COMMUNICATION CIRCUIT 1290
Diagnosis Procedure 1290

ITS COMMUNICATION CIRCUIT 1292
Diagnosis Procedure 1292

CAN SYSTEM (TYPE 28)

DTC/CIRCUIT DIAGNOSIS 1294

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT 1294
Diagnosis Procedure 1294

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT 1295
Diagnosis Procedure 1295

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT 1296
Diagnosis Procedure 1296

MAIN LINE BETWEEN ABS AND DLC CIRCUIT 1297
Diagnosis Procedure 1297

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1299
Diagnosis Procedure 1299

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1300
Diagnosis Procedure 1300

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 1301
Diagnosis Procedure 1301

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 1302
Diagnosis Procedure 1302

MAIN LINE BETWEEN M&A AND AV CIRCUIT 1303
Diagnosis Procedure 1303

MAIN LINE BETWEEN AV AND HVAC CIRCUIT 1304
Diagnosis Procedure 1304

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT 1305
Diagnosis Procedure 1305

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 1306
Diagnosis Procedure 1306

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 1308
Diagnosis Procedure 1308

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT 1309
Diagnosis Procedure 1309

ECM BRANCH LINE CIRCUIT 1311
Diagnosis Procedure 1311

4WD BRANCH LINE CIRCUIT 1312
Diagnosis Procedure 1312

ABS BRANCH LINE CIRCUIT 1313
Diagnosis Procedure 1313

IPDM-E BRANCH LINE CIRCUIT 1314
Diagnosis Procedure 1314

TCM BRANCH LINE CIRCUIT 1315
Diagnosis Procedure 1315

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1317
Diagnosis Procedure 1317

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1318
Diagnosis Procedure 1318

STRG BRANCH LINE CIRCUIT 1319
Diagnosis Procedure 1319

A-BAG BRANCH LINE CIRCUIT 1320
Diagnosis Procedure 1320

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1321
Diagnosis Procedure 1321

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1322
Diagnosis Procedure 1322

M&A BRANCH LINE CIRCUIT 1323
Diagnosis Procedure 1323

AV BRANCH LINE CIRCUIT 1324
Diagnosis Procedure 1324

TPMS BRANCH LINE CIRCUIT 1325
Diagnosis Procedure 1325

HVAC BRANCH LINE CIRCUIT 1326
Diagnosis Procedure 1326

BCM BRANCH LINE CIRCUIT 1327
Diagnosis Procedure 1327

RDR-R BRANCH LINE CIRCUIT 1328
Diagnosis Procedure 1328

RDR-L BRANCH LINE CIRCUIT 1329
Diagnosis Procedure 1329

DIFF BRANCH LINE CIRCUIT 1330
Diagnosis Procedure 1330

CAN COMMUNICATION CIRCUIT 1332
Diagnosis Procedure 1332

ITS COMMUNICATION CIRCUIT 1334
Diagnosis Procedure 1334

CAN SYSTEM (TYPE 29)

DTC/CIRCUIT DIAGNOSIS 1336

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT 1336
Diagnosis Procedure 1336

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT 1337
Diagnosis Procedure 1337

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT 1338
Diagnosis Procedure 1338

MAIN LINE BETWEEN ABS AND ADP CIRCUIT 1339
Diagnosis Procedure 1339

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 1340
Diagnosis Procedure 1340

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1341
Diagnosis Procedure 1341

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1342
Diagnosis Procedure 1342

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 1343
Diagnosis Procedure 1343

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 1344
Diagnosis Procedure 1344

MAIN LINE BETWEEN M&A AND AV CIRCUIT 1345
Diagnosis Procedure 1345

MAIN LINE BETWEEN AV AND TCU CIRCUIT 1346
Diagnosis Procedure 1346

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT 1347
Diagnosis Procedure 1347

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT 1348
Diagnosis Procedure 1348

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 1349
Diagnosis Procedure 1349

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 1351
Diagnosis Procedure 1351

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT 1352
Diagnosis Procedure 1352

ECM BRANCH LINE CIRCUIT 1354
Diagnosis Procedure 1354

4WD BRANCH LINE CIRCUIT 1355
Diagnosis Procedure 1355

ABS BRANCH LINE CIRCUIT 1356
Diagnosis Procedure 1356

IPDM-E BRANCH LINE CIRCUIT 1357
Diagnosis Procedure 1357

TCM BRANCH LINE CIRCUIT 1358
Diagnosis Procedure 1358

ADP BRANCH LINE CIRCUIT 1360
Diagnosis Procedure 1360

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1361
Diagnosis Procedure 1361

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1362
Diagnosis Procedure 1362

STRG BRANCH LINE CIRCUIT 1363
Diagnosis Procedure 1363

A-BAG BRANCH LINE CIRCUIT 1364
Diagnosis Procedure 1364

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1365
Diagnosis Procedure 1365

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1366
Diagnosis Procedure 1366

M&A BRANCH LINE CIRCUIT 1367
Diagnosis Procedure 1367

AV BRANCH LINE CIRCUIT 1368
Diagnosis Procedure 1368

TCU BRANCH LINE CIRCUIT 1369
Diagnosis Procedure 1369

TPMS BRANCH LINE CIRCUIT 1370
Diagnosis Procedure 1370

HVAC BRANCH LINE CIRCUIT 1371
Diagnosis Procedure 1371

BCM BRANCH LINE CIRCUIT 1372
Diagnosis Procedure 1372

RDR-R BRANCH LINE CIRCUIT 1373
Diagnosis Procedure 1373

RDR-L BRANCH LINE CIRCUIT 1374
Diagnosis Procedure 1374

SONAR BRANCH LINE CIRCUIT 1375
Diagnosis Procedure 1375

CAN COMMUNICATION CIRCUIT 1377
Diagnosis Procedure 1377

ITS COMMUNICATION CIRCUIT 1379
Diagnosis Procedure 1379

CAN SYSTEM (TYPE 30)

DTC/CIRCUIT DIAGNOSIS 1381

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT 1381
Diagnosis Procedure 1381

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT 1382
Diagnosis Procedure 1382

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT 1383
Diagnosis Procedure 1383

MAIN LINE BETWEEN ABS AND DLC CIRCUIT 1384
Diagnosis Procedure 1384

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1386
Diagnosis Procedure 1386

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1387
Diagnosis Procedure 1387

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 1388
Diagnosis Procedure 1388

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 1389
Diagnosis Procedure 1389

MAIN LINE BETWEEN M&A AND AV CIRCUIT 1390
Diagnosis Procedure 1390

MAIN LINE BETWEEN AV AND HVAC CIRCUIT 1391
Diagnosis Procedure 1391

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT 1392
Diagnosis Procedure 1392

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 1393
Diagnosis Procedure 1393

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 1395
Diagnosis Procedure 1395

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT 1396
Diagnosis Procedure 1396

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT 1398
Diagnosis Procedure 1398

ECM BRANCH LINE CIRCUIT 1399
Diagnosis Procedure 1399

4WD BRANCH LINE CIRCUIT 1400
Diagnosis Procedure 1400

ABS BRANCH LINE CIRCUIT 1401
Diagnosis Procedure 1401

IPDM-E BRANCH LINE CIRCUIT 1402
Diagnosis Procedure 1402

TCM BRANCH LINE CIRCUIT 1403
Diagnosis Procedure 1403

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1405
Diagnosis Procedure 1405

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1406
Diagnosis Procedure 1406

STRG BRANCH LINE CIRCUIT 1407
Diagnosis Procedure 1407

A-BAG BRANCH LINE CIRCUIT 1408
Diagnosis Procedure 1408

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1409
Diagnosis Procedure 1409

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1410
Diagnosis Procedure 1410

M&A BRANCH LINE CIRCUIT 1411
Diagnosis Procedure 1411

AV BRANCH LINE CIRCUIT 1412
Diagnosis Procedure 1412

TPMS BRANCH LINE CIRCUIT 1413
Diagnosis Procedure 1413

HVAC BRANCH LINE CIRCUIT 1414
Diagnosis Procedure 1414

BCM BRANCH LINE CIRCUIT 1415
Diagnosis Procedure 1415

RDR-R BRANCH LINE CIRCUIT 1416
Diagnosis Procedure 1416

RDR-L BRANCH LINE CIRCUIT 1417
Diagnosis Procedure 1417

DIFF BRANCH LINE CIRCUIT 1418
Diagnosis Procedure 1418

SONAR BRANCH LINE CIRCUIT 1420
Diagnosis Procedure 1420

CAN COMMUNICATION CIRCUIT 1422
Diagnosis Procedure 1422

ITS COMMUNICATION CIRCUIT 1424
Diagnosis Procedure 1424

CAN SYSTEM (TYPE 31)

DTC/CIRCUIT DIAGNOSIS 1426

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT 1426
Diagnosis Procedure 1426

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT 1427
Diagnosis Procedure 1427

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT 1428
Diagnosis Procedure 1428

MAIN LINE BETWEEN ABS AND ADP CIRCUIT 1429
Diagnosis Procedure 1429

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 1430
Diagnosis Procedure 1430

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1431
Diagnosis Procedure 1431

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1432
Diagnosis Procedure 1432

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 1433
Diagnosis Procedure 1433

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 1434
Diagnosis Procedure 1434

MAIN LINE BETWEEN M&A AND AV CIRCUIT 1435
Diagnosis Procedure 1435

MAIN LINE BETWEEN AV AND TCU CIRCUIT 1436
Diagnosis Procedure 1436

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT 1437
Diagnosis Procedure 1437

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT 1438
Diagnosis Procedure 1438

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 1439
Diagnosis Procedure 1439

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 1441
Diagnosis Procedure 1441

MAIN LINE BETWEEN RDR-L AND AVM CIRCUIT 1442
Diagnosis Procedure 1442

MAIN LINE BETWEEN AVM AND SONAR CIRCUIT 1444
Diagnosis Procedure 1444

ECM BRANCH LINE CIRCUIT 1445
Diagnosis Procedure 1445

4WD BRANCH LINE CIRCUIT 1446
Diagnosis Procedure 1446

ABS BRANCH LINE CIRCUIT 1447
Diagnosis Procedure 1447

IPDM-E BRANCH LINE CIRCUIT 1448
Diagnosis Procedure 1448

TCM BRANCH LINE CIRCUIT 1449
Diagnosis Procedure 1449

ADP BRANCH LINE CIRCUIT 1451
Diagnosis Procedure 1451

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1452
Diagnosis Procedure 1452

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1453
Diagnosis Procedure 1453

STRG BRANCH LINE CIRCUIT 1454
Diagnosis Procedure 1454

A-BAG BRANCH LINE CIRCUIT 1455
Diagnosis Procedure 1455

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1456
Diagnosis Procedure 1456

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1457
Diagnosis Procedure 1457

M&A BRANCH LINE CIRCUIT 1458
Diagnosis Procedure 1458

AV BRANCH LINE CIRCUIT 1459
Diagnosis Procedure 1459

TCU BRANCH LINE CIRCUIT 1460
Diagnosis Procedure 1460

TPMS BRANCH LINE CIRCUIT 1461
Diagnosis Procedure 1461

HVAC BRANCH LINE CIRCUIT 1462
Diagnosis Procedure 1462

BCM BRANCH LINE CIRCUIT 1463
Diagnosis Procedure 1463

RDR-R BRANCH LINE CIRCUIT 1464
Diagnosis Procedure 1464

RDR-L BRANCH LINE CIRCUIT 1465
Diagnosis Procedure 1465

AVM BRANCH LINE CIRCUIT 1466
Diagnosis Procedure 1466

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Diagnosis Procedure 1468

CAN COMMUNICATION CIRCUIT 1470
Diagnosis Procedure 1470

ITS COMMUNICATION CIRCUIT 1472
Diagnosis Procedure 1472

CAN SYSTEM (TYPE 32)

DTC/CIRCUIT DIAGNOSIS 1474

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT 1474
Diagnosis Procedure 1474

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT 1475
Diagnosis Procedure 1475

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT 1476
Diagnosis Procedure 1476

MAIN LINE BETWEEN ABS AND ADP CIRCUIT 1477
Diagnosis Procedure 1477

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 1478
Diagnosis Procedure 1478

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1479
Diagnosis Procedure 1479

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1480
Diagnosis Procedure 1480

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 1481
Diagnosis Procedure 1481

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 1482
Diagnosis Procedure 1482

MAIN LINE BETWEEN M&A AND AV CIRCUIT 1483
Diagnosis Procedure 1483

MAIN LINE BETWEEN AV AND TCU CIRCUIT 1484
Diagnosis Procedure 1484

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT 1485
Diagnosis Procedure 1485

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT 1486
Diagnosis Procedure 1486

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 1487
Diagnosis Procedure 1487

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 1489
Diagnosis Procedure 1489

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT 1490
Diagnosis Procedure 1490

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT 1492
Diagnosis Procedure 1492

ECM BRANCH LINE CIRCUIT 1493
Diagnosis Procedure 1493

4WD BRANCH LINE CIRCUIT 1494
Diagnosis Procedure 1494

ABS BRANCH LINE CIRCUIT 1495
Diagnosis Procedure 1495

IPDM-E BRANCH LINE CIRCUIT 1496
Diagnosis Procedure 1496

TCM BRANCH LINE CIRCUIT 1497
Diagnosis Procedure 1497

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Diagnosis Procedure 1499

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Diagnosis Procedure 1500

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1501
Diagnosis Procedure 1501

STRG BRANCH LINE CIRCUIT 1502
Diagnosis Procedure 1502

A-BAG BRANCH LINE CIRCUIT 1503
Diagnosis Procedure 1503

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Diagnosis Procedure 1504

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1505
Diagnosis Procedure 1505

M&A BRANCH LINE CIRCUIT 1506
Diagnosis Procedure 1506

AV BRANCH LINE CIRCUIT 1507
Diagnosis Procedure 1507

TCU BRANCH LINE CIRCUIT 1508
Diagnosis Procedure 1508

TPMS BRANCH LINE CIRCUIT 1509
Diagnosis Procedure 1509

HVAC BRANCH LINE CIRCUIT 1510
Diagnosis Procedure 1510

BCM BRANCH LINE CIRCUIT 1511
Diagnosis Procedure 1511

RDR-R BRANCH LINE CIRCUIT 1512
Diagnosis Procedure 1512

RDR-L BRANCH LINE CIRCUIT 1513
Diagnosis Procedure 1513

DIFF BRANCH LINE CIRCUIT 1514
Diagnosis Procedure 1514

SONAR BRANCH LINE CIRCUIT 1516
Diagnosis Procedure 1516

CAN COMMUNICATION CIRCUIT 1518
Diagnosis Procedure 1518

ITS COMMUNICATION CIRCUIT 1520
Diagnosis Procedure 1520

CAN SYSTEM (TYPE 33)

DTC/CIRCUIT DIAGNOSIS 1522

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT 1522
Diagnosis Procedure 1522

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT 1523
Diagnosis Procedure 1523

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT 1524
Diagnosis Procedure 1524

MAIN LINE BETWEEN ABS AND ADP CIRCUIT 1525

Diagnosis Procedure 1525

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 1526
Diagnosis Procedure 1526

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1527
Diagnosis Procedure 1527

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1528
Diagnosis Procedure 1528

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 1529
Diagnosis Procedure 1529

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 1530
Diagnosis Procedure 1530

MAIN LINE BETWEEN M&A AND AV CIRCUIT 1531
Diagnosis Procedure 1531

MAIN LINE BETWEEN AV AND TCU CIRCUIT 1532
Diagnosis Procedure 1532

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT 1533
Diagnosis Procedure 1533

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT 1534
Diagnosis Procedure 1534

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 1535
Diagnosis Procedure 1535

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 1537
Diagnosis Procedure 1537

MAIN LINE BETWEEN RDR-L AND AVM CIRCUIT 1538
Diagnosis Procedure 1538

MAIN LINE BETWEEN AVM AND DIFF CIRCUIT 1540
Diagnosis Procedure 1540

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT 1541
Diagnosis Procedure 1541

ECM BRANCH LINE CIRCUIT 1542
Diagnosis Procedure 1542

4WD BRANCH LINE CIRCUIT 1543
Diagnosis Procedure 1543

ABS BRANCH LINE CIRCUIT 1544
Diagnosis Procedure 1544

IPDM-E BRANCH LINE CIRCUIT 1545
Diagnosis Procedure 1545

TCM BRANCH LINE CIRCUIT 1546
Diagnosis Procedure 1546

ADP BRANCH LINE CIRCUIT 1548
Diagnosis Procedure 1548

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1549
Diagnosis Procedure 1549

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1550
Diagnosis Procedure 1550

STRG BRANCH LINE CIRCUIT 1551
Diagnosis Procedure 1551

A-BAG BRANCH LINE CIRCUIT 1552
Diagnosis Procedure 1552

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1553
Diagnosis Procedure 1553

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1554
Diagnosis Procedure 1554

M&A BRANCH LINE CIRCUIT 1555
Diagnosis Procedure 1555

AV BRANCH LINE CIRCUIT 1556
Diagnosis Procedure 1556

TCU BRANCH LINE CIRCUIT 1557
Diagnosis Procedure 1557

TPMS BRANCH LINE CIRCUIT 1558
Diagnosis Procedure 1558

HVAC BRANCH LINE CIRCUIT 1559
Diagnosis Procedure 1559

BCM BRANCH LINE CIRCUIT 1560
Diagnosis Procedure 1560

RDR-R BRANCH LINE CIRCUIT 1561
Diagnosis Procedure 1561

RDR-L BRANCH LINE CIRCUIT 1562
Diagnosis Procedure 1562

AVM BRANCH LINE CIRCUIT 1563
Diagnosis Procedure 1563

DIFF BRANCH LINE CIRCUIT 1565
Diagnosis Procedure 1565

SONAR BRANCH LINE CIRCUIT 1567
Diagnosis Procedure 1567

CAN COMMUNICATION CIRCUIT 1569
Diagnosis Procedure 1569

ITS COMMUNICATION CIRCUIT 1571
Diagnosis Procedure 1571

CAN SYSTEM (TYPE 34)

DTC/CIRCUIT DIAGNOSIS 1573

MAIN LINE BETWEEN TCM AND IPDM-E CIRCUIT 1573
Diagnosis Procedure 1573

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT 1574
Diagnosis Procedure 1574

MAIN LINE BETWEEN ABS AND ADP CIRCUIT 1575
Diagnosis Procedure 1575

MAIN LINE BETWEEN ADP AND DLC CIRCUIT 1576
Diagnosis Procedure 1576

MAIN LINE BETWEEN DLC AND STRG CIRCUIT 1577
Diagnosis Procedure 1577

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT 1578
Diagnosis Procedure 1578

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT 1579
Diagnosis Procedure 1579

MAIN LINE BETWEEN ICC AND M&A CIRCUIT 1580
Diagnosis Procedure 1580

MAIN LINE BETWEEN M&A AND AV CIRCUIT 1581
Diagnosis Procedure 1581

MAIN LINE BETWEEN AV AND TCU CIRCUIT 1582
Diagnosis Procedure 1582

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT 1583
Diagnosis Procedure 1583

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT 1584
Diagnosis Procedure 1584

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT 1585
Diagnosis Procedure 1585

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 1587
Diagnosis Procedure 1587

MAIN LINE BETWEEN RDR-L AND AVM CIRCUIT 1588
Diagnosis Procedure 1588

MAIN LINE BETWEEN AVM AND SONAR CIRCUIT 1590
Diagnosis Procedure 1590

ECM BRANCH LINE CIRCUIT 1591
Diagnosis Procedure 1591

ABS BRANCH LINE CIRCUIT 1592
Diagnosis Procedure 1592

IPDM-E BRANCH LINE CIRCUIT 1593
Diagnosis Procedure 1593

TCM BRANCH LINE CIRCUIT 1594
Diagnosis Procedure 1594

ADP BRANCH LINE CIRCUIT 1596
Diagnosis Procedure 1596

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1597
Diagnosis Procedure 1597

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1598
Diagnosis Procedure 1598

STRG BRANCH LINE CIRCUIT 1599
Diagnosis Procedure 1599

A-BAG BRANCH LINE CIRCUIT 1600
Diagnosis Procedure 1600

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT) 1601
Diagnosis Procedure 1601

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 1602
Diagnosis Procedure 1602

M&A BRANCH LINE CIRCUIT 1603
Diagnosis Procedure 1603

AV BRANCH LINE CIRCUIT 1604
Diagnosis Procedure 1604

TCU BRANCH LINE CIRCUIT 1605
Diagnosis Procedure 1605

TPMS BRANCH LINE CIRCUIT 1606
Diagnosis Procedure 1606

HVAC BRANCH LINE CIRCUIT 1607
Diagnosis Procedure 1607

BCM BRANCH LINE CIRCUIT 1608
Diagnosis Procedure 1608

RDR-R BRANCH LINE CIRCUIT 1609
Diagnosis Procedure 1609

RDR-L BRANCH LINE CIRCUIT 1610
Diagnosis Procedure 1610

AVM BRANCH LINE CIRCUIT 1611
Diagnosis Procedure 1611

SONAR BRANCH LINE CIRCUIT 1613
Diagnosis Procedure 1613

CAN COMMUNICATION CIRCUIT 1615
Diagnosis Procedure 1615

ITS COMMUNICATION CIRCUIT 1617
Diagnosis Procedure 1617

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000014666395

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, and wait at least three minutes before performing any service.**

Precaution for Work

INFOID:0000000014745102

- When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth.
- When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it.
- Protect the removed parts with a shop cloth and prevent them from being dropped.
- Replace a deformed or damaged clip.
- If a part is specified as a non-reusable part, always replace it with a new one.
- Be sure to tighten bolts and nuts securely to the specified torque.
- After installation is complete, be sure to check that each part works properly.
- Follow the steps below to clean components.

- Water soluble dirt:

- Dip a soft cloth into lukewarm water, wring the water out of the cloth and wipe the dirty area.
- Then rub with a soft, dry cloth.

- Oily dirt:

- Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%) and wipe the dirty area.
- Then dip a cloth into fresh water, wring the water out of the cloth and wipe the detergent off.
- Then rub with a soft, dry cloth.

- Do not use organic solvent such as thinner, benzene, alcohol or gasoline.
- For genuine leather seats, use a genuine leather seat cleaner.

Precautions for Trouble Diagnosis

INFOID:0000000014387262

CAUTION:

Follow the instructions listed below. Failure to do this may cause damage to parts:

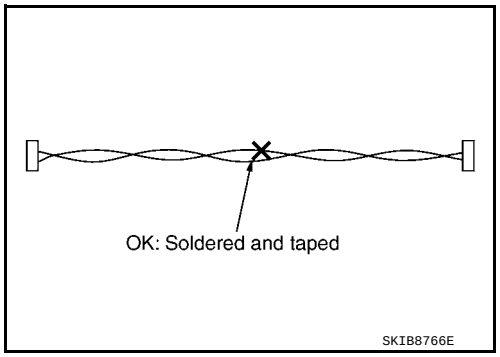
- **Never apply 7.0 V or more to the measurement terminal.**
- **Use a tester with open terminal voltage of 7.0 V or less.**

- **Turn the ignition switch OFF and disconnect the battery cable from the negative terminal when checking the harness.**

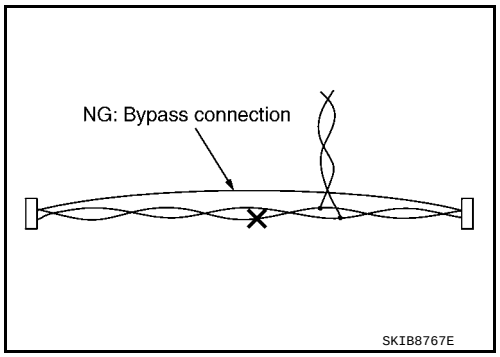
Precautions for Harness Repair

INFOID:0000000014387263

- Solder the repaired area and wrap tape around the soldered area.
  NOTE:
  A fray of twisted lines must be within 110 mm (4.33 in).



- Bypass connection is never allowed at the repaired area.
  NOTE:
  Bypass connection may cause CAN communication error. The spliced wire becomes separated and the characteristics of twisted line are lost.



- Replace the applicable harness as an assembly if error is detected on the shield lines of CAN communication line.

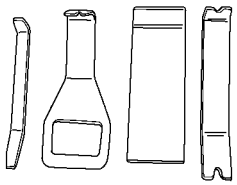
PREPARATION

PREPARATION

Special Service Tool

INFOID:0000000014387264

The actual shape of the tools may differ from those illustrated here.

Tool number (TechMate No.) Tool name	Description
— (J-46534) Trim Tool Set  AWJIA0483ZZ	Removing trim components

HOW TO USE THIS MANUAL

HOW TO USE THIS SECTION

Information

INFOID:0000000014387265

- “CAN FUNDAMENTAL” of LAN Section describes the basic knowledge of the CAN communication system and the method of trouble diagnosis.
- For information peculiar to a vehicle and inspection procedure, refer to “CAN”.

SYSTEM DESCRIPTION

SYSTEM

CAN COMMUNICATION SYSTEM

CAN COMMUNICATION SYSTEM : System Description

INFOID:0000000014387266

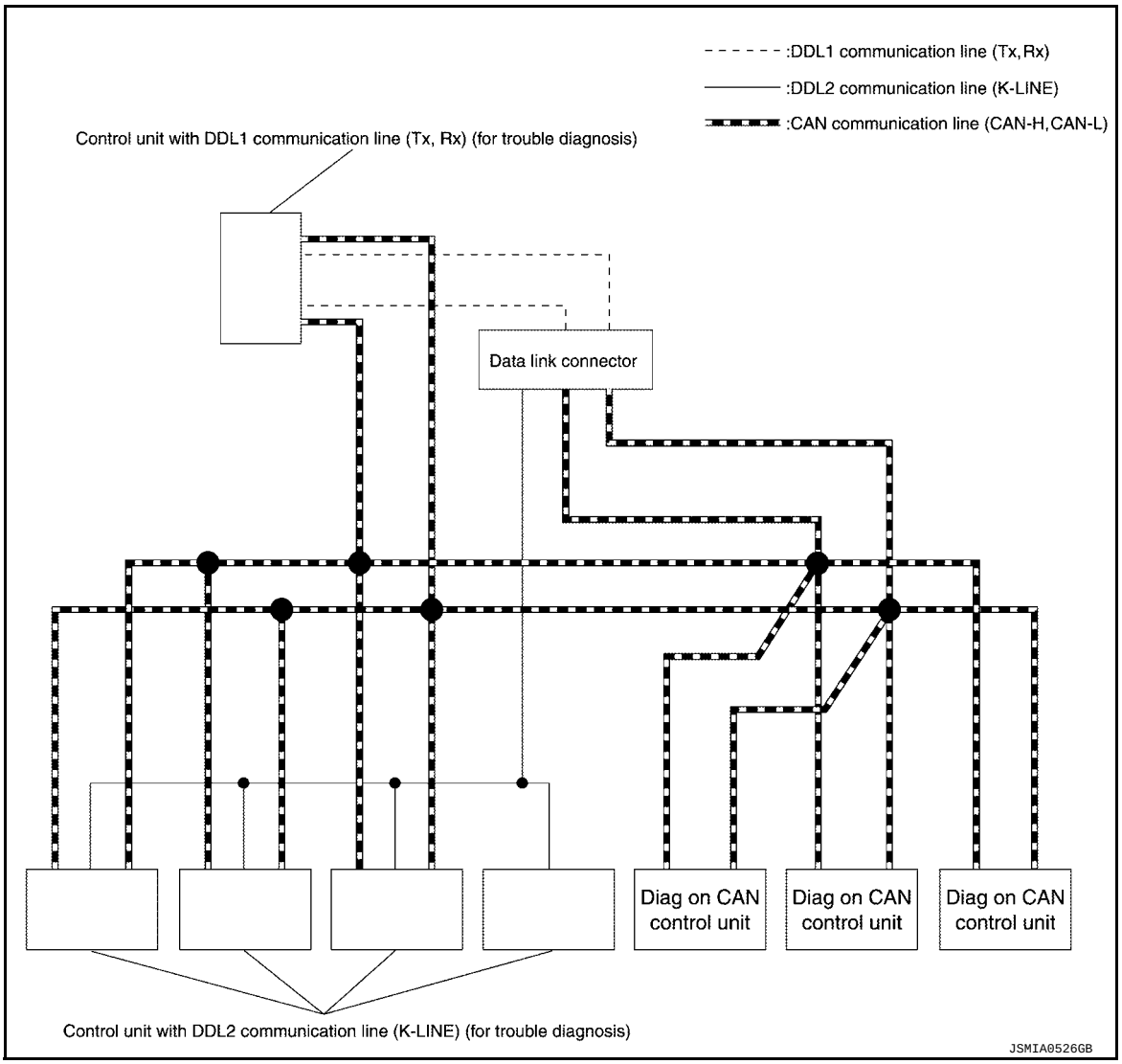
CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DIAG ON CAN

DIAG ON CAN : System Description

INFOID:0000000014387267

SYSTEM DIAGRAM



Name	Harness	Description
DDL1	Tx Rx	For communications with the diagnostic tool. (CAN-H and CAN-L are used for controlling)
DDL2	K-LINE	For communications with the diagnostic tool. (CAN-H and CAN-L are used for controlling)
Diag on CAN	CAN-H CAN-L	For communications with the diagnostic tool. (CAN-H and CAN-L are also used for control and diagnoses.)

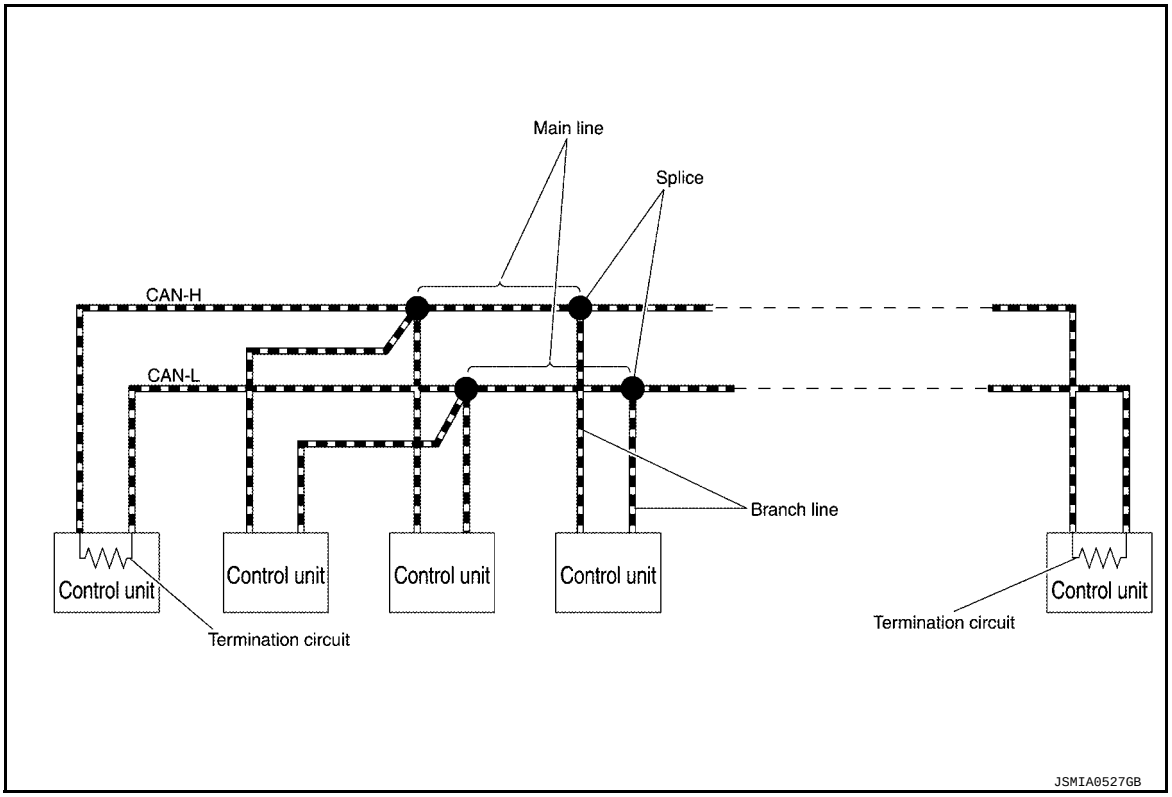
DESCRIPTION

“Diag on CAN” is a diagnosis method which uses the CAN communication line for the communication between the control unit and the diagnostic tool.

TROUBLE DIAGNOSIS

Component Description

INFOID:0000000014387268



Component	Description
Main line	CAN communication line between splices
Branch line	CAN communication line between splice and a control unit
Splice	A point connecting a branch line with a main line
Termination circuit	Circuit connected across the CAN communication system. (Resistor)

Condition of Error Detection

INFOID:0000000014387269

DTC (e.g. U1000 and U1001) of CAN communication is indicated on SELF-DIAG RESULTS on CONSULT if a CAN communication signal is not transmitted or received between units for 2 seconds or more.

CAN COMMUNICATION SYSTEM ERROR

- CAN communication line open (CAN-H, CAN-L, or both)
- CAN communication line short (ground, between CAN communication lines, other harnesses)
- Error of CAN communication control circuit of the unit connected to CAN communication line

WHEN DTC OF CAN COMMUNICATION IS INDICATED EVEN THOUGH CAN COMMUNICATION SYSTEM IS NORMAL

- Removal/installation of parts: Error may be detected when removing and installing CAN communication unit and related parts while turning the ignition switch ON. (A DTC except for CAN communication may be detected.)
- Fuse blown out (removed): CAN communication of the unit may cease.
- Voltage drop: Error may be detected if voltage drops due to discharged battery when turning the ignition switch ON (Depending on the control unit which carries out CAN communication).
- Error may be detected if the power supply circuit of the control unit, which carries out CAN communication, malfunctions (Depending on the control unit which carries out CAN communication).
- Error may be detected if reprogramming is not completed normally.

NOTE:

CAN communication system is normal if DTC of CAN communication is indicated on SELF-DIAG RESULTS of CONSULT under the above conditions. Erase the memory of the self-diagnosis of each control unit.

Symptom When Error Occurs in CAN Communication System

INFOID:0000000014387270

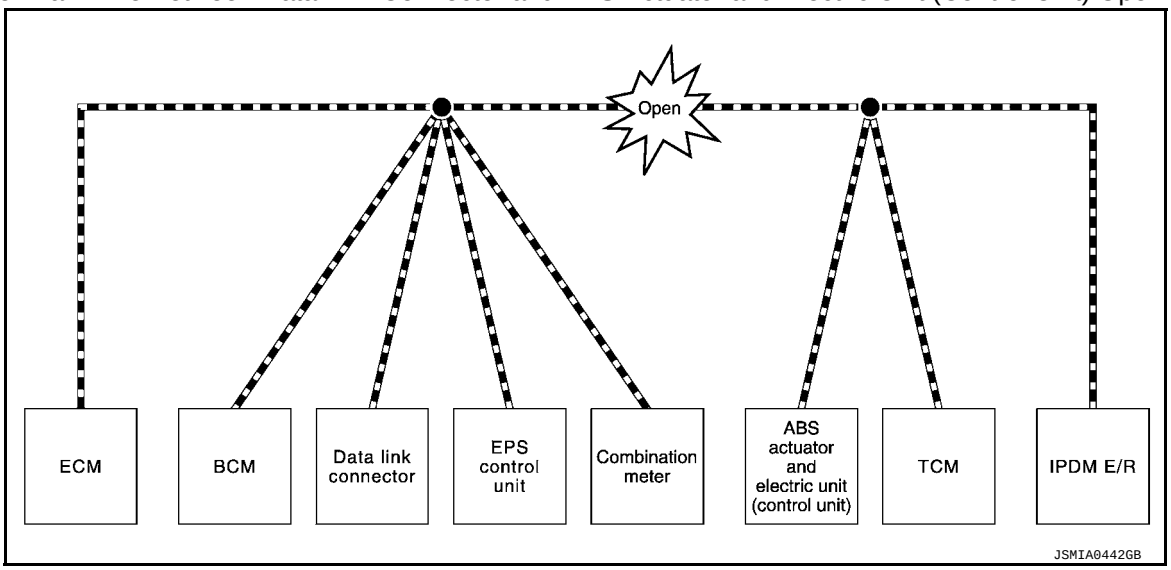
In CAN communication system, multiple control units mutually transmit and receive signals. Each control unit cannot transmit and receive signals if any error occurs on CAN communication line. Under this condition, multiple control units related to the root cause malfunction or go into fail-safe mode.

ERROR EXAMPLE

NOTE:

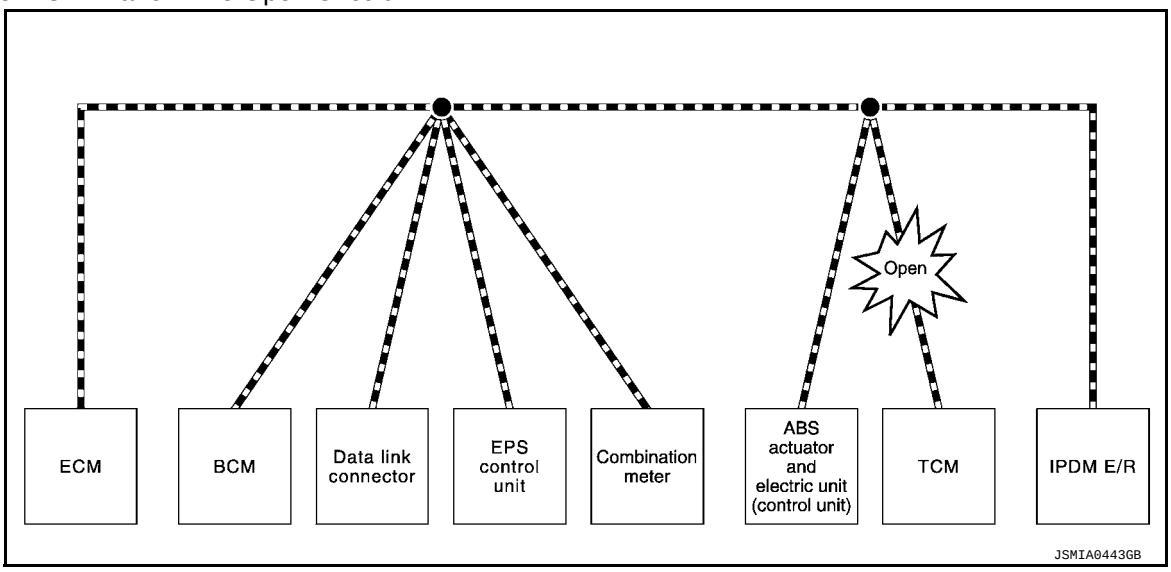
Each vehicle differs in symptom of each control unit under fail-safe mode and CAN communication line wiring.

Example: Main Line Between Data Link Connector and ABS Actuator and Electric Unit (Control Unit) Open Circuit



Unit name	Major symptom
ECM	Engine torque limiting is affected, and shift harshness increases.
BCM	• Reverse warning buzzer does not sound. • The front wiper moves under continuous operation mode even though the front wiper switch being in the intermittent position.
EPS control unit	The steering effort increases.
Combination meter	• The shift position indicator and OD OFF indicator turn OFF. • The speedometer is inoperative. • The odo/trip meter stops.
ABS actuator and electric unit (control unit)	Normal operation.
TCM	No impact on operation.
IPDM E/R	When the ignition switch is ON, • The headlamps (Lo) turn ON. • The cooling fan continues to rotate.

Example: TCM Branch Line Open Circuit

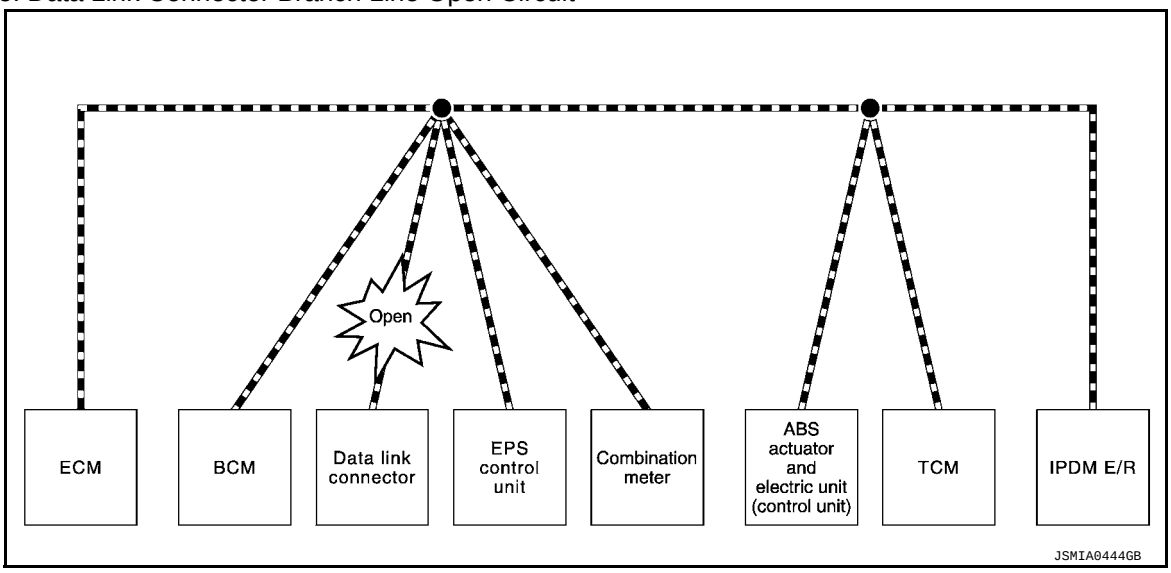


Unit name	Major symptom
ECM	Engine torque limiting is affected, and shift harshness increases.
BCM	Reverse warning buzzer does not sound.
EPS control unit	Normal operation.
Combination meter	• Shift position indicator and O/D OFF indicator turn OFF. • Warning lamps turn ON.
ABS actuator and electric unit (control unit)	Normal operation.
TCM	No impact on operation.
IPDM E/R	Normal operation.

NOTE:
The model (all control units on CAN communication system are Diag on CAN) cannot perform CAN diagnosis with CONSULT if the following error occurs. The error is judged by the symptom.

Error	Difference of symptom
Data link connector branch line open circuit	Normal operation.
CAN-H, CAN-L harness short-circuit	Most of the control units which are connected to the CAN communication system enter fail-safe mode or are deactivated.

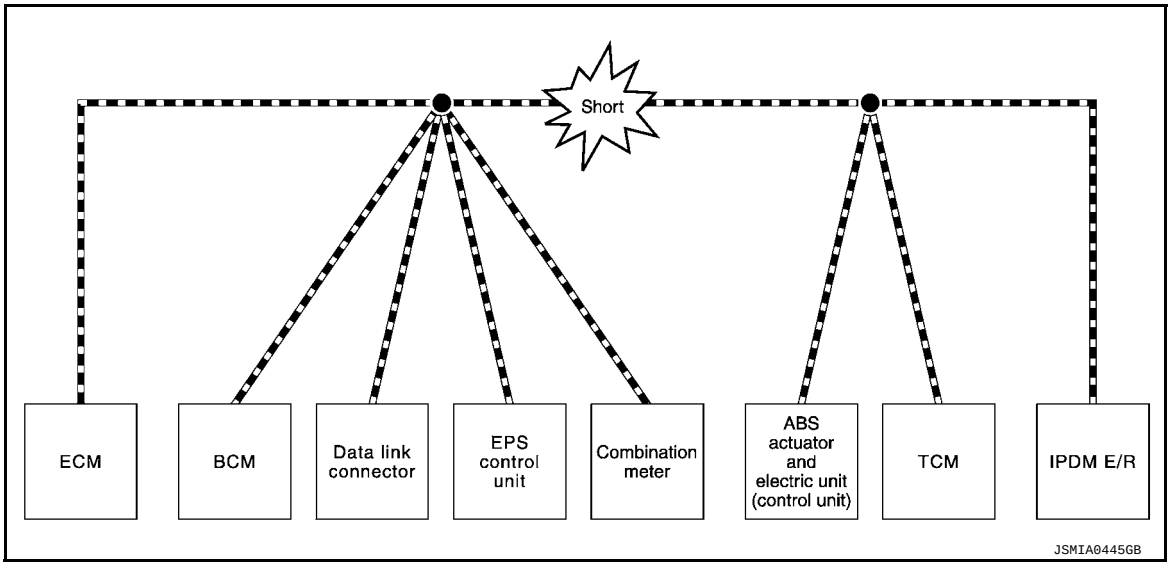
Example: Data Link Connector Branch Line Open Circuit



Unit name	Major symptom
ECM	Normal operation.
BCM	
EPS control unit	
Combination meter	
ABS actuator and electric unit (control unit)	
TCM	
IPDM E/R	

NOTE:
When data link connector branch line is open, transmission and reception of CAN communication signals are not affected. Therefore, no symptoms occur. However, be sure to repair malfunctioning circuit.

Example: CAN-H, CAN-L Harness Short Circuit



Unit name	Major symptom
ECM	• Engine torque limiting is affected, and shift harshness increases. • Engine speed drops.
BCM	• Reverse warning buzzer does not sound. • The front wiper moves under continuous operation mode even though the front wiper switch being in the intermittent position. • The room lamp does not turn ON. • The engine does not start (if an error or malfunction occurs while turning the ignition switch OFF.) • The steering lock does not release (if an error or malfunction occurs while turning the ignition switch OFF.)
EPS control unit	The steering effort increases.
Combination meter	• The tachometer and the speedometer do not move. • Warning lamps turn ON. • Indicator lamps do not turn ON.
ABS actuator and electric unit (control unit)	Normal operation.
TCM	No impact on operation.
IPDM E/R	When the ignition switch is ON, • The headlamps (Lo) turn ON. • The cooling fan continues to rotate.

CAN Diagnosis with CONSULT

INFOID:0000000014387271

CAN diagnosis on CONSULT extracts the root cause by receiving the following information.

- Response to the system call
- Control unit diagnosis information
- Self-diagnosis
- CAN diagnostic support monitor

Self-Diagnosis

INFOID:0000000014387272

If communication signals cannot be transmitted or received among control units communicating via CAN communication line, CAN communication-related DTC is displayed on the CONSULT “Self Diagnostic Result” screen.

NOTE:
The following table shows examples of CAN communication-related DTC. For other DTC, refer to the applicable sections.

DTC	Self-diagnosis item (CONSULT indication)	DTC detection condition		Inspection/Action
U1000	CAN COMM CIRCUIT	ECM	When ECM is not transmitting or receiving CAN communication signal of OBD (emission-related diagnosis) for 2 seconds or more.	Start the inspection. Refer to the applicable section of the indicated control unit.
		Except for ECM	When a control unit (except for ECM) is not transmitting or receiving CAN communication signal for 2 seconds or more.	
U1001	CAN COMM CIRCUIT	When ECM is not transmitting or receiving CAN communication signal other than OBD (emission-related diagnosis) for 2 seconds or more.		
U1002	SYSTEM COMM	When a control unit is not transmitting or receiving CAN communication signal for 2 seconds or less.		
U1010	CONTROL UNIT(CAN)	When an error is detected during the initial diagnosis for CAN controller of each control unit.		Replace the control unit indicating “U1010”.

CAN Diagnostic Support Monitor

INFOID:0000000014387273

MONITOR ITEM (CONSULT)

Example: CAN DIAG SUPPORT MNTR indication

Without PAST

BCM		
MONITOR ITEM	PRESENT	PAST
INITIAL DIAG	OK	-
TRANSMIT DIAG	OK	-
ECM	OK	-
METER/M&A	OK	-
TCM	OK	-
IPDM E/R	OK	-
I-KEY	OK	-

With PAST

ENGINE		
MONITOR ITEM	PRESENT	PAST
TRANSMIT DIAG	OK	OK
VDC/TCS/ABS	OK	5
METER/M&A	Not diagnosed	-
BCM/SEC	OK	OK
ICC	Not diagnosed	-
HVAC	Not diagnosed	-
TCM	OK	OK
EPS	OK	OK
IPDM E/R	OK	5
e4WD	Not diagnosed	-
AWD/4WD	Not diagnosed	-

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Without PAST

Item	PRESENT	Description
Initial diagnosis	OK	Normal at present
	NG	Control unit error (Except for some control units)

Item	PRESENT	Description
Transmission diagnosis	OK	Normal at present
	UNKWN	Unable to transmit signals for 2 seconds or more.
		Diagnosis not performed
Control unit name (Reception diagnosis)	OK	Normal at present
	UNKWN	Unable to receive signals for 2 seconds or more.
		Diagnosis not performed
		No control unit for receiving signals. (No applicable optional parts)

With PAST

Item	PRESENT	PAST	Description
Transmission diagnosis	OK	OK	Normal at present and in the past
		1 – 39	Normal at present, but unable to transmit signals for 2 seconds or more in the past. (The number indicates the number of ignition switch cycles from OFF to ON.)
	UNKWN	0	Unable to transmit signals for 2 seconds or more at present.
Control unit name (Reception diagnosis)	OK	OK	Normal at present and in the past
		1 – 39	Normal at present, but unable to receive signals for 2 seconds or more in the past. (The number indicates the number of ignition switch cycles from OFF to ON.)
	UNKWN	0	Unable to receive signals for 2 seconds or more at present.
	Not diagnosed	–	Diagnosis not performed.
			No control unit for receiving signals. (No applicable optional parts)

How to Use CAN Communication Signal Chart

INFOID:0000000014387274

The CAN communication signal chart lists the signals transmitted/received among control units. It is useful for detecting the root cause by finding a signal related to the symptom, and by checking transmission and reception unit.

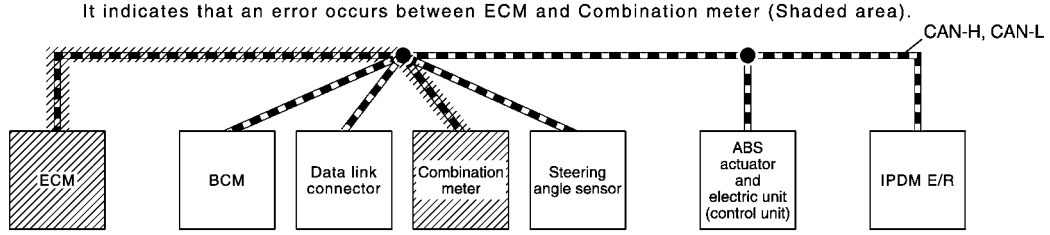
Example: Tachometer does not move even though the engine rotates.

T: Transmit R: Receive

Signal name/Connecting unit	ECM	BCM	M&A	STRG	ABS	IPDM-E
A/C compressor feedback signal	T		R			
A/C compressor request signal	T					R
Accelerator pedal position signal	T				R	
Cooling fan motor operation signal	T					R
Engine coolant temperature signal	T		R			
Engine speed signal	T		R		R	
Fuel consumption monitor signal	T		R			
Malfunction indicator lamp signal	T		R			
A/C switch signal	R	T				
Ignition switch signal		T				R
Sleep/wake up signal		T	R			R

No communication between ECM and M&A (Combination meter).

It indicates that an error occurs between ECM and Combination meter (Shaded area).

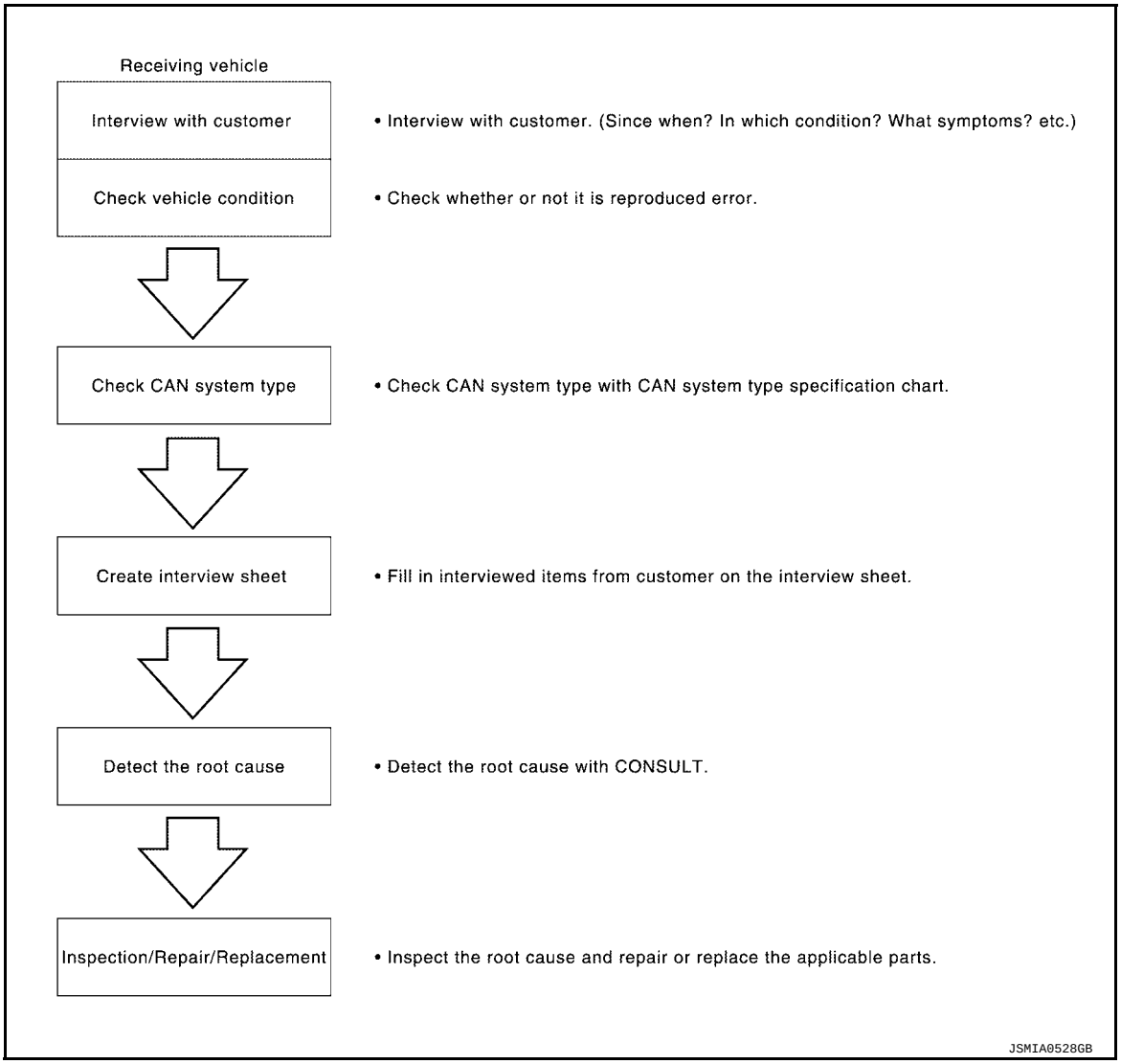


BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Trouble Diagnosis Flow Chart

INFOID:0000000014387275



DETAIL OF TROUBLE DIAGNOSIS FLOW CHART

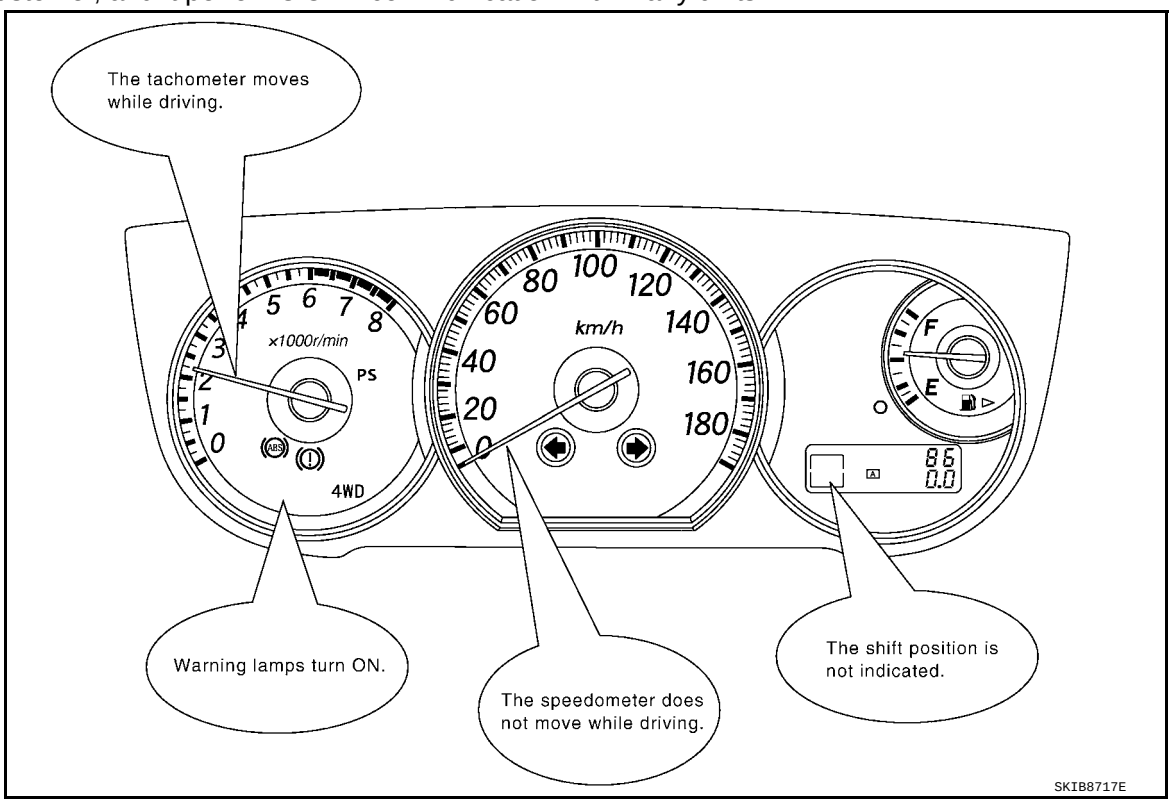
1. INTERVIEW WITH CUSTOMER

Interview with the customer is important to detect the root cause of CAN communication system errors and to understand vehicle condition and symptoms for proper trouble diagnosis.

Points in interview
- What: Parts name, system name
- When: Date, Frequency
- Where: Road condition, Place
- In what condition: Driving condition/environment
- Result: Symptom

Notes for checking error symptoms:
- Check normal units as well as error symptoms.
  - Example: Circuit between ECM and the combination meter is judged normal if the customer indicates tachometer functions normally.
- When a CAN communication system error is present, multiple control units may malfunction or go into fail-safe mode.

- Indication of the combination meter is important to detect the root cause because it is the most obvious to the customer, and it performs CAN communication with many units.



>> GO TO 2.

2.INSPECTION OF VEHICLE CONDITION

Check whether the symptom is reproduced or not.

NOTE:

Do not turn the ignition switch OFF or disconnect the 12V battery cable while reproducing the error. The error may temporarily correct itself, making it difficult to determine the root cause.

>> GO TO 3.

3.CHECK OF CAN SYSTEM TYPE (HOW TO USE CAN SYSTEM TYPE SPECIFICATION CHART)

Determine CAN system type based on vehicle equipment.

NOTE:

- This chart is used if CONSULT does not automatically recognize CAN system type.
- There are two styles for CAN system type specification charts. Depending on the number of available system types, either style A or style B may be used.
- CAN System Type Specification Chart (Style A)
  NOTE:

CAN system type is easily checked with the vehicle equipment identification information shown in the chart.

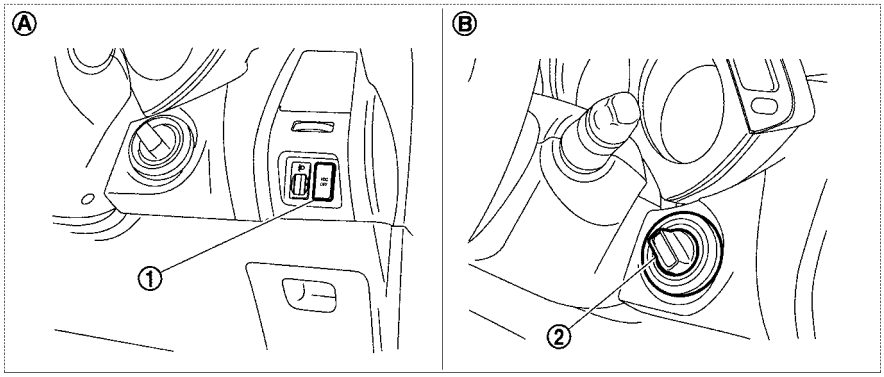
Example:
Vehicle is equipped as follows: Wagon, AWD, VQ35DE, CVT, VDC, and Intelligent Key system. (◯ shows an example of CAN system type.)

CAN System Specification Chart
Determine CAN system type from the following specification chart.

Body type	Wagon						Check the vehicle equipment with the vehicle identification number plate.
Axle	2WD				AWD		
Engine	QR25DE		VQ35DE				
Transmission	A/T		CVT				
Brake control	ABS				VDC		Check the vehicle equipment.
Intelligent Key system		×		×		×	
CAN system type	1	2	3	4	5	6	← The number indicates the CAN system type of the vehicle.
CAN communication control unit							
ECM	×	×	×	×	×	×	
AWD control unit					×	×	
Air bag diagnosis sensor unit	×	×	×	×	×	×	
BCM	×	×	×	×	×	×	
Intelligent Key unit		×		×		×	
Steering angle sensor					×	×	
EPS control unit	×	×	×	×	×	×	
Combination meter	×	×	×	×	×	×	
ABS actuator and electric unit (control unit)	×	×	×	×	×	×	
TCM	×	×	×	×	×	×	
IPDM E/R	×	×	×	×	×	×	

×: Applicable

VEHICLE EQUIPMENT IDENTIFICATION INFORMATION
NOTE:
Check CAN system type from the vehicle shape and equipment.



In the above example,
- Checking VDC OFF switch leads to judge whether or not VDC is equipped.
- Checking the ignition knob leads to judge whether or not Intelligent Key system is equipped.

1. VDC OFF switch
2. Ignition knob
A. With VDC
B. With Intelligent Key system

For the above case, CAN system type is "6".

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- CAN System Type Specification Chart (Style B)

NOTE:

CAN system type is easily checked with the vehicle equipment identification information shown in the chart.

Example:
Vehicle is equipped as follows: Sedan, 2WD, MR20DE, CVT, ABS, Active AFS, Intelligent Key system, Navigation system and Automatic drive positioner. ( ) shows an example of CAN system type.)

CAN System Specification Chart

Refer to the specification as shown in the chart.

Body type	Sedan		
Axle	2WD		AWD
Engine	HR15DE	MR20DE	HR15DE
Transmission	A/T	CVT	A/T
Brake control		ABS	
Specification chart	XX.XX. SPECIFICATION CHART A	XX.XX. SPECIFICATION CHART B	XX.XX. SPECIFICATION CHART C

×: Applicable

Check the vehicle equipment with the vehicle identification number plate.
Check the vehicle equipment.
Select the applicable vehicle equipment. Refer to the specification chart.

SPECIFICATION CHART B

Determine CAN system type from the following specification chart.

Body type	Sedan										
Axle	2WD										
Engine	MR20DE										
Transmission	CVT										
Brake control	ABS										
Active AFS		×			×	×			×	×		×
Intelligent Key system			×		×		×	×	×	×	×	×
Navigation system				×		×	×		×		×	×
Automatic drive positioner								×		×	×	×
CAN system type	9	10	11	12	13	14	15	16	17	18	19	20
CAN communication control unit												
ECM	×	×	×	×	×	×	×	×	×	×	×	×
AFS control unit		×			×	×			×	×		×
BCM	×	×	×	×	×	×	×	×	×	×	×	×
IPDM E/R	×	×	×	×	×	×	×	×	×	×	×	×

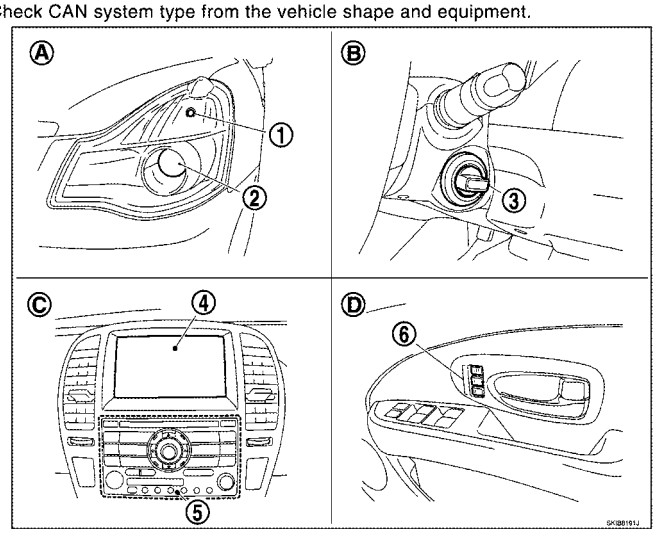
×: Applicable

Check the vehicle equipment.
The number indicates the CAN system type of the vehicle.

VEHICLE EQUIPMENT IDENTIFICATION INFORMATION

NOTE:

Check CAN system type from the vehicle shape and equipment.



1.Bending lamp 2.Xenon bulb 3.Ignition knob
4.Display 5.Multifunction switch 6.Seat memory switch
A. With active AFS B. With Intelligent Key system C. With navigation system
D.With automatic drive positioner

In the above example,
- Checking Xenon bulb and bending lamp lead to judge whether or not Active AFS is equipped.
- Checking the ignition knob leads to judge whether or not Intelligent Key system is equipped.
- Checking display and multifunction switch lead to judge whether or not Navigation system is equipped.
- Checking seat memory switch leads to judge whether or not Automatic drive positioner is equipped.

For the above case, CAN system type is "20".

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>> GO TO 4.

4. CREATE INTERVIEW SHEET

Fill out the symptom described by the customer, vehicle condition, and CAN system type on the interview sheet.

NOTE:

Interview Sheet (Example)

CAN Communication System Diagnosis Interview Sheet

Date received: 3, Feb. 2006

Type: DBA-KG11

VIN No.: KG11-005040

Model: BDRARGZG11EDA-E-J-

First registration: 10, Jan. 2001

Mileage: 62,140

CAN system type: Type 19

Symptom (Results from interview with customer)

- Headlamps suddenly turn ON while driving the vehicle.
- The engine does not restart after stopping the vehicle and turning the ignition switch OFF.
- The cooling fan continues rotating while turning the ignition switch ON.

Condition at inspection

Error Symptom: (Present) / Past

The engine does not start.
While turning the ignition switch ON,
- The headlamps (Lo) turn ON, and the cooling fan continues rotating.
- The interior lamp does not turn ON.

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>> GO TO 5.

5. DETECT THE ROOT CAUSE

CAN diagnosis function of CONSULT detects a root cause.

>> GO TO 6.

6. REPAIR OR REPLACE MALFUNCTIONING PART

Repair or replace malfunctioning parts identified by CAN diagnosis function of CONSULT.

CAN communication circuit>>Refer to LAN-132, "CAN Communication Circuit".
ITS communication circuit>> Refer to LAN-134, "ITS Communication Circuit".

HOW TO USE THIS MANUAL

HOW TO USE THIS SECTION

Information

INFOID:0000000014387276

- “CAN” of LAN Section describes information peculiar to a vehicle and inspection procedures.
- For trouble diagnosis procedure, refer to LAN-53, "Trouble Diagnosis Flow Chart" of “CAN FUNDAMENTAL”.

Abbreviation List

INFOID:0000000014387277

Unit name abbreviations in CONSULT CAN diagnosis and in this section are as per the following list.

Abbreviation	Unit name
4WD	Transfer control unit
A-BAG	Air bag diagnosis sensor unit
ABS	ABS actuator and electric unit (control unit)
ADP	Driver seat control unit
AV	AV control unit
AVM	Around view monitor control unit
BCM	BCM
CGW	CAN gateway
DIFF	Differential lock control unit
DLC	Data link connector
ECM	ECM
HVAC	•A/C auto amp. (automatic air conditioner) •Front air control (manual air conditioner)
ICC	ADAS control unit
IPDM-E	IPDM E/R
M&A	Combination meter
PTC	PTC heater control unit
RDR-L	Side radar LH
RDR-R	Side radar RH
STRG	Steering angle sensor
SONAR	Sonar control unit
TCM	TCM
TCU	TCU
TPMS	Low tire pressure warning control unit

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000014455980

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, and wait at least three minutes before performing any service.**

Precautions for Trouble Diagnosis

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CAUTION:

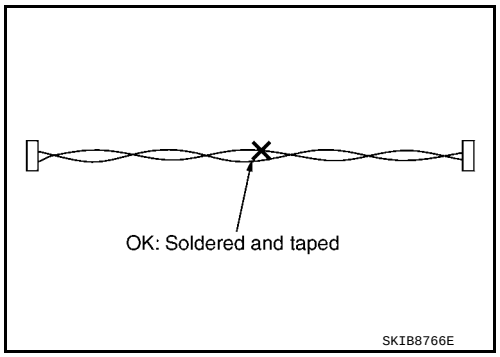
Follow the instructions listed below. Failure to do this may cause damage to parts:

- **Never apply 7.0 V or more to the measurement terminal.**
- **Use a tester with open terminal voltage of 7.0 V or less.**
- **Turn the ignition switch OFF and disconnect the battery cable from the negative terminal when checking the harness.**

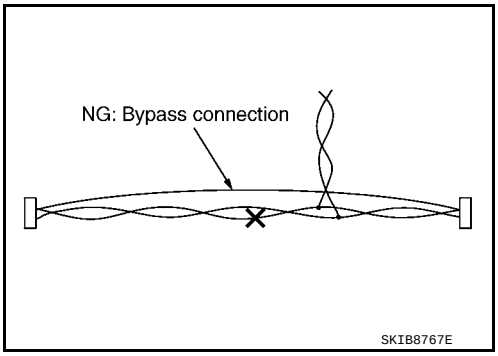
Precautions for Harness Repair

INFOID:0000000014455982

- Solder the repaired area and wrap tape around the soldered area.
  NOTE:
  A fray of twisted lines must be within 110 mm (4.33 in).



- Bypass connection is never allowed at the repaired area.
  NOTE:
  Bypass connection may cause CAN communication error. The spliced wire becomes separated and the characteristics of twisted line are lost.



- Replace the applicable harness as an assembly if error is detected on the shield lines of CAN communication line.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

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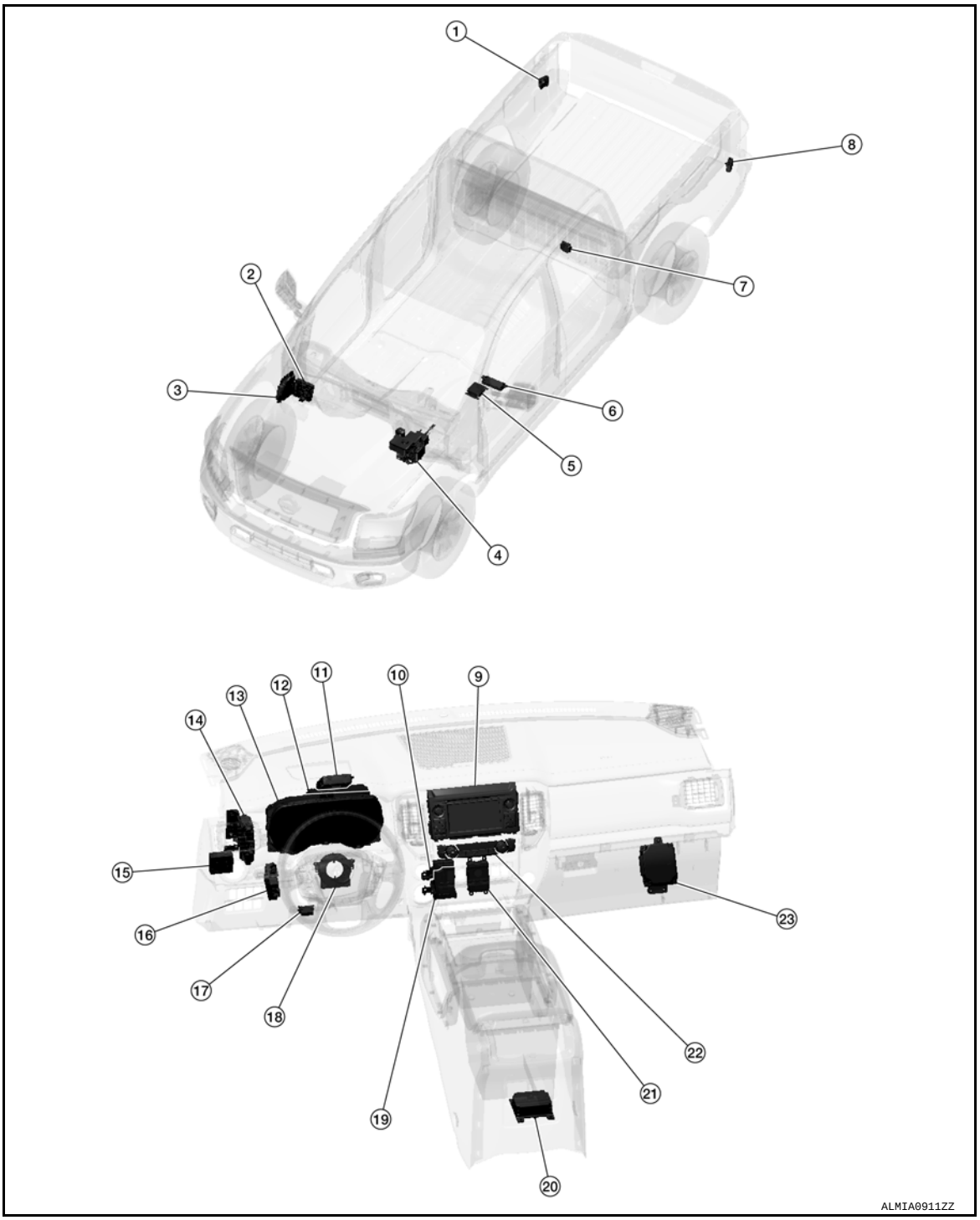


① Side radar RH	② IPDM E/R	③ ECM
④ ABS actuator and electric unit (control unit)	⑤ Around view monitor control unit	⑥ Driver seat control unit
⑦ Differential lock control unit	⑧ Side radar LH	⑨ AV control unit
⑩ ADAS control unit	⑪ TCU	⑫ BCM

⑬ Combination meter
⑭ Transfer control unit
⑮ Low tire pressure warning control unit
⑯ Sonar control unit
⑰ Data link connector
⑱ Steering angle sensor
⑲ CAN gateway
⑳ Air bag diagnosis sensor unit
㉑ PTC heater control unit
㉒
- A/C auto amp. (automatic air conditioner)
- Front air control (manual air conditioner)

㉓ TCM

SYSTEM

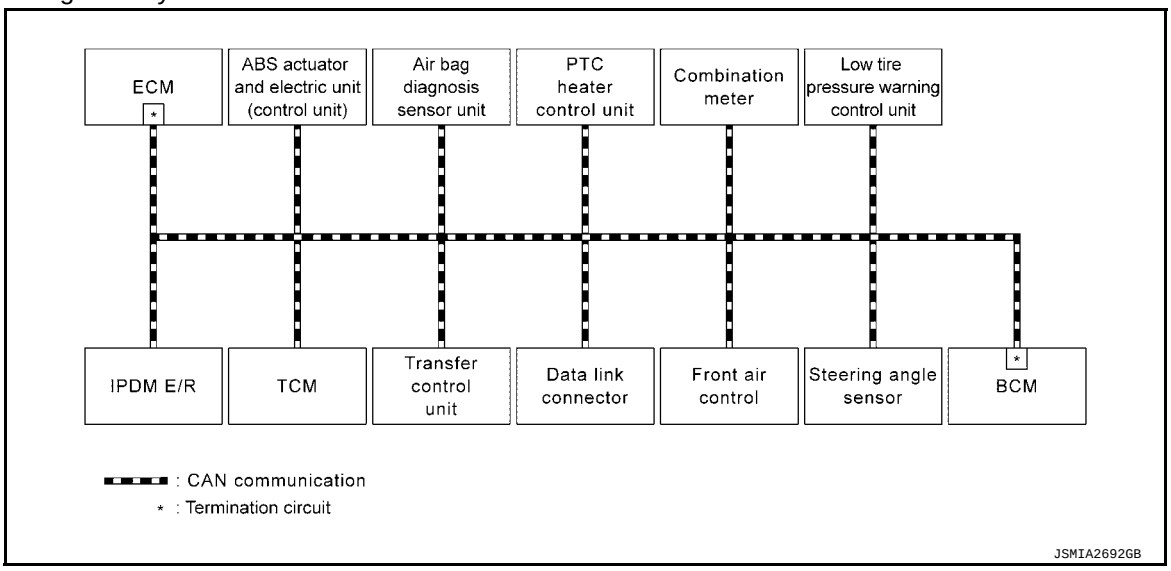
CAN COMMUNICATION SYSTEM

CAN COMMUNICATION SYSTEM : System Description

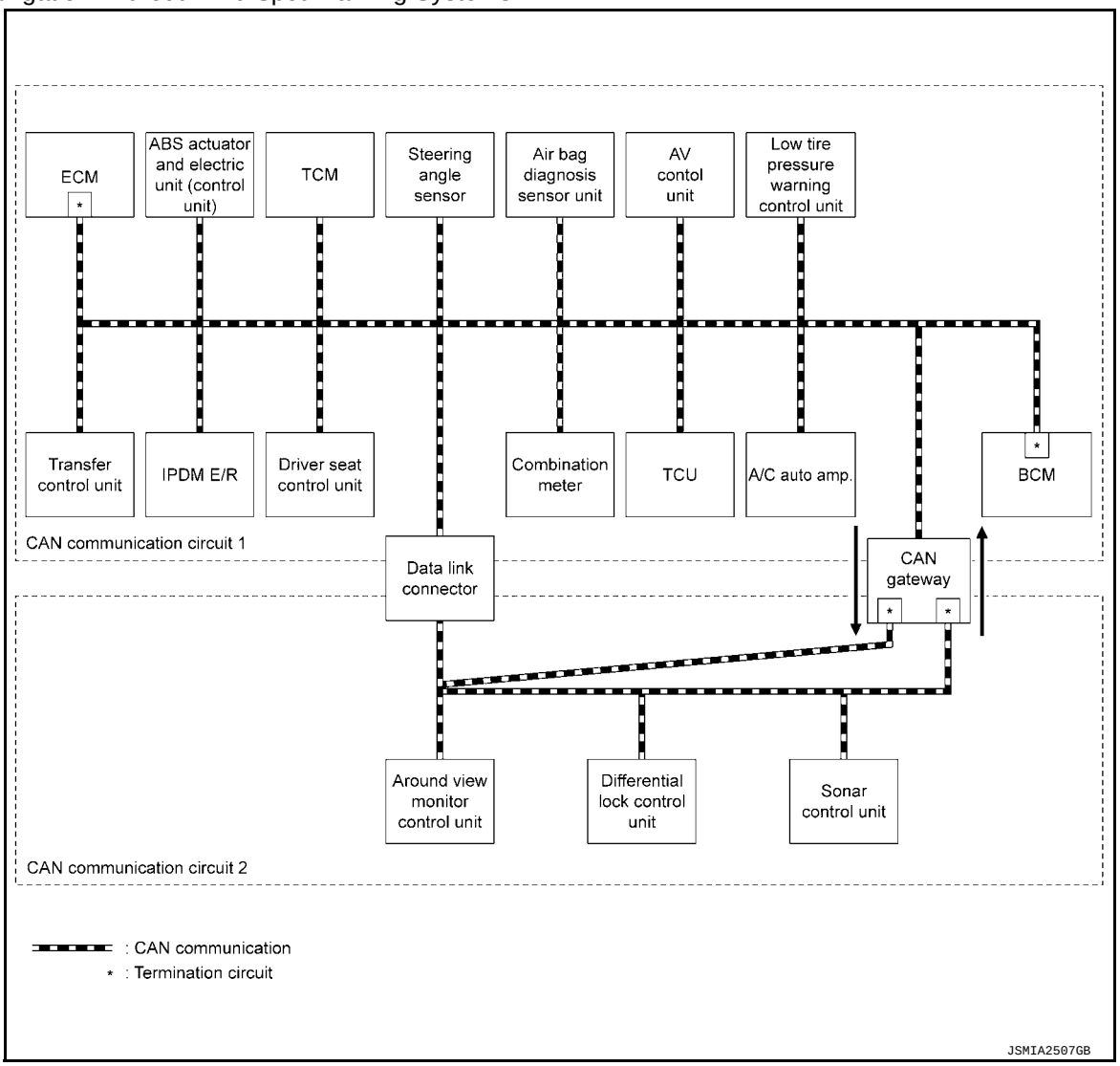
INFOID:0000000014387279

SYSTEM DIAGRAM

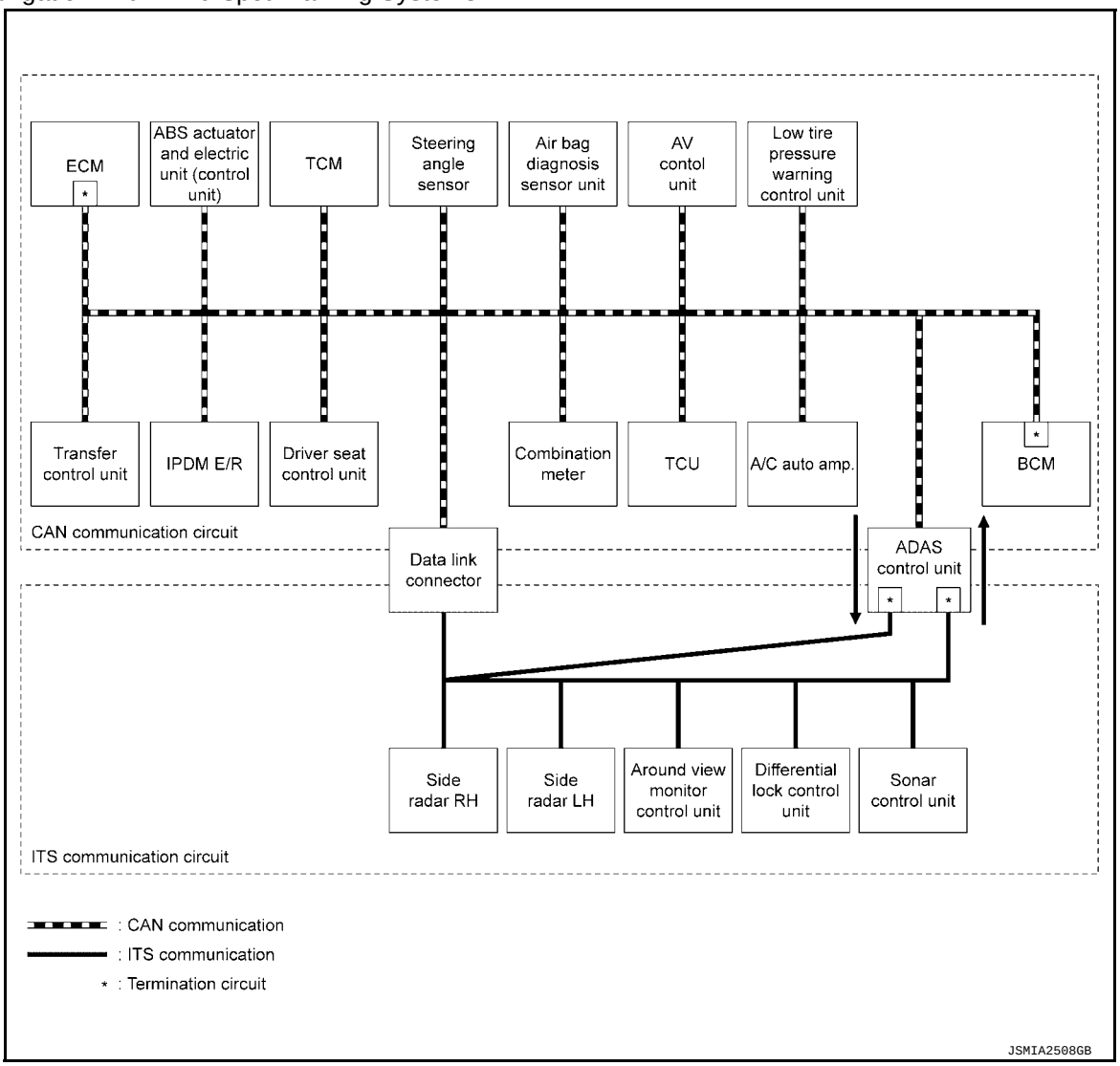
Without Navigation System



With Navigation Without Blind Spot Warning Systems



With Navigation With Blind Spot Warning Systems



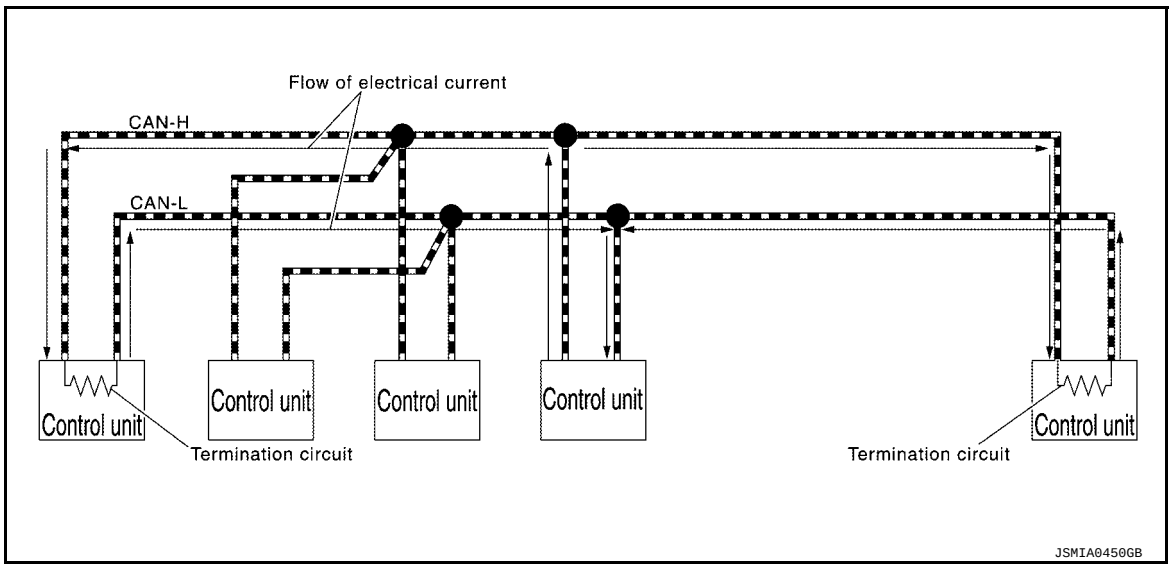
DESCRIPTION

- CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
- The following control units include a gateway function and communicate signals between the different CAN communication circuits.

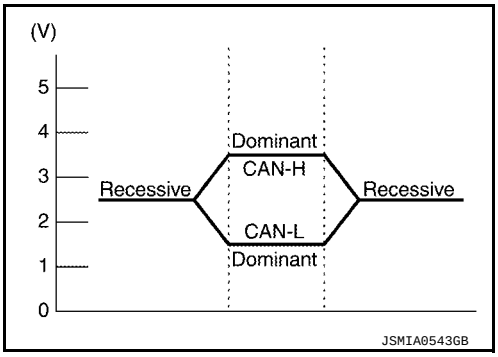
CAN communication circuit	Gateway control unit	Reference
CAN communication circuit 1 ⇔ CAN communication circuit 2	CAN gateway	LAN-224, "System Description"
CAN communication circuit 2 ⇔ ITS communication circuit	ADAS control unit	DAS-5, "ADAS Control Unit"

CAN Communication Signal Generation

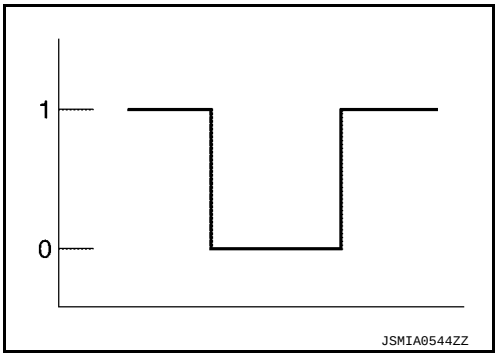
- Termination circuits (resistors) are connected across the CAN communication system. When transmitting a CAN communication signal, each control unit passes a current to the CAN-H line and the current returns to the CAN-L line.



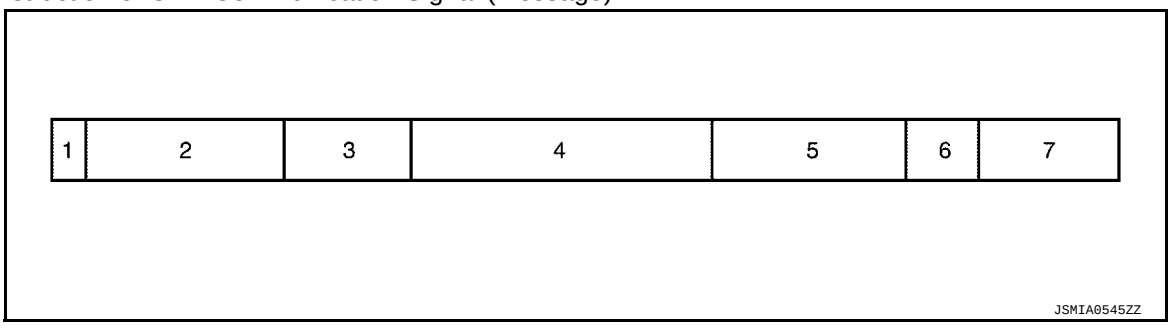
- The current flows separately into the termination circuits connected across the CAN communication system and the termination circuits drop voltage to generate a potential difference between the CAN-H line and the CAN-L line.
  NOTE:
  A signal with no current passage is called “Recessive” and one with current passage is called “Dominant”.



- The system produces digital signals for signal communications, by using the potential difference.



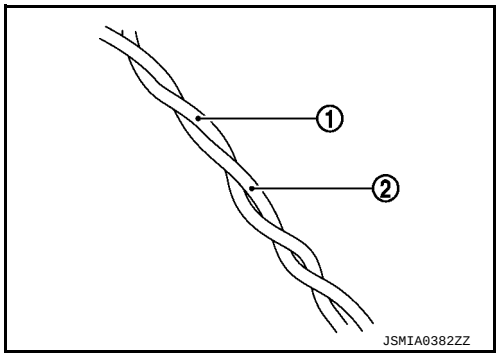
The Construction of CAN Communication Signal (Message)



No.	Message name	Description
1	Start of frame (1 bit)	Start of message.
2	Arbitration of field (11 bit)	Priorities of message-sending are shown when there is a possibility that multiple messages are sent at the same time.
3	Control field (6 bit)	Signal quantity in data field is shown.
4	Data field (0-64 bit)	Actual signal is shown.
5	CRC field (16 bit)	• The transmitting control unit calculates sending data in advance and writes the calculated value in a message. • The receiving control unit calculates received data and judges that the data reception is normal when the calculated value is the same as the value written in the sent data.
6	ACK field (2 bit)	The completion of normal reception is sent to the transmitting control unit.
7	End of frame (7 bit)	End of message.

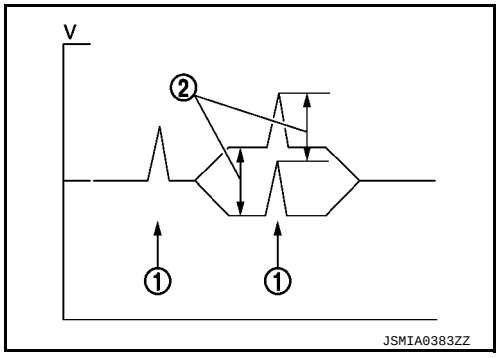
CAN COMMUNICATION LINE

The CAN communication line is a twisted pair wire consisting of strands of CAN-H ① and CAN-L ② and has noise immunity.



NOTE:
The CAN communication system has the characteristics of noise-resistant because this system produces digital signals by using the potential difference between the CAN-H line and the CAN-L line and has the twisted pair wire structure.

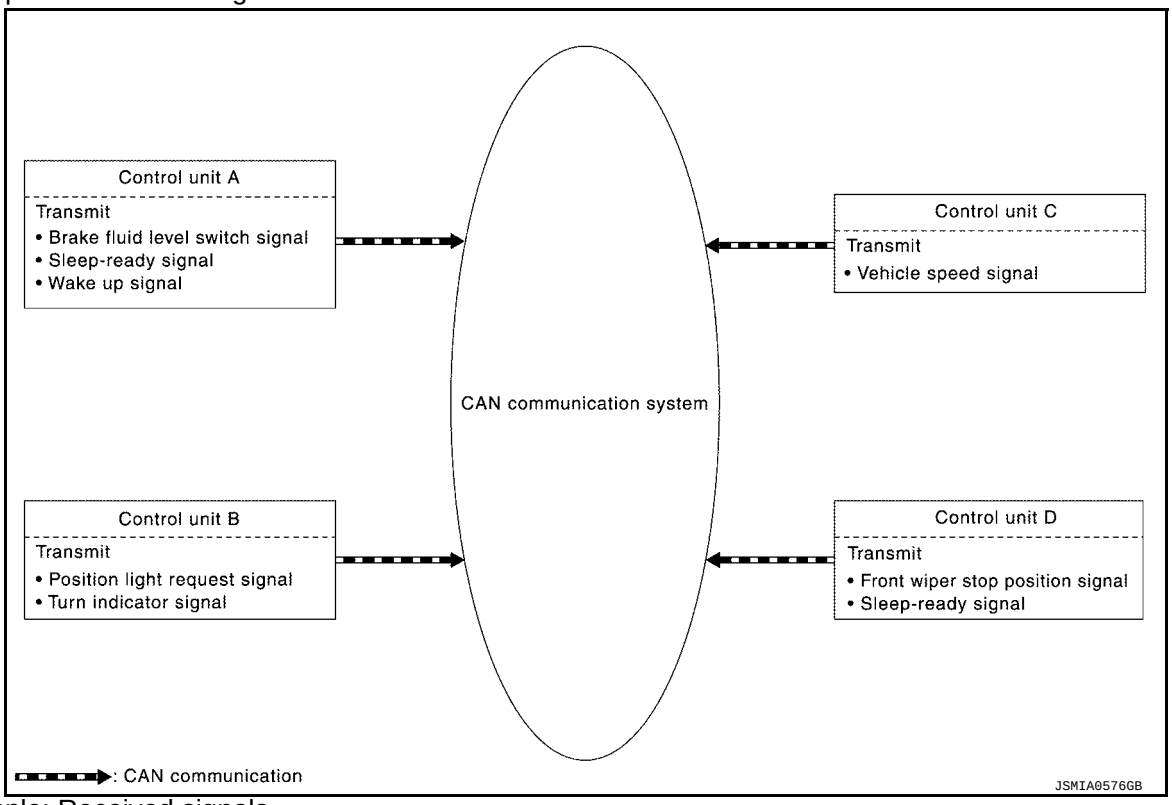
Since the CAN-H line and the CAN-L line are always adjacent to each other, the same degree of noise occurs, respectively, when a noise ① occurs. Although the noise changes the voltage, the potential difference ② between the CAN-H line and the CAN-L line is insensitive to noise. Therefore, noise-resistant signals can be obtained.



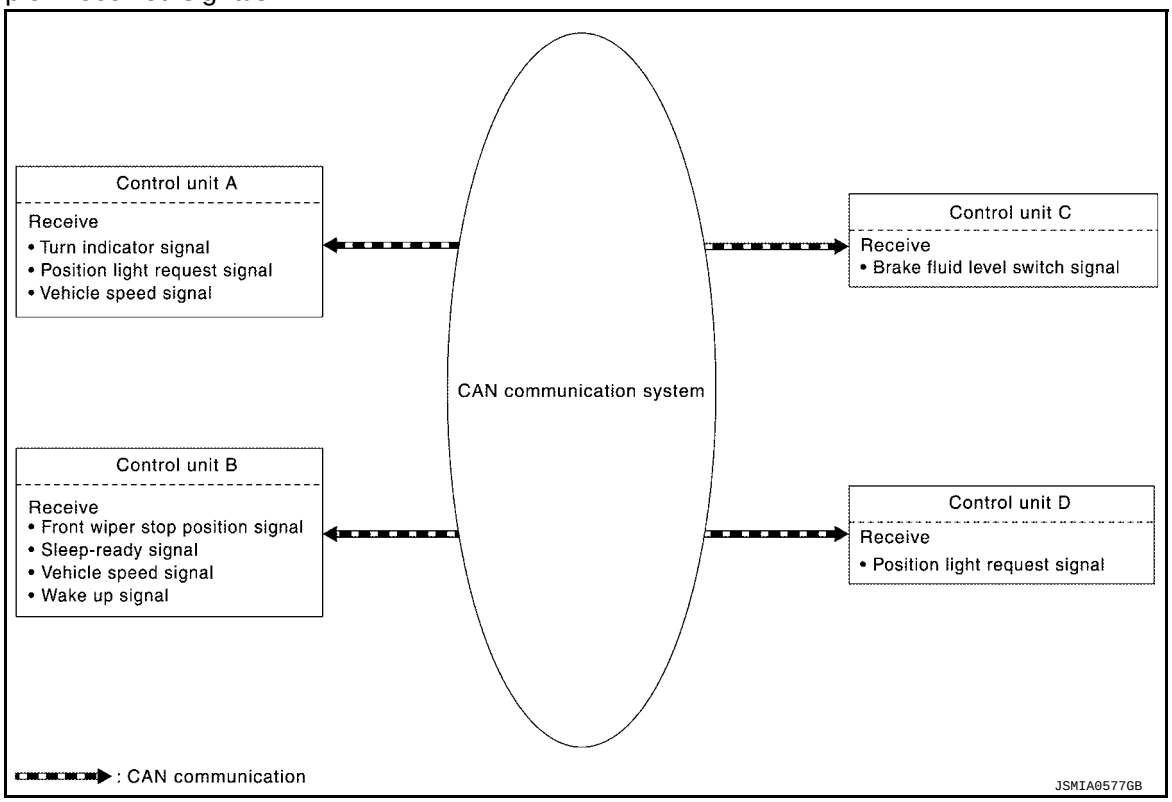
CAN SIGNAL COMMUNICATIONS

Each control unit of the CAN communication system transmits signals through the CAN communication control circuit included in the control unit and receives only necessary signals from each control unit to perform various kinds of control.

- Example: Transmitted signals



- Example: Received signals



NOTE:
The above signal names and signal communications are provided for reference purposes. For CAN communications signals of this vehicle, refer to LAN-74, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

CAN COMMUNICATION SYSTEM : CAN Communication Control Circuit

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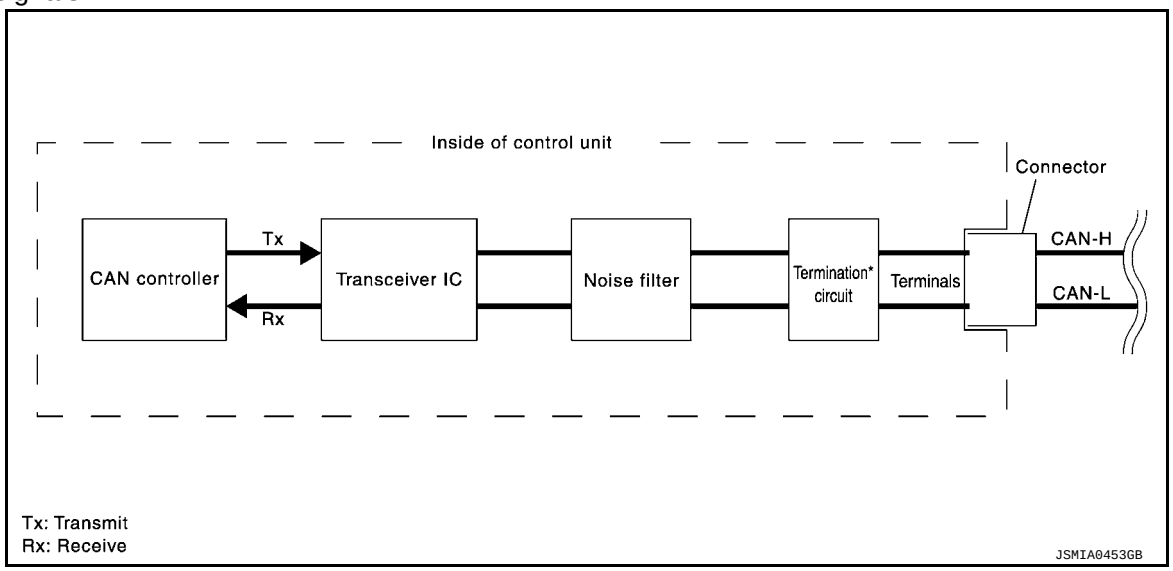
CAN communication control circuit is incorporated into the control unit and transmits/receives CAN communication signals.



Component	System description
CAN controller	It controls CAN communication signal transmission and reception, error detection, etc.
Transceiver IC	It converts digital signal into CAN communication signal, and CAN communication signal into digital signal.
Noise filter	It eliminates noise of CAN communication signal.
Termination circuit* (Resistance of approx. 120 Ω)	Generates a potential difference between CAN-H and CAN-L.

*: These are the only control units wired with both ends of CAN communication system.

CAN COMMUNICATION SYSTEM : CAN System Specification Chart

INFOID:0000000014387281

Determine CAN system type from the following specification chart.

NOTE:

Refer to LAN-53, "Trouble Diagnosis Flow Chart" for how to use CAN system specification chart.

Refer to the specification as shown in the chart.

Engine type	Diesel engine		Gasoline engine	
Body type	Crew Cab Truck			
Axle	2WD	4WD	2WD	4WD
Engine	Cummins Diesel		VK56VD	
Transmission	A/T			
Brake control	VDC			
Specification chart	SPECIFICATION CHART A		SPECIFICATION CHART B	

SPECIFICATION CHART A

Body type	Crew Cab Truck																					
Axle	2WD							4WD														
Engine	Cummins Diesel																					
Transmission	A/T																					
Brake control	VDC																					
Differential lock system										×			×	×			×	×		×	×	×
Around view monitor system						×	×									×			×		×	×
Blind Spot Warning system				×	×		×					×		×	×		×		×	×		×
Navigation system		×	×	×	×	×	×		×	×	×	×	×	×	×	×	×	×	×	×	×	×
Telematics system			×		×	×	×				×				×	×		×	×	×	×	×
Sonar system		×	×	×	×	×	×		×		×	×	×		×	×	×	×	×	×	×	×
CAN system type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
CAN communication control unit																						
ECM	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Transfer control unit								×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
ABS actuator and electric unit (control unit)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
IPDM E/R	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
TCM	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Driver seat control unit			×		×	×	×				×				×	×		×	×	×	×	×
Data link connector	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Steering angle sensor	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Air bag diagnosis sensor unit	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
CAN gateway		×	×			×			×	×	×		×			×		×			×	
ADAS control unit				×	×		×					×		×	×		×		×	×		×
Combination meter	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
AV control unit		×	×	×	×	×	×		×	×	×	×	×	×	×	×	×	×	×	×	×	×
TCU			×		×	×	×				×				×	×		×	×	×	×	×
Low tire pressure warning control unit	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
• A/C auto amp. (automatic air conditioner) • Front air control (manual air conditioner)	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
PTC heater control unit	×							×														
BCM	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
CAN communication control unit 2																						
CAN gateway		×	×			×			×	×	×		×			×		×			×	
Around view monitor control unit						×										×					×	

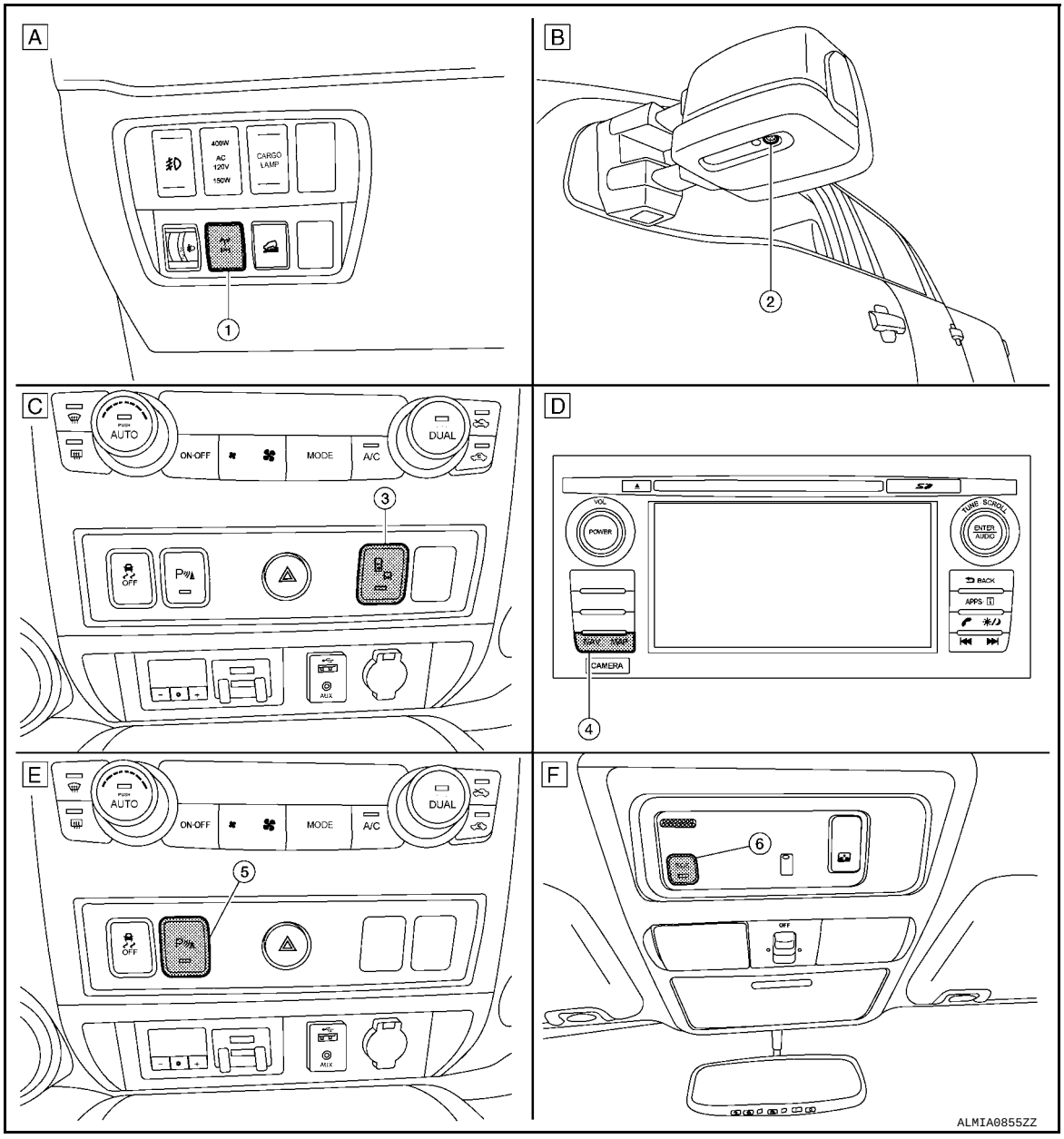
Body type	Crew Cab Truck																				
Axle	2WD							4WD													
Engine	Cummins Diesel																				
Transmission	A/T																				
Brake control	VDC																				
Differential lock system										×			×	×			×	×		×	×	×
Around view monitor system						×	×									×			×		×	×
Blind Spot Warning system				×	×		×					×		×	×		×		×	×		×
Navigation system		×	×	×	×	×	×		×	×	×	×	×	×	×	×	×	×	×	×	×	×
Telematics system			×		×	×	×				×				×	×		×	×	×	×	×
Sonar system		×	×	×	×	×	×		×		×	×	×		×	×	×	×	×	×	×	×
CAN system type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Differential lock control unit										×			×					×			×	
Sonar control unit		×	×			×			×		×		×			×		×			×	
ITS communication control unit																						
ADAS control unit				×	×		×					×		×	×		×		×	×		×
Side radar RH				×	×		×					×		×	×		×		×	×		×
Side radar LH				×	×		×					×		×	×		×		×	×		×
Around view monitor control unit							×												×			×
Differential lock control unit														×			×			×		×
Sonar control unit				×	×		×					×			×		×		×	×		×

×: Applicable

Vehicle Equipment Identification Information

NOTE:

Check CAN system type from the vehicle shape and equipment.



① Differential lock mode switch
② Side camera LH
③ Blind spot warning switch
④ NAVI switch
⑤ Sonar system OFF switch
⑥ Telematics switch
A With differential lock system
B With around view monitor system
C With blind spot warning system
D With navigation system
E With sonar system
F With telematics system

SPECIFICATION CHART B

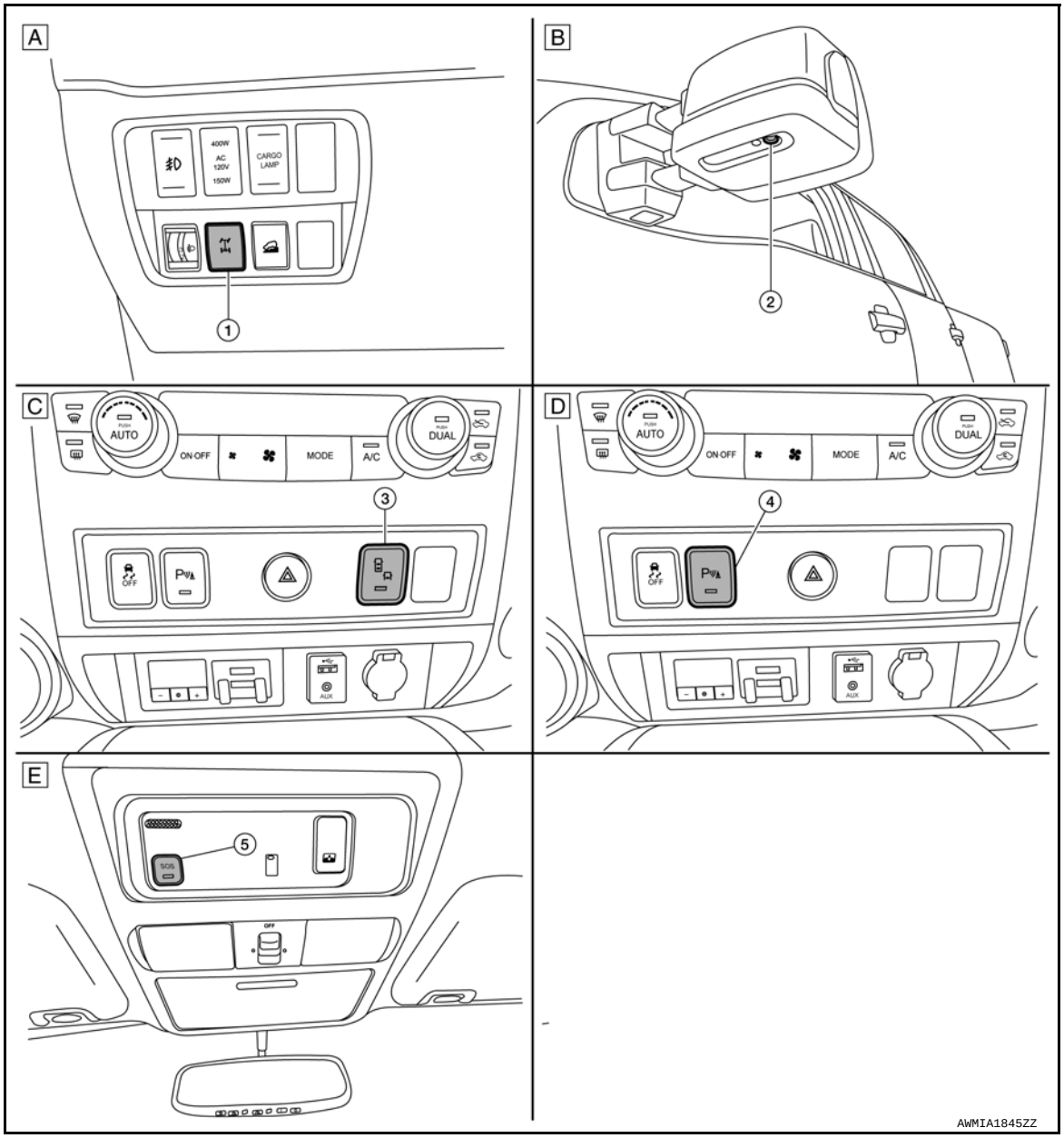
Body type	Crew Cab Truck											
Axle	2WD				4WD							
Engine	VK56VD											
Transmission	A/T											
Brake control	VDC											
Differential lock system							×		×		×	×
Around view monitor system				×						×		×
Blind Spot Warning system		×	×	×		×	×	×	×	×	×	×
Telematics system			×	×				×		×	×	×
Sonar system		×	×	×		×		×	×	×	×	×
CAN system type	23	24	25	34	26	27	28	29	30	31	32	33
CAN communication control unit												
ECM	×	×	×	×	×	×	×	×	×	×	×	×
Transfer control unit					×	×	×	×	×	×	×	×
ABS actuator and electric unit (control unit)	×	×	×	×	×	×	×	×	×	×	×	×
IPDM E/R	×	×	×	×	×	×	×	×	×	×	×	×
TCM	×	×	×	×	×	×	×	×	×	×	×	×
Driver seat control unit			×	×				×		×	×	×
Data link connector	×	×	×	×	×	×	×	×	×	×	×	×
Steering angle sensor	×	×	×	×	×	×	×	×	×	×	×	×
Air bag diagnosis sensor unit	×	×	×	×	×	×	×	×	×	×	×	×
ADAS control unit		×	×	×		×	×	×	×	×	×	×
Combination meter	×	×	×	×	×	×	×	×	×	×	×	×
AV control unit		×	×	×		×	×	×	×	×	×	×
TCU			×	×				×		×	×	×
Low tire pressure warning control unit	×	×	×	×	×	×	×	×	×	×	×	×
• A/C auto amp. (automatic air conditioner) • Front air control (manual air conditioner)	×	×	×	×	×	×	×	×	×	×	×	×
BCM	×	×	×	×	×	×	×	×	×	×	×	×
ITS communication control unit												
ADAS control unit		×	×	×		×	×	×	×	×	×	×
Side radar RH		×	×	×		×	×	×	×	×	×	×
Side radar LH		×	×	×		×	×	×	×	×	×	×
Around view monitor control unit				×						×		×
Differential lock control unit							×		×		×	×
Sonar control unit		×	×	×		×		×	×	×	×	×

×: Applicable

Vehicle Equipment Identification Information

NOTE:

Check CAN system type from the vehicle shape and equipment.



① Differential lock mode switch ② Side camera LH ③ Blind spot warning switch
④ Sonar system OFF switch ⑤ Telematics switch
A With differential lock system B With around view monitor system C With blind spot warning system
D With sonar system E With telematics system

CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart

INFOID:0000000014387282

Refer to LAN-52, "How to Use CAN Communication Signal Chart" for how to use CAN communication signal chart.

NOTE:

Refer to LAN-58, "Abbreviation List" for the abbreviations of the connecting units.

T: Transmit R: Receive

Signal name	ECM	4WD	ABS	IPDM-E	TCM	ADP	STRG	A-BAG	CGW	ICC	M&A	AV	TCU	TPMS	HVAC	PTC	BCM	RDR-R	RDR-L	AVM	DIFF	SONAR
A/C compressor cut-off signal[*1]	T														R	R						
A/C compressor request signal	T			R											R							
Accelerator pedal position signal	T		R		R					R												
Air filter service status signal[*1]	T										R											
ASCD status signal	T										R		R									
Closed throttle position signal	T			R																		
Condenser fan speed request signal[*1]	T			R											R	R						
Cooling fan speed request signal[*2]	T			R																		
Diesel exhaust fluid low level signal[*1]	T										R											
Diesel particulate filter status signal[*1]	T										R											
Diesel water-in-fuel signal[*1]	T										R											
Diesel particulate filter warning lamp signal[*1]	T										R											
DPF regeneration active signal[*1]	T										R											
Engine and A/T integrated control signal[*2]	T				R																	
	R				T																	
Engine coolant temperature signal	T		R	R	R					R	R				R	R				R		
Engine coolant temperature warning signal[*1]	T										R											
Engine speed signal	T	R	R		R			R		R	R		R		R	R					R	
Engine status signal	T			R	R												R					
Engine torque signal	T				R																	
Exhaust gas temperature signal[*1]	T										R											
Fuel consumption monitor signal	T										R	R	R									
Glow indicator monitor signal[*1]	T										R											
Malfunction indicator lamp signal	T										R		R									
	R[*1]				T																	
Oil pressure warning lamp[*2]	T										R											
Power generation command value signal[*2]	T			R																		
Wide open throttle position signal	T				R[*2]						R[*1]											
4WD signal		T	R																			

Signal name	ECM	4WD	ABS	IPDM-E	TCM	ADP	STRG	A-BAG	CGW	ICC	M&A	AV	TCU	TPMS	HVAC	PTC	BCM	RDR-R	RDR-L	AVM	DIFF	SONAR
4WD warning icon/display signal		T									R											
4WD mode indicator signal		T									R											
4WD mode signal		T			R																	
4WD warning lamp signal		T									R											
ATP warning lamp signal		T									R											
ABS operation signal			T		R							R										
ABS warning lamp signal			T								R											
AT fluid temperature signal*2	R		T																			
Brake warning lamp signal			T								R											
Front LH wheel speed signal		R	T		R																	
Front RH wheel speed signal		R	T		R																	
Rear LH wheel speed signal		R	T		R															R		
Rear RH wheel speed signal		R	T		R															R		
Sleep-ready signal		T															R					
				T													R					
											T						R					
Stop lamp switch signal		R			R												T					
			T																	R		
Target throttle position signal*2	R		T																			
TCS operation signal*1	R		T		R																	
VDC OFF indicator lamp signal			T								R											
VDC operation signal*1	R		T		R																	
VDC warning lamp signal			T								R											
Vehicle speed signal	R*2		T		R	R					R						R			R		R
	R	R		R		R					T	R			R		R					
A/C compressor feedback signal	R			T								R			R							
Front wiper position signal				T													R					
High beam status signal	R			T								R										
Hood switch signal				T													R					
Low beam status signal	R			T								R										
Push-button ignition switch status signal				T													R					
A/T check indicator lamp signal*1	R				T						R											
A/T self-diagnosis signal*1	R				T					R												
Current gear position signal*1	R		R	R	T			R		R								R	R			
Gear position signal		R			T																	
Input speed signal	R		R		T			R			R											
Manual mode signal*1	R				T						R											
Output shaft revolution signal	R	R	R		T						R											

Signal name	ECM	4WD	ABS	IPDM-E	TCM	ADP	STRG	A-BAG	CGW	ICC	M&A	AV	TCU	TPMS	HVAC	PTC	BCM	RDR-R	RDR-L	AVM	DIFF	SONAR
Shift position signal					T	R					R									R		R
Torque converter status signal[*1]	R				T																	
Steering angle sensor malfunction signal			R				T													R		
Steering angle sensor signal			R				T					R								R		
Steering angle speed signal			R				T															
Steering calibration signal			R				T													R		
Brake fluid level switch signal			R								T											
Distance to empty signal											T	R										
Fuel filler cap warning reset signal[*1]	R										T											
Fuel level low warning signal											T	R										
Fuel level sensor signal[*1]	R										T											
Manual mode (shift down) signal					R						T											
Manual mode (shift up) signal					R						T											
Odometer signal											T						R					
Parking brake switch signal			R								T						R					
Seat belt buckle switch signal (driver side)											T						R					
Tow mode switch signal					R						T											
Wake up signal											T						R					
A/C switch operation signal												T			R							
Rear window defogger switch signal												T					R					
System setting signal												T					R					
												R					T					
Voice recognition signal												T			R							
A/C display signal												R			T							
A/C evaporator temperature signal[*1]	R														T							
A/C ON signal	R														T							
Ambient sensor signal											R				T							
Blower fan ON signal	R														T							
Target A/C evaporator temperature signal[*1]	R														T							
Buzzer request signal											R						T					
																				T		R
Low tire pressure warning lamp signal											R						T					
Sonar status signal																				R		T
PTC idle up request signal	R															T		R				
	R																T	R				

Signal name	ECM	4WD	ABS	IPDM-E	TCM	ADP	STRG	A-BAG	CGW	ICC	M&A	AV	TCU	TPMS	HVAC	PTC	BCM	RDR-R	RDR-L	AVM	DIFF	SONAR
PTC power consumption signal	R															T	T	R				
	R																T	R				
Buzzer output signal											R						T					
Day time running light request signal				R											R		T			R		
Dimmer signal											R						T					
Door switch signal				R		R					R				R		T			R		
Door unlock signal						R											T					
Front fog light request signal				R							R				R		T			R		
Front wiper request signal				R								R			R		T					
Handle position signal						R											T					
High beam request signal				R							R				R		T			R		
Horn reminder signal				R													T					
Ignition switch ON signal				R													T					
				T													R					
Ignition switch signal				R		R											T					
Intelligent Key system warning display signal											R						T					
Interlock/PNP switch signal				R													T					
				T													R					
Key ID signal						R									R		T					
Low beam request signal				R											R		T			R		
Meter display signal											R						T					
Meter ring illumination request signal											R						T					
Oil pressure switch signal											R						T					
				T							R						R					
Position light request signal				R							R				R		T			R		
Rear window defogger control signal				R											R		T					
	R			T								R										
Sleep wake up signal		R		R		R			R		R						T					
Starter control relay signal				R													T					
Starter relay status signal				R							R						T					
				T													R					
Starting mode signal						R											T					
Theft warning horn request signal				R													T					
Turn indicator signal											R	R			R		T			R		
Sonar setting change signal																				T		R

*1: Diesel engine

*2: Gasoline engine

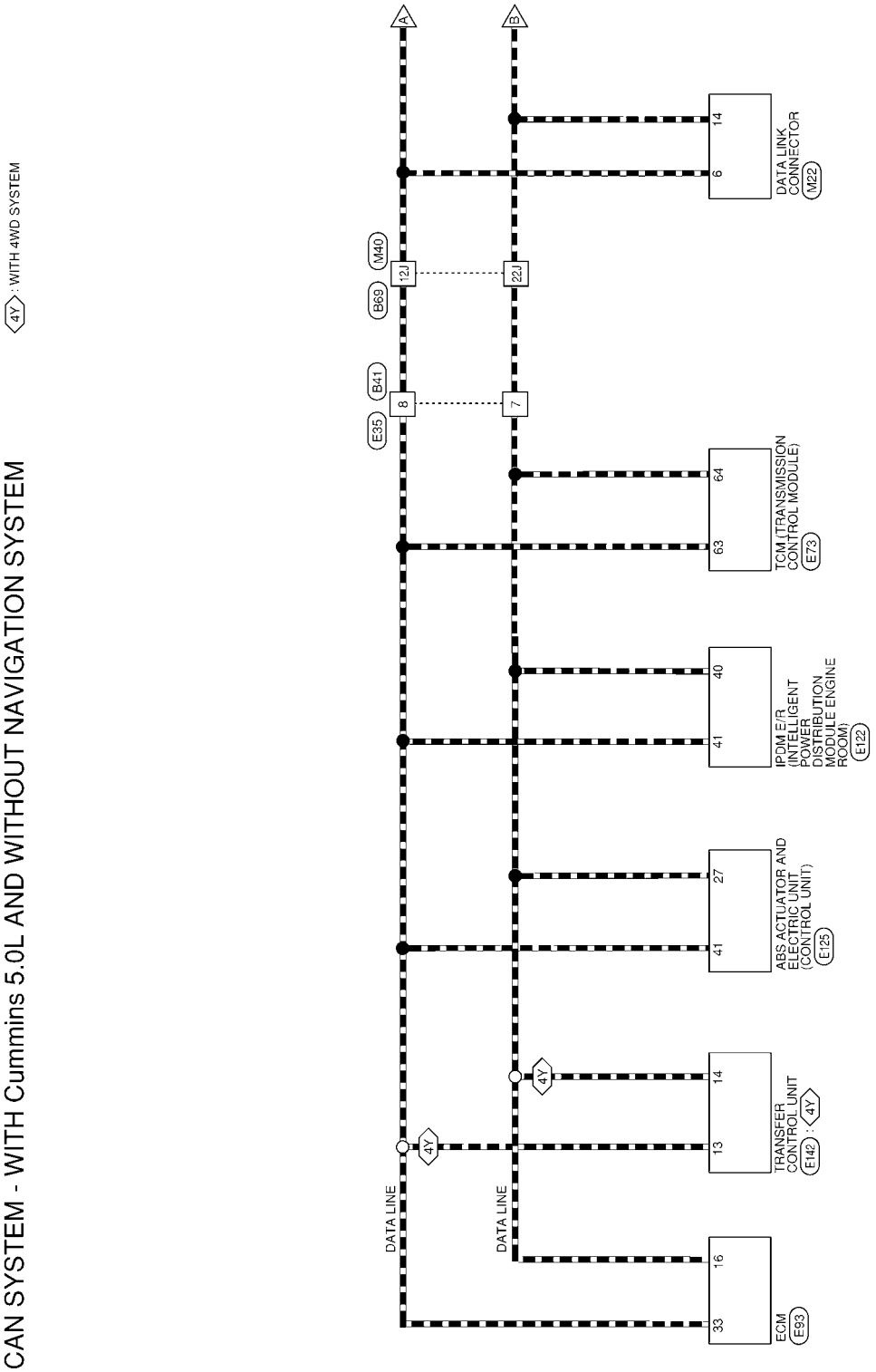
WIRING DIAGRAM

CAN SYSTEM (WITH CUMMINS 5.0L AND WITHOUT NAVIGATION SYSTEMS)

Wiring Diagram

INFOID:0000000014387283

CAN SYSTEM - WITH Cummins 5.0L AND WITHOUT NAVIGATION SYSTEM



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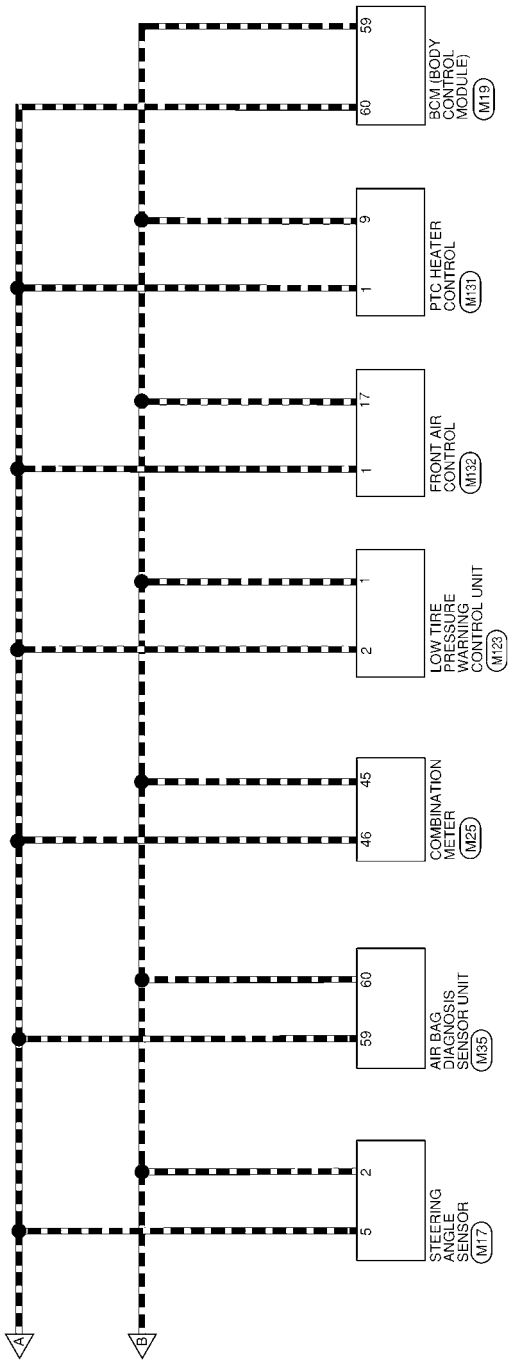

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CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITHOUT NAVIGATION SYSTEM

Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Type	NS12MW-CS
Connector Color	WHITE

H.S.

1	2	3		4	5
6	7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	Y	TO ENGINE ROOM HARNESS
2	V	TO ENGINE ROOM HARNESS
3	L	TO ENGINE ROOM HARNESS
4	L/G	TO ENGINE ROOM HARNESS
5	R/G	TO ENGINE ROOM HARNESS
6	SB	TO ENGINE ROOM HARNESS
7	P	TO ENGINE ROOM HARNESS
8	L	TO ENGINE ROOM HARNESS
9	SHIELD	TO ENGINE ROOM HARNESS
10	W/G	TO ENGINE ROOM HARNESS
11	L	TO ENGINE ROOM HARNESS
12	BR	TO ENGINE ROOM HARNESS

Connector No.	B69
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1J	P	TO MAIN HARNESS
2J	R/Y	TO MAIN HARNESS
3J	L	TO MAIN HARNESS
4J	L/B	TO MAIN HARNESS
5J	G/W	TO MAIN HARNESS
6J	LG/Y	TO MAIN HARNESS
7J	BR/LG	TO MAIN HARNESS
8J	SB/BR	TO MAIN HARNESS
9J	BR	TO MAIN HARNESS
10J	BR	TO MAIN HARNESS
11J	O/B	TO MAIN HARNESS
12J	L	TO MAIN HARNESS
13J	SB/O	TO MAIN HARNESS
14J	Y	TO MAIN HARNESS
15J	–	TO MAIN HARNESS
16J	R	TO MAIN HARNESS
17J	G	TO MAIN HARNESS
18J	SB	TO MAIN HARNESS
19J	O	TO MAIN HARNESS
20J	O/B	TO MAIN HARNESS
21J	Y/R	TO MAIN HARNESS
22J	P	TO MAIN HARNESS
23J	W	TO MAIN HARNESS
24J	W/R	TO MAIN HARNESS
25J	V	TO MAIN HARNESS
26J	L	TO MAIN HARNESS
27J	R	TO MAIN HARNESS
28J	L	TO MAIN HARNESS
29J	G/O	TO MAIN HARNESS
30J	SB	TO MAIN HARNESS
31J	LG	TO MAIN HARNESS
32J	R	TO MAIN HARNESS
33J	L	TO MAIN HARNESS
34J	Y	TO MAIN HARNESS
35J	P	TO MAIN HARNESS
36J	G/R	TO MAIN HARNESS
37J	LG/B	TO MAIN HARNESS
38J	SB	TO MAIN HARNESS
39J	Y/L	TO MAIN HARNESS
40J	BR	TO MAIN HARNESS
41J	L	TO MAIN HARNESS
42J	L	TO MAIN HARNESS
43J	SB	TO MAIN HARNESS
44J	BR	TO MAIN HARNESS
45J	BG	TO MAIN HARNESS
46J	P/Y	TO MAIN HARNESS
47J	Y/GR	TO MAIN HARNESS
48J	V	TO MAIN HARNESS
49J	BR/Y	TO MAIN HARNESS
50J	G/W	TO MAIN HARNESS
51J	–	TO MAIN HARNESS
52J	SHIELD	TO MAIN HARNESS
53J	R	TO MAIN HARNESS
54J	L	TO MAIN HARNESS
55J	R	TO MAIN HARNESS
56J	W	TO MAIN HARNESS
57J	L/G	TO MAIN HARNESS
58J	O	TO MAIN HARNESS
59J	–	TO MAIN HARNESS
60J	SHIELD	TO MAIN HARNESS
61J	G	TO MAIN HARNESS
62J	–	TO MAIN HARNESS
63J	R/W	TO MAIN HARNESS
64J	L/W	TO MAIN HARNESS
65J	SHIELD	TO MAIN HARNESS
66J	B	TO MAIN HARNESS
67J	SHIELD	TO MAIN HARNESS
68J	O/L	TO MAIN HARNESS
69J	SHIELD	TO MAIN HARNESS
70J	BR	TO MAIN HARNESS
71J	L/W	TO MAIN HARNESS
72J	–	TO MAIN HARNESS
72J	–	TO MAIN HARNESS
73J	–	TO MAIN HARNESS
74J	SHIELD	TO MAIN HARNESS
75J	LG/B	TO MAIN HARNESS
76J	R	TO MAIN HARNESS
77J	SHIELD	TO MAIN HARNESS
78J	GR/B	TO MAIN HARNESS
79J	B	TO MAIN HARNESS
80J	W	TO MAIN HARNESS
81J	SHIELD	TO MAIN HARNESS
82J	L/R	TO MAIN HARNESS
83J	–	TO MAIN HARNESS
84J	Y/B	TO MAIN HARNESS
85J	G	TO MAIN HARNESS
86J	B/R	TO MAIN HARNESS
87J	SHIELD	TO MAIN HARNESS
88J	GR/R	TO MAIN HARNESS
89J	L	TO MAIN HARNESS
90J	L/B	TO MAIN HARNESS
91J	SB	TO MAIN HARNESS
92J	B	TO MAIN HARNESS
93J	L	TO MAIN HARNESS
94J	LG	TO MAIN HARNESS
95J	R	TO MAIN HARNESS
96J	B/Y	TO MAIN HARNESS
97J	L/B	TO MAIN HARNESS
98J	W/L	TO MAIN HARNESS
99J	SB	TO MAIN HARNESS
100J		

Connector No.	E35
Connector Name	WIRE TO WIRE
Connector Type	NS12FW-CS
Connector Color	WHITE

H.S.

5	4		3	2	1
12	11	10	9	8	7	6

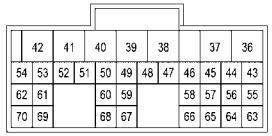
Terminal No.	Color of Wire	Signal Name
1	Y	TO BODY HARNESS
2	V	TO BODY HARNESS
3	L	TO BODY HARNESS
4	W	TO BODY HARNESS
5	R/G	TO BODY HARNESS
6	SB	TO BODY HARNESS
7	P	TO BODY HARNESS
8	L	TO BODY HARNESS
9	SHIELD	TO BODY HARNESS
10	B	TO BODY HARNESS
11	R	TO BODY HARNESS
12	BR	TO BODY HARNESS

AAMIA4447GB

CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITHOUT NAVIGATION SYSTEM

Connector No.	E73
Connector Name	TCM (TRANSMISSION CONTROL MODULE) (WITH CUMMINS 5.0L)
Connector Type	AAH28FW-TK7
Connector Color	WHITE

H.S.

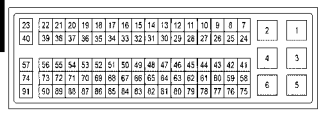


Terminal No.	Color of Wire	Signal Name
36	B	GND
37	B	GND
38	L/Y	LINE PRESSURE SOLENOID VALVE (+)
39	O	LINE PRESSURE SOLENOID VALVE (-)
40	–	–
41	R/W	BATT
42	R/W	BATT
43	L/R	C1 CLUTCH SOLENOID VALVE (+)
44	R/W	C1 CLUTCH SOLENOID VALVE (-)
45	R/Y	C2 CLUTCH SOLENOID VALVE (-)
46	R/Y	C2 CLUTCH SOLENOID VALVE (+)
47	B/R	C3 CLUTCH SOLENOID VALVE (+)
48	W	C3 CLUTCH SOLENOID VALVE (-)
49	R/L	B1 BRAKE SOLENOID VALVE (-)
50	L/W	B1 BRAKE SOLENOID VALVE (+)
51	–	–
52	–	–
53	–	–
54	P	ACCESSORY RELAY-2
55	–	–
56	–	–
57	V	A/T FLUID TEMPERATURE SENSOR 1 (+)
58	SB	A/T FLUID TEMPERATURE SENSOR 1 (-)
59	Y	B2 BRAKE SOLENOID VALVE (-)
60	W/L	B2 BRAKE SOLENOID VALVE (+)
61	–	–
62	–	–
63	L	CAN-H
64	P	CAN-L
65	L/B	A/T FLUID TEMPERATURE SENSOR 2 (+)
66	L	A/T FLUID TEMPERATURE SENSOR 2 (-)
67	V/W	TORQUE CONVERTER CLUTCH SOLENOID VALVE (-)
68	Y/B	TORQUE CONVERTER CLUTCH SOLENOID VALVE (+)
69	–	–
70	W/R	FAIL-SAFE SOLENOID VALVE

AAMIA4448GB

Connector No.	E93
Connector Name	ECM (WITH CUMMINS 5.0L)
Connector Type	1-928-405-452
Connector Color	BLACK

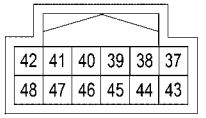
H.S.



Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	B	GROUND
3	BR	SW BATTERY
4	B	GROUND
5	BR	SW BATTERY
6	BR	SW BATTERY
7	O	DOF DELTA PRESS
8	–	–
9	–	–
10	–	–
11	–	–
12	–	–
13	–	–
14	–	–
15	L/R	AT SENSOR RTN
16	P	CAN-L
17	–	–
18	G	J1939 +
19	–	–
20	G	SMART POWER LSD
21	–	–
22	–	–
23	–	–
24	SB	DPF OUT PRESS
25	–	–
26	R/L	REF PRESS SENS SIGNAL
27	–	–
28	–	–
29	–	–
30	–	–
31	–	–
32	Y	AT SSR SUPPLY
33	L	CAN-H
34	–	–
35	Y	J1939 +
36	–	–
37	L	MAIN RLY LSD
38	–	–
39	–	–
40	GR	FUEL PUMP RLY SIG
41	BR	SW RETURN
42	–	–
43	–	–
44	–	–
45	–	–
46	–	–
47	–	–
48	–	–
49	–	–
50	–	–
51	–	–
52	–	–
53	R/G	BRAKE SW OPEN
54	L	BRAKE NC
55	–	–
56	–	–
57	–	–
58	–	–
59	G/Y	ASCD SIGNAL
60	–	–
61	B/Y	ASCD RETURN
62	R	PPS2 RETURN
63	R	PPS1 RETURN
64	R/W	REF PRESS SENS RETURN
65	L/W	IGN/KEYSWITCH
66	–	–
67	–	–
68	–	–
69	–	–
70	–	–
71	–	–
72	–	–
73	B	DOSER RETURN
74	GR/R	DOSER HS
75	L/W	COOLANT SIGNAL
76	–	–
77	L	WIF SIGNAL
78	L	PPS2 SIGNAL
79	BR	PPS1 SIGNAL
80	W	PPS1 SUPPLY
81	B	PPS2 SUPPLY
82	–	–
83	BR	BATTERY
84	–	–
85	–	–
86	–	–
87	–	–
88	–	–
89	–	–
90	–	–
91	–	–

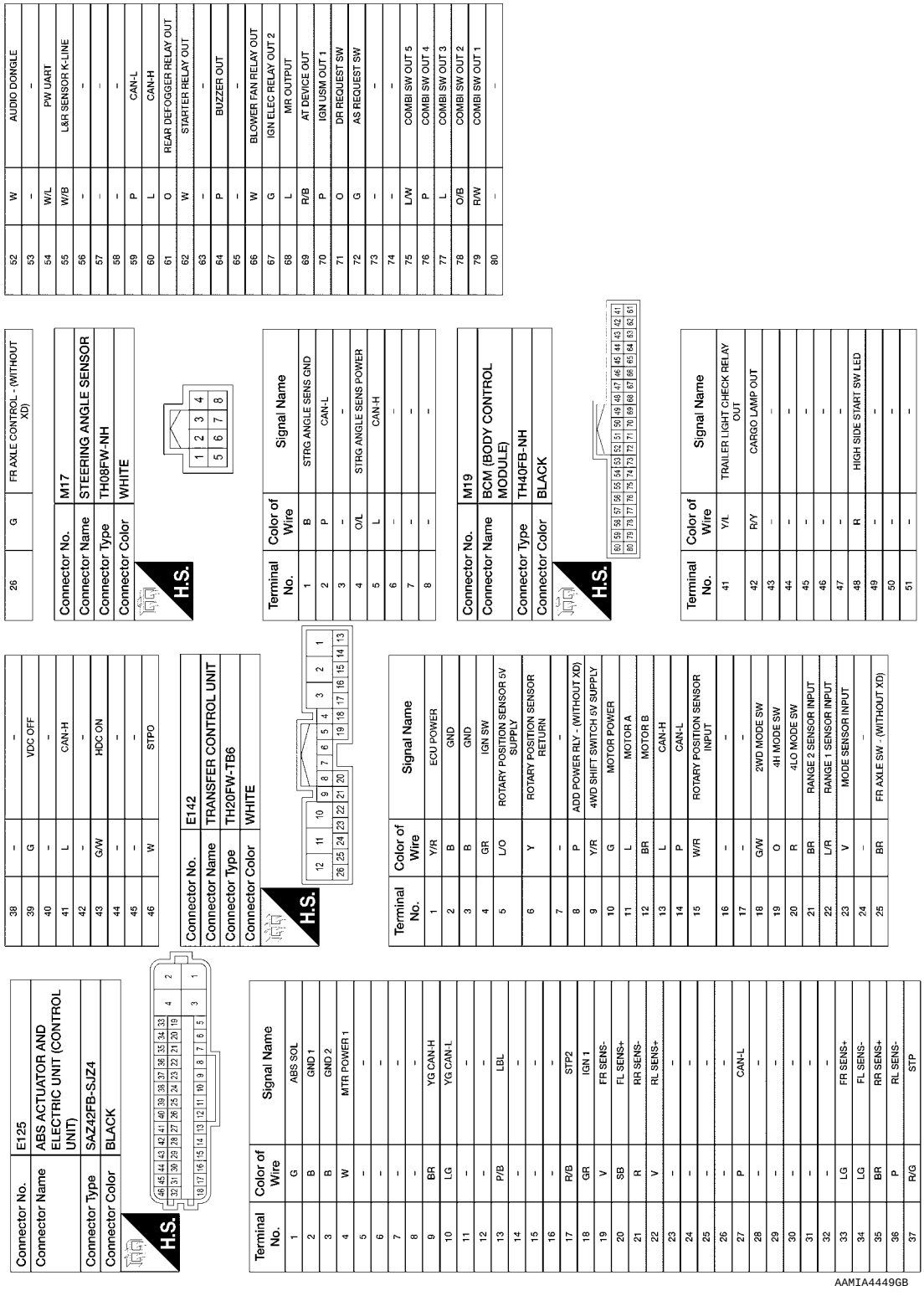
Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
37	–	–
38	–	–
39	L/Y	WIPER AUTO STOP SW
40	P	CAN-L
41	L	CAN-H
42	BR	DTRL RLY
43	–	–
44	W/B	START CONT
45	GR	FUEL RLY CONT
46	Y	HOOD SW
47	Y	ALT C - (WITH VK56VD)
48	R/W	HORN RLY CONT

CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITHOUT NAVIGATION SYSTEM



CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITHOUT NAVIGATION SYSTEM

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW
Connector Color	WHITE

H.S.

9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	LG	M-CAN-L
4	B	BODY GND
5	B	ENG GND
6	L	CAN-H
7	BR	K-LINE
8	G/R	IGN SW
9	–	–
10	–	–
11	SB	M-CAN-H
12	R	CAN-L
13	L	CAN-H
14	P	CAN-L
15	–	–
16	Y	BATTERY

Connector No.	M25
Connector Name	COMBINATION METER (WITH TYPE A)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

46	45	44	43	42	41
52	51	50	49	48	47

Terminal No.	Color of Wire	Signal Name
41	W	IGN
42	R	BAT
43	Y/V	FUEL SENSOR GND
44	GR	ILL CONT OUTPUT
45	P	CAN-L
46	L	CAN-H
47	B	G1
48	BR/Y	FUEL SENSOR
49	–	–
50	–	–
51	LG	M CAN-L
52	SB	M CAN-H

Connector No.	M35
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT (WITHOUT OCCUPANT CLASSIFICATION SYSTEM)
Connector Type	NH28FY-EX
Connector Color	YELLOW

H.S.

8	9	7	6		2	4	3
19	52	54	23			22	
18	51	53	60	59			1

Terminal No.	Color of Wire	Signal Name
1	R	IGN
2	B	GND
3	Y	DR1 (+)
4	Y/B	DR1 (-)
6	O	AS1 (+)
7	G	AS1 (-)
8	P	AS2 (+)
9	Y	AS2 (-)
18	GR/R	ECZS (+)
19	GR/B	ECZS (-)
22	SHIELD	ECZS GND
23	O	AIRBAG WARN LAMP
51	LG/B	RH DOOR SATELLITE SENSOR+
52	Y/B	RH DOOR SATELLITE SENSOR -
53	L	LH DOOR SATELLITE SENSOR+
54	W	LH DOOR SATELLITE SENSOR -
59	L	CAN-H
60	P	CAN-L

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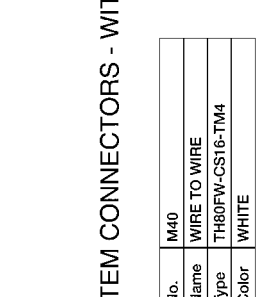
CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITHOUT NAVIGATION SYSTEM

Connector No.	M40
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1J	G	TO BODY HARNESS
2J	R/Y	TO BODY HARNESS
3J	L	TO BODY HARNESS
4J	L/B	TO BODY HARNESS
5J	B	TO BODY HARNESS
6J	BR	TO BODY HARNESS
7J	BG	TO BODY HARNESS
8J	SB	TO BODY HARNESS
9J	BR	TO BODY HARNESS
10J	R	TO BODY HARNESS
11J	O/B	TO BODY HARNESS
12J	L	TO BODY HARNESS
13J	W	TO BODY HARNESS
14J	Y	TO BODY HARNESS
15J	–	TO BODY HARNESS
16J	R	TO BODY HARNESS
17J	G	TO BODY HARNESS
18J	SB	TO BODY HARNESS
19J	O	TO BODY HARNESS
20J	O/B	TO BODY HARNESS
21J	Y	TO BODY HARNESS
22J	P	TO BODY HARNESS
23J	W	TO BODY HARNESS
24J	W/R	TO BODY HARNESS
25J	P	TO BODY HARNESS
26J	L	TO BODY HARNESS
27J	R	TO BODY HARNESS

28J	L	TO BODY HARNESS
29J	G/O	TO BODY HARNESS
30J	SB	TO BODY HARNESS
31J	L/G	TO BODY HARNESS
32J	R	TO BODY HARNESS
33J	BG	TO BODY HARNESS
34J	Y	TO BODY HARNESS
35J	P	TO BODY HARNESS
36J	G/R	TO BODY HARNESS
37J	LG	TO BODY HARNESS
38J	SB	TO BODY HARNESS
39J	Y	TO BODY HARNESS
40J	SB	TO BODY HARNESS
41J	L	TO BODY HARNESS
42J	L	TO BODY HARNESS
43J	W	TO BODY HARNESS
44J	BR	TO BODY HARNESS
45J	BG	TO BODY HARNESS
46J	P	TO BODY HARNESS
47J	O	TO BODY HARNESS
48J	V	TO BODY HARNESS
49J	BR	TO BODY HARNESS
50J	G/W	TO BODY HARNESS
51J	–	TO BODY HARNESS
52J	SHIELD	TO BODY HARNESS
53J	R	TO BODY HARNESS
54J	L	TO BODY HARNESS
55J	R	TO BODY HARNESS
56J	W	TO BODY HARNESS
57J	R	TO BODY HARNESS
58J	B	TO BODY HARNESS
59J	–	TO BODY HARNESS
60J	SHIELD	TO BODY HARNESS
61J	G	TO BODY HARNESS
62J	–	TO BODY HARNESS
63J	R/W	TO BODY HARNESS
64J	L/W	TO BODY HARNESS
65J	SHIELD	TO BODY HARNESS
66J	B	TO BODY HARNESS
67J	SHIELD	TO BODY HARNESS
68J	W	TO BODY HARNESS
69J	SHIELD	TO BODY HARNESS
70J	B/R	TO BODY HARNESS
71J	L/W	TO BODY HARNESS
72J	–	TO BODY HARNESS
73J	–	TO BODY HARNESS
74J	SHIELD	TO BODY HARNESS
75J	R	TO BODY HARNESS
76J	O	TO BODY HARNESS
77J	SHIELD	TO BODY HARNESS
78J	W	TO BODY HARNESS
79J	B	TO BODY HARNESS
80J	W	TO BODY HARNESS

81J	SHIELD	TO BODY HARNESS
82J	L/R	TO BODY HARNESS
83J	–	TO BODY HARNESS
84J	–	TO BODY HARNESS
85J	W	TO BODY HARNESS
86J	G	TO BODY HARNESS
87J	W	TO BODY HARNESS
88J	SHIELD	TO BODY HARNESS
89J	R	TO BODY HARNESS
90J	L	TO BODY HARNESS
91J	L/B	TO BODY HARNESS
92J	SB	TO BODY HARNESS
93J	B	TO BODY HARNESS
94J	LG	TO BODY HARNESS
95J	L	TO BODY HARNESS
96J	G	TO BODY HARNESS
97J	B/Y	TO BODY HARNESS
98J	L/B	TO BODY HARNESS
99J	W/L	TO BODY HARNESS
100J	Y	TO BODY HARNESS

Connector No.	M123
Connector Name	LOW TIRE PRESSURE WARNING CONTROL UNIT
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	P	CAN-L
2	L	CAN-H
3	–	–
4	–	–
5	–	–
6	–	–
7	W	IGN SW
8	–	–
9	–	–
10	B	GND
11	Y	+B
12	–	–

Connector No.	M131
Connector Name	PTC HEATER CONTROL
Connector Type	TH16FW-NH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	CAN H
2	B	GND
3	G	IGNITION
4	–	–
5	R	SENS GND
6	–	–
7	–	–
8	–	–
9	P	CAN L
10	SB	BATTERY
11	–	–
12	W	AMB SENS
13	L/W	FAN SPEED
14	G/R	PTC 1
15	LG	PTC 2
16	SB	PTC 3

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CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITHOUT NAVIGATION SYSTEM

Connector No.	M132
Connector Name	FRONT AIR CONTROL
Connector Type	TH32FW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	B	GND
3	SB	BAT
4	L	ILL+
5	–	–
6	–	–
7	–	–
8	–	–
9	W	IGN2(ACC)
10	P	FAN GATE
11	Y	RR DEF ON
12	G	LIN SIG
13	W	VACTR
14	–	–
15	–	–
16	–	–
17	P	CAN-L
18	B	GND(POWER)
19	G	IGN
20	GR	ILL-
21	R	SENS GND
22	P	INTAKE SENS
23	–	–
24	–	–
25	Y	COMP ON
26	L/W	FAN FB
27	B/W	RR DEF F/B
28	–	–
29	B	ACTR GND
30	W	FAN ON
31	–	–
32	–	–

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CAN SYSTEM (WITH CUMMINS 5.0L AND WITH NAVIGATION WITHOUT BLIND SPOT WARNING SYSTEMS)

Wiring Diagram

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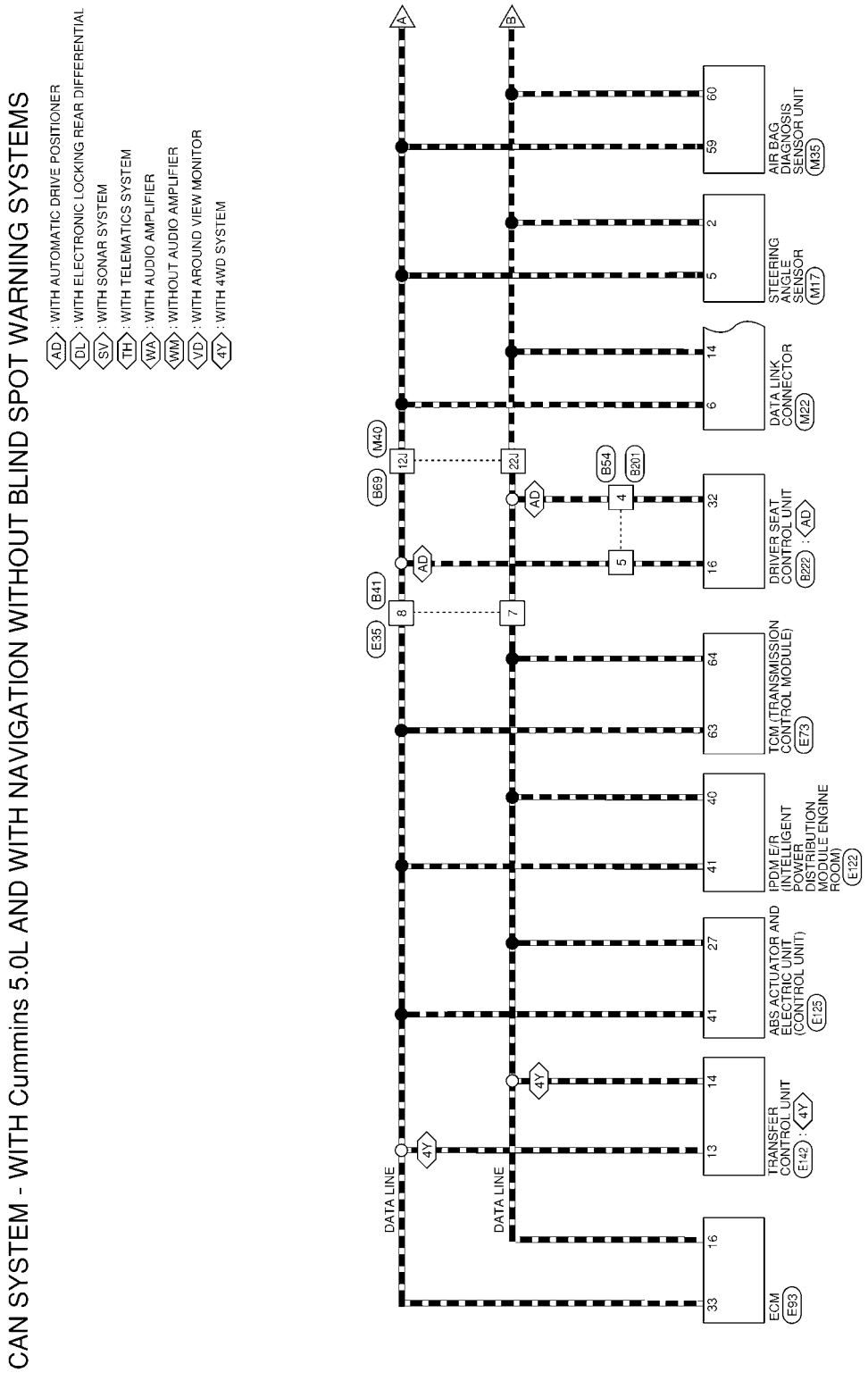

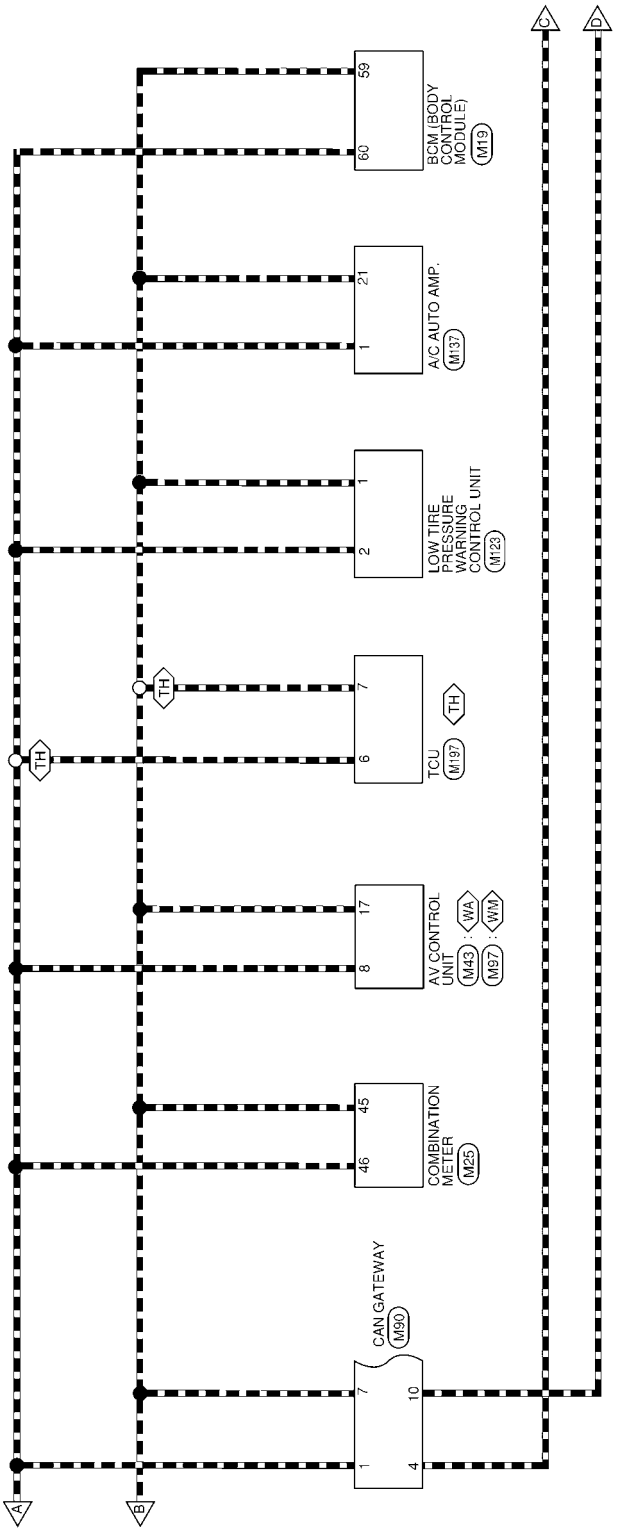

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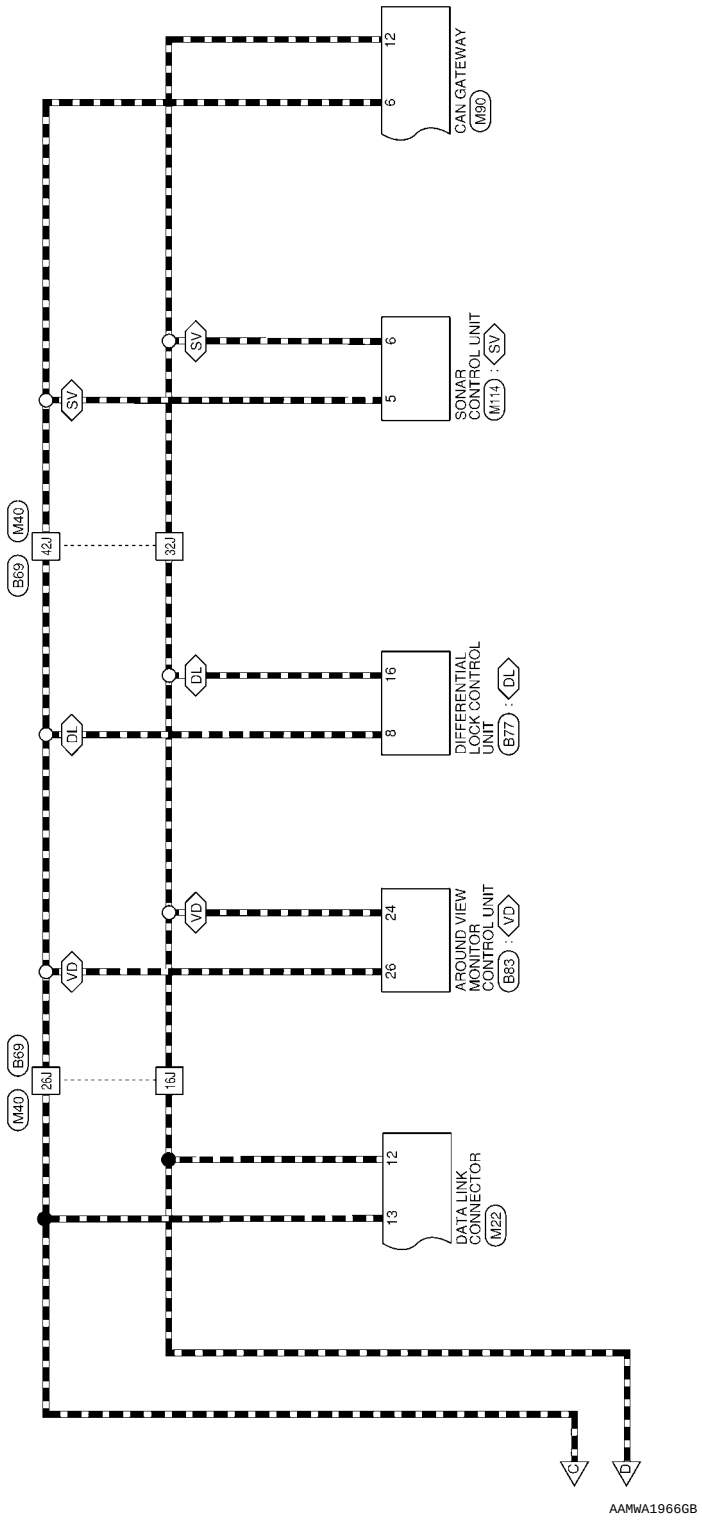
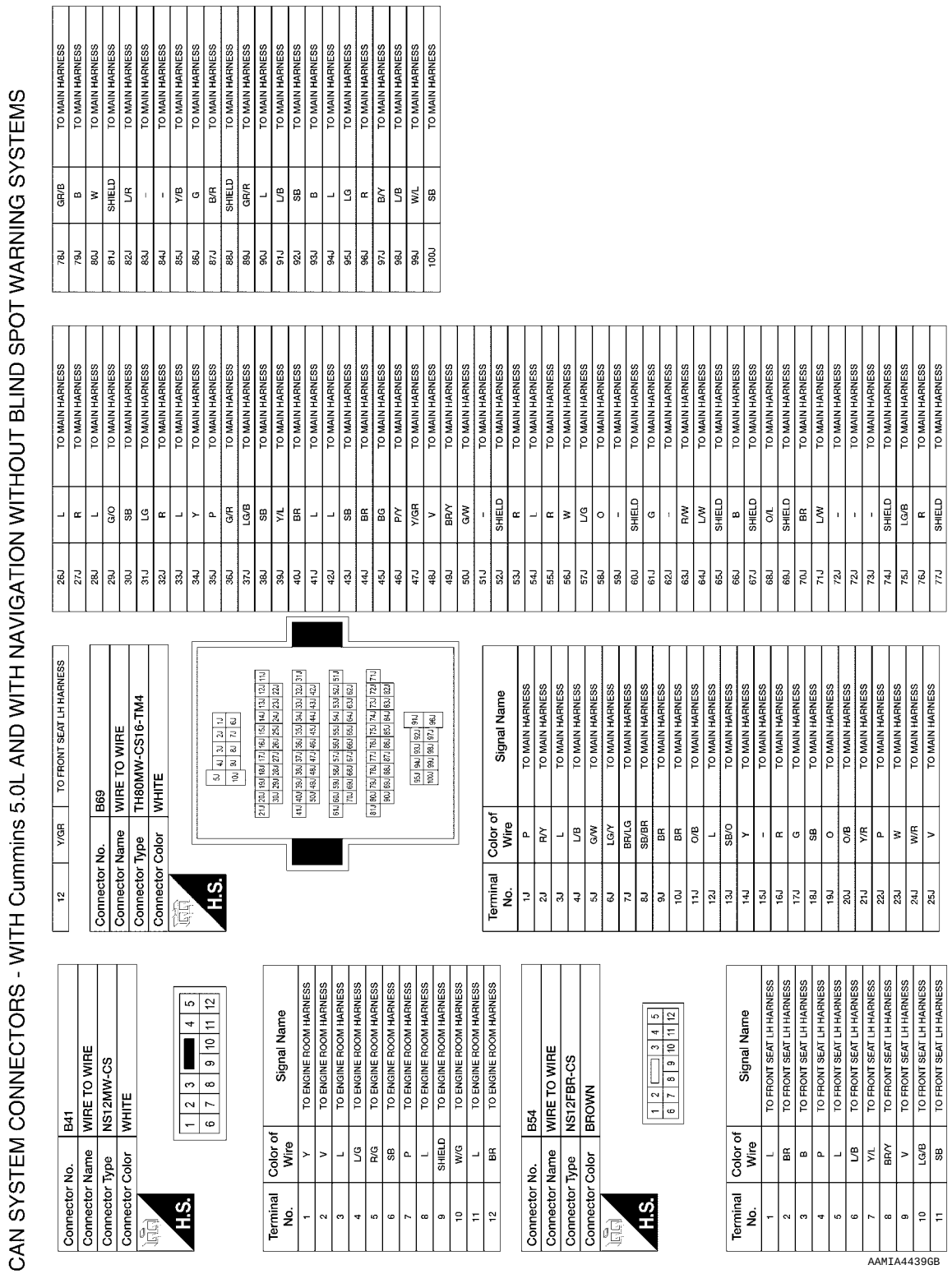

CAN GATEWAY
M90
12
6
SONAR CONTROL UNIT
M114
SV
6
5
M40
B69
42J
32J
DIFFERENTIAL LOCK CONTROL UNIT
B77
DL
16
8
AROUND VIEW MONITOR CONTROL UNIT
B83
VD
24
26
25J
16J
DATA LINK CONNECTOR
M22
12
13
C
D
AAMWA1966GB

CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITHOUT BLIND SPOT WARNING SYSTEMS



CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITHOUT BLIND SPOT WARNING SYSTEMS

Connector No.	B77
Connector Name	DIFFERENTIAL LOCK CONTROL UNIT
Connector Type	TH16FW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

Terminal No.	Color of Wire	Signal Name
1	Y	SOLENOID (+)
2	V	SOLENOID (-)
3	–	–
4	–	–
5	G/O	DIFF LOCK ON SW
6	–	–
7	P	IGN
8	L	CAN-H
9	BR	SOL BATT
10	B	GND
11	B	GND
12	L	DIFF LOCK POSITION SW
13	–	–
14	O	DIFF LOCK OFF SW
15	Y/R	VBATT
16	R	CAN-L

Connector No.	B83
Connector Name	AROUND VIEW MONITOR CONTROL UNIT
Connector Type	TH40FW-NH
Connector Color	WHITE

H.S.

2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39

Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	SHIELD	VIDEO OUTPUT GND
4	G	VIDEO OUTPUT SIGNAL
5	L/G	FV POWER GND
6	L	FV POWER 6.2V
7	SHIELD	FV VIDEO GND
8	W/G	FV VIDEO SIGNAL
9	O/L	SV1 POWER GND
10	O	SV1 POWER 6.2V
11	SHIELD	SV1 VIDEO GND
12	L/G	SV1 VIDEO SIGNAL
13	B	SV2 POWER GND
14	W	SV2 POWER 6.2V
15	SHIELD	SV2 VIDEO GND
16	R	SV2 VIDEO SIGNAL
17	L/W	RV POWER GND
18	L	RV POWER 6.2V
19	R/W	RV VIDEO GND
20	R	RV VIDEO SIGNAL
21	–	–
22	–	–
23	–	–
24	R	CAN-L
25	–	–
26	L	CAN-H
27	–	–
28	–	–
29	–	–
30	–	–
31	–	–
32	G/W	REVERSE
33	–	–
34	–	–
35	–	–
36	–	–
37	–	–
38	–	–
39	B	GND
40	G/R	IGN

Connector No.	B201
Connector Name	WIRE TO WIRE
Connector Type	NS12MBR-CS
Connector Color	BROWN

H.S.

5	4	3		2	1
12	11	10	9	8	7	6

Terminal No.	Color of Wire	Signal Name
1	BR	TO BODY HARNESS
2	W	TO BODY HARNESS
3	B	TO BODY HARNESS
4	P	TO BODY HARNESS
5	V	TO BODY HARNESS
6	GR	TO BODY HARNESS
7	L	TO BODY HARNESS
8	SB	TO BODY HARNESS
9	G	TO BODY HARNESS
10	V	TO BODY HARNESS
11	P	TO BODY HARNESS
12	W	TO BODY HARNESS
13	L	TO BODY HARNESS
14	Y	TO BODY HARNESS
15	R	TO BODY HARNESS
16	BR	TO BODY HARNESS
17	SB	TO BODY HARNESS
18	V	TO BODY HARNESS
19	GR	TO BODY HARNESS
20	L	TO BODY HARNESS
21	W	TO BODY HARNESS
22	P	TO BODY HARNESS
23	G	TO BODY HARNESS
24	R	TO BODY HARNESS
25	Y	TO BODY HARNESS
26	P	TO BODY HARNESS
27	V	TO BODY HARNESS
28	BR	TO BODY HARNESS
29	R	PULSE (REAR LIFTER)
30	Y	PULSE (FRONT LIFTER)
31	LG	PULSE (SLIDE)
32	W	CAN-L

Connector No.	E35
Connector Name	WIRE TO WIRE
Connector Type	NS12FW-CS
Connector Color	WHITE

H.S.

5	4		3	2	1
12	11	10	9	8	7	6

Terminal No.	Color of Wire	Signal Name
1	Y	TO BODY HARNESS
2	V	TO BODY HARNESS
3	L	TO BODY HARNESS
4	W	TO BODY HARNESS
5	P/G	TO BODY HARNESS
6	SB	TO BODY HARNESS
7	P	TO BODY HARNESS
8	L	TO BODY HARNESS
9	SHIELD	TO BODY HARNESS
10	B	TO BODY HARNESS
11	R	TO BODY HARNESS
12	BR	TO BODY HARNESS

Connector No.	B222
Connector Name	DRIVER SEAT CONTROL UNIT
Connector Type	TH32FW-NH
Connector Color	WHITE

H.S.

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	–	–
4	–	–
5	W	POWER SUPPLY (ENCODER)
6	R	REAR LIFTER SW (DOWNWARD)
7	Y	FRONT LIFTER SW (DOWNWARD)
8	BR	RECLINER SW (BACKWARD)
9	SB	SLIDE SW (BACKWARD)
10	G	IND 2
11	GR	ADDRESS 2
12	W	PULSE (TELESCOPIC)
13	G	PULSE (RECLINER)
14	–	–
15	SB	UART (TX/RX)
16	P	CAN-H
17	–	–
18	–	–
19	–	–
20	–	–
21	L	SET SW
22	V	REAR LIFTER SW (UPWARD)
23	G	FRONT LIFTER SW (UPWARD)
24	P	RECLINER SW (FORWARD)
25	L	SLIDE SW (FORWARD)
26	Y	IND 1
27	V	ADDRESS 1
28	BR	PULSE(TILT)

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CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITHOUT BLIND SPOT WARNING SYSTEMS

Connector No.	E73
Connector Name	TCM (TRANSMISSION CONTROL MODULE) (WITH CUMMINS 5.0L)
Connector Type	AAH28FW-TK7
Connector Color	WHITE

H.S.

42	41	40	39	38		37	36
54	53	52	51	50	49	48	47	46	45	44	43
62	61			60	59			58	57	56	55
70	69			68	67			66	65	64	63

Terminal No.	Color of Wire	Signal Name
36	B	GND
37	B	GND
38	L/Y	LINE PRESSURE SOLENOID VALVE (+)
39	O	LINE PRESSURE SOLENOID VALVE (-)
40	-	-
41	R/W	BATT
42	R/W	BATT
43	L/R	C1 CLUTCH SOLENOID VALVE (+)
44	R/W	C1 CLUTCH SOLENOID VALVE (-)
45	R/Y	C2 CLUTCH SOLENOID VALVE (-)
46	R/Y	C2 CLUTCH SOLENOID VALVE (+)
47	B/R	C3 CLUTCH SOLENOID VALVE (+)
48	W	C3 CLUTCH SOLENOID VALVE (-)
49	R/L	B1 BRAKE SOLENOID VALVE (-)
50	L/W	B1 BRAKE SOLENOID VALVE (+)
51	-	-
52	-	-
53	-	-
54	P	ACCESSORY RELAY-2
55	-	-
56	-	-
57	V	A/T FLUID TEMPERATURE SENSOR 1 (+)
58	SB	A/T FLUID TEMPERATURE SENSOR 1 (-)
59	Y	B2 BRAKE SOLENOID VALVE (-)
60	W/L	B2 BRAKE SOLENOID VALVE (+)
61	-	-
62	-	-
63	L	CAN-H
64	P	CAN-L
65	L/B	A/T FLUID TEMPERATURE SENSOR 2 (+)
66	L	A/T FLUID TEMPERATURE SENSOR 2 (-)
67	V/W	TORQUE CONVERTER CLUTCH SOLENOID VALVE (-)
68	Y/B	TORQUE CONVERTER CLUTCH SOLENOID VALVE (+)
69	-	-
70	W/R	FAIL-SAFE SOLENOID VALVE

Connector No.	E93
Connector Name	ECM (WITH CUMMINS 5.0L)
Connector Type	1-928-405-452
Connector Color	BLACK

H.S.

23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7		2		1
45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24		4		3
57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41									
74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58		6		5
91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75				

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	B	GROUND
3	BR	SW BATTERY
4	B	GROUND
5	BR	SW BATTERY
6	BR	SW BATTERY
7	O	DOF DELTA PRESS
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	L/R	AT SENSOR RTN
16	P	CAN-L
17	-	-
18	G	J1939 +
19	-	-
20	G	SMART POWER LSD
21	-	-
22	-	-
23	-	-
24	SB	DPF OUT PRESS
25	-	-
26	R/L	REF PRESS SENS SIGNAL
27	-	-
28	-	-
29	-	-
30	-	-
31	-	-
32	Y	AT SSR SUPPLY
33	L	CAN-H
34	-	-
35	Y	J1939 +
36	-	-
37	L	MAIN RLY LSD
38	-	-
39	-	-
40	GR	FUEL PUMP RLY SIG
41	BR	SW RETURN
42	-	-
43	-	-
44	-	-
45	-	-
46	-	-
47	-	-
48	-	-
49	-	-
50	-	-
51	-	-
52	-	-
53	R/G	BRAKE SW OPEN
54	L	BRAKE NC
55	-	-
56	-	-
57	-	-
58	-	-
59	G/Y	ASCD SIGNAL
60	-	-
61	B/Y	ASCD RETURN
62	R	PPS2 RETURN
63	R	PPS1 RETURN
64	R/W	REF PRESS SENS RETURN
65	L/W	IGN/KEYSWITCH
66	-	-
67	-	-
68	-	-
69	-	-
70	-	-
71	-	-
72	-	-
73	B	DOSER RETURN
74	GR/R	DOSER HS
75	L/W	COOLANT SIGNAL
76	-	-
77	L	WIF SIGNAL
78	L	PPS2 SIGNAL
79	BR	PPS1 SIGNAL
80	W	PPS1 SUPPLY
81	B	PPS2 SUPPLY
82	-	-
83	BR	BATTERY
84	-	-
85	-	-
86	-	-
87	-	-
88	-	-
89	-	-
90	-	-
91	-	-

Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

42	41	40	39	38	37
48	47	46	45	44	43

Terminal No.	Color of Wire	Signal Name
37	-	-
38	-	-
39	L/Y	WIPER AUTO STOP SW
40	P	CAN-L
41	L	CAN-H
42	BR	DTRL RLY
43	-	-
44	W/B	START CONT
45	GR	FUEL RLY CONT
46	Y	HOOD SW
47	Y	ALT C - (WITH VK56VD)
48	R/W	HORN RLY CONT

AAMIA4441GB

CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITHOUT BLIND SPOT WARNING SYSTEMS

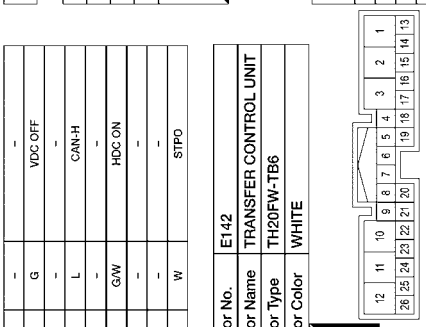
Connector No.	E125
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	SAZ42FB-SJZ4
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	G	ABS SOL
2	B	GND 1
3	B	GND 2
4	W	MTR POWER 1
5	–	–
6	–	–
7	–	–
8	–	–
9	BR	YG CAN-H
10	LG	YG CAN-L
11	–	–
12	–	–
13	P/B	LBL
14	–	–
15	–	–
16	–	–
17	R/B	STP2
18	GR	IGN 1
19	V	FR SENS-
20	SB	FL SENS+
21	R	RR SENS-
22	V	RL SENS+
23	–	–
24	–	–
25	–	–
26	–	–
27	P	CAN-L
28	–	–
29	–	–
30	–	–
31	–	–
32	–	–
33	LG	FR SENS+
34	LG	FL SENS-
35	BR	RR SENS+
36	P	RL SENS-
37	R/G	STP
38	–	–
39	G	VDC OFF
40	–	–
41	L	CAN-H
42	–	–
43	G/W	HDC ON
44	–	–
45	–	–
46	W	STPO

Connector No.	E142
Connector Name	TRANSFER CONTROL UNIT
Connector Type	TH20FW-TB6
Connector Color	WHITE

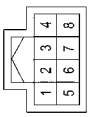
H.S.



Terminal No.	Color of Wire	Signal Name
1	Y/R	ECU POWER
2	B	GND
3	B	GND
4	GR	IGN SW
5	L/O	ROTARY POSITION SENSOR 5V SUPPLY
6	Y	ROTARY POSITION SENSOR RETURN
7	–	–
8	P	ADD POWER RLY - (WITHOUT XD)
9	Y/R	4WD SHIFT SWITCH 5V SUPPLY
10	G	MOTOR POWER
11	L	MOTOR A
12	BR	MOTOR B
13	L	CAN-H
14	P	CAN-L
15	W/R	ROTARY POSITION SENSOR INPUT
16	–	–
17	–	–
18	G/W	2WD MODE SW
19	O	4H MODE SW
20	R	4LO MODE SW
21	BR	RANGE 2 SENSOR INPUT
22	L/R	RANGE 1 SENSOR INPUT
23	V	MODE SENSOR INPUT
24	–	–
25	BR	FR AXLE SW - (WITHOUT XD)
26	G	FR AXLE CONTROL - (WITHOUT XD)

Connector No.	M17
Connector Name	STEERING ANGLE SENSOR
Connector Type	TH08FW-NH
Connector Color	WHITE

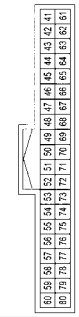
H.S.



Terminal No.	Color of Wire	Signal Name
1	B	STRG ANGLE SENS GND
2	P	CAN-L
3	–	–
4	O/L	STRG ANGLE SENS POWER
5	L	CAN-H
6	–	–
7	–	–
8	–	–

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH
Connector Color	BLACK

H.S.



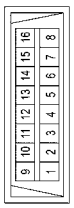
Terminal No.	Color of Wire	Signal Name
41	Y/L	TRAILER LIGHT CHECK RELAY OUT
42	R/Y	CARGO LAMP OUT
43	–	–
44	–	–
45	–	–
46	–	–
47	–	–
48	R	HIGH SIDE START SW LED
49	–	–
50	–	–
51	–	–
52	W	–
53	–	–
54	W/L	PW UART
55	W/B	L&R SENSOR K-LINE
56	–	–
57	–	–
58	–	–
59	P	CAN-L
60	L	CAN-H
61	O	REAR DEFOGGER RELAY OUT
62	W	STARTER RELAY OUT
63	–	–
64	P	BUZZER OUT
65	–	–
66	W	BLOWER FAN RELAY OUT
67	G	IGN ELEC RELAY OUT 2
68	L	MR OUTPUT
69	R/B	AT DEVICE OUT
70	P	IGN USM OUT 1
71	O	DR REQUEST SW
72	G	AS REQUEST SW
73	–	–
74	–	–
75	L/W	COMBI SW OUT 5
76	P	COMBI SW OUT 4
77	L	COMBI SW OUT 3
78	O/B	COMBI SW OUT 2
79	R/W	COMBI SW OUT 1
80	–	–

AAMIA4442GB

CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITHOUT BLIND SPOT WARNING SYSTEMS

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	LG	M-CAN-L
4	B	BODY GND
5	B	ENG GND
6	L	CAN-H
7	BR	K-LINE
8	G/R	IGN SW
9	–	–
10	–	–
11	SB	M-CAN-H
12	R	CAN-L
13	L	CAN-H
14	P	CAN-L
15	–	–
16	Y	BATTERY

Connector No.	M25
Connector Name	COMBINATION METER (WITH TYPE A)
Connector Type	TH12FW-NH
Connector Color	WHITE

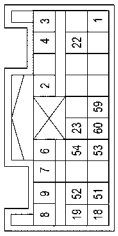
H.S.

Terminal No.	Color of Wire	Signal Name
41	W	IGN
42	R	BAT
43	Y/V	FUEL SENSOR GND
44	GR	ILL CONT OUTPUT
45	P	CAN-L
46	L	CAN-H

47	B	G1
48	BR/Y	FUEL SENSOR
49	–	–
50	–	–
51	LG	M CAN-L
52	SB	M CAN-H

Connector No.	M35
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT (WITHOUT OCCUPANT CLASSIFICATION SYSTEM)
Connector Type	NH28FY-EX
Connector Color	YELLOW

H.S.



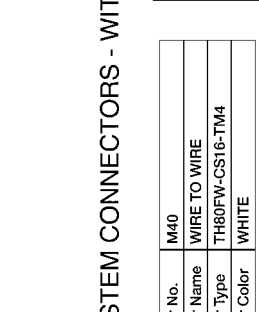
Terminal No.	Color of Wire	Signal Name
1	R	IGN
2	B	GND
3	Y	DR1 (+)
4	Y/B	DR1 (-)
6	O	AS1 (+)
7	G	AS1 (-)
8	P	AS2 (+)
9	Y	AS2 (-)
18	GR/R	ECZS (+)
19	GR/B	ECZS (-)
22	SHIELD	ECZS GND
23	O	AIRBAG WARN LAMP
51	LG/B	RH DOOR SATELLITE SENSOR+
52	Y/B	RH DOOR SATELLITE SENSOR -
53	L	LH DOOR SATELLITE SENSOR+
54	W	LH DOOR SATELLITE SENSOR -
59	L	CAN-H
60	P	CAN-L

AAMIA4443GB

CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITHOUT BLIND SPOT WARNING SYSTEMS

Connector No.	M40
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.



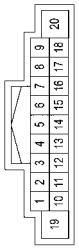
Terminal No.	Color of Wire	Signal Name
1J	G	TO BODY HARNESS
2J	R/Y	TO BODY HARNESS
3J	L	TO BODY HARNESS
4J	L/B	TO BODY HARNESS
5J	B	TO BODY HARNESS
6J	BR	TO BODY HARNESS
7J	BG	TO BODY HARNESS
8J	SB	TO BODY HARNESS
9J	BR	TO BODY HARNESS
10J	R	TO BODY HARNESS
11J	O/B	TO BODY HARNESS
12J	L	TO BODY HARNESS
13J	W	TO BODY HARNESS
14J	Y	TO BODY HARNESS
15J	–	TO BODY HARNESS
16J	R	TO BODY HARNESS
17J	G	TO BODY HARNESS
18J	SB	TO BODY HARNESS
19J	O	TO BODY HARNESS
20J	O/B	TO BODY HARNESS
21J	Y	TO BODY HARNESS
22J	P	TO BODY HARNESS
23J	W	TO BODY HARNESS
24J	W/R	TO BODY HARNESS
25J	P	TO BODY HARNESS
26J	L	TO BODY HARNESS
27J	R	TO BODY HARNESS

28J	L	TO BODY HARNESS
29J	G/O	TO BODY HARNESS
30J	SB	TO BODY HARNESS
31J	L/G	TO BODY HARNESS
32J	R	TO BODY HARNESS
33J	BG	TO BODY HARNESS
34J	Y	TO BODY HARNESS
35J	P	TO BODY HARNESS
36J	G/R	TO BODY HARNESS
37J	LG	TO BODY HARNESS
38J	SB	TO BODY HARNESS
39J	Y	TO BODY HARNESS
40J	SB	TO BODY HARNESS
41J	L	TO BODY HARNESS
42J	L	TO BODY HARNESS
43J	W	TO BODY HARNESS
44J	BR	TO BODY HARNESS
45J	BG	TO BODY HARNESS
46J	P	TO BODY HARNESS
47J	O	TO BODY HARNESS
48J	V	TO BODY HARNESS
49J	BR	TO BODY HARNESS
50J	G/W	TO BODY HARNESS
51J	–	TO BODY HARNESS
52J	SHIELD	TO BODY HARNESS
53J	R	TO BODY HARNESS
54J	L	TO BODY HARNESS
55J	R	TO BODY HARNESS
56J	W	TO BODY HARNESS
57J	R	TO BODY HARNESS
58J	B	TO BODY HARNESS
59J	–	TO BODY HARNESS
60J	SHIELD	TO BODY HARNESS
61J	G	TO BODY HARNESS
62J	–	TO BODY HARNESS
63J	R/W	TO BODY HARNESS
64J	L/W	TO BODY HARNESS
65J	SHIELD	TO BODY HARNESS
66J	B	TO BODY HARNESS
67J	SHIELD	TO BODY HARNESS
68J	W	TO BODY HARNESS
69J	SHIELD	TO BODY HARNESS
70J	B/R	TO BODY HARNESS
71J	L/W	TO BODY HARNESS
72J	–	TO BODY HARNESS
73J	–	TO BODY HARNESS
74J	SHIELD	TO BODY HARNESS
75J	R	TO BODY HARNESS
76J	O	TO BODY HARNESS
77J	SHIELD	TO BODY HARNESS
78J	W	TO BODY HARNESS
79J	B	TO BODY HARNESS
80J	W	TO BODY HARNESS

81J	SHIELD	TO BODY HARNESS
82J	L/R	TO BODY HARNESS
83J	–	TO BODY HARNESS
84J	–	TO BODY HARNESS
85J	W	TO BODY HARNESS
86J	G	TO BODY HARNESS
87J	W	TO BODY HARNESS
88J	SHIELD	TO BODY HARNESS
89J	R	TO BODY HARNESS
90J	L	TO BODY HARNESS
91J	L/B	TO BODY HARNESS
92J	SB	TO BODY HARNESS
93J	B	TO BODY HARNESS
94J	LG	TO BODY HARNESS
95J	L	TO BODY HARNESS
96J	G	TO BODY HARNESS
97J	B/Y	TO BODY HARNESS
98J	L/B	TO BODY HARNESS
99J	W/L	TO BODY HARNESS
100J	Y	TO BODY HARNESS

Connector No.	M43
Connector Name	AV CONTROL UNIT (WITH AUDIO AMPLIFIER)
Connector Type	NH18FW-CS2
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	G/W	AMP ON
2	L	FR SP LH+
3	W	FR SP LH-
4	L	RR SP LH+
5	BR	RR SP LH-
6	–	–
7	R	ACC
8	L	CAN-H
9	L	ILL (+)
10	SHIELD	PRE AMP SHIELD
11	B	FR SP RH+
12	Y	FR SP RH-
13	B/W	RR SP RH+
14	P	RR SP RH-
15	–	–
16	–	–
17	P	CAN-L

18	G	SPEED SIG
19	W	BAT
20	B	GND

Connector No.	M90
Connector Name	CAN GATEWAY
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	CAN 1 H
2	–	–
3	BG	BATTERY
4	L	CAN 2 H
5	B	GND
6	L	CAN 3 H
7	P	CAN 1 L
8	–	–
9	G	IGNITION
10	R	CAN 2 L
11	B	GND
12	R	CAN 3 L

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CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITHOUT BLIND SPOT WARNING SYSTEMS

Connector No.	M97
Connector Name	AV CONTROL UNIT (WITHOUT AUDIO AMPLIFIER)
Connector Type	NH18FW-CS2
Connector Color	WHITE

H.S.

19	10	11	12	13	14	15	16	17	18	20
	1	2	3	4	5	6	7	8	9	

Terminal No.	Color of Wire	Signal Name
1	–	–
2	L/W	FR SP LH+
3	L/R	FR SP LH-
4	SB	RR SP LH+
5	B/Y	RR SP LH-
6	–	–
7	R	ACC
8	L	CAN-H
9	L	ILL (+)
10	–	–
11	W/B	FR SP RH+
12	L/B	FR SP RH-
13	O/L	RR SP RH+
14	R/L	RR SP RH-
15	–	–
16	–	–
17	P	CAN-L
18	G	SPEED SIG
19	W	BAT
20	B	GND

Connector No.	M114
Connector Name	SONAR CONTROL UNIT
Connector Type	TH24FW-NH
Connector Color	WHITE

H.S.

12	11	10	9	8	7	6	5	4	3	2	1
24	23	22	21	20	19	18	17	16	15	14	13

Terminal No.	Color of Wire	Signal Name
1	W/L	FRONT INNER RIGHT SENSOR SIGNAL
2	W/R	FRONT INNER LEFT SENSOR SIGNAL
3	O	FRONT OUTER LEFT SENSOR SIGNAL
4	BG	FRONT OUTER RIGHT SENSOR SIGNAL
5	L	CAN-H
6	R	CAN-L
7	–	–
8	–	–
9	L	REAR INNER RIGHT SENSOR SIGNAL
10	O	REAR OUTER RIGHT SENSOR SIGNAL
11	–	–
12	G/R	IGN
13	W	FRONT SENSOR GND
14	BG	REAR SENSOR GND
15	B	SYSTEM GND
16	G	SWITCH INPUT (WITHOUT DRIVER ASSISTANCE SYSTEM)
16	–	- (WITH DRIVER ASSISTANCE SYSTEM)
17	G/B	STATUS LED (WITHOUT DRIVER ASSISTANCE SYSTEM)
17	–	- (WITH DRIVER ASSISTANCE SYSTEM)
18	G	SPEAKER 2 (FRONT) SIGNAL -
19	W	SPEAKER POWER
20	–	–
21	Y	REAR INNER LEFT SENSOR SIGNAL
22	B	REAR OUTER LEFT SENSOR SIGNAL
23	–	–
24	G/W	REVERSE POSITION INPUT

Connector No.	M123
Connector Name	LOW TIRE PRESSURE WARNING CONTROL UNIT
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6
7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	P	CAN-L
2	L	CAN-H
3	–	–
4	–	–
5	–	–
6	–	–
7	–	IGN SW
8	–	–
9	–	–
10	B	GND
11	Y	+B
12	–	–

Connector No.	M137
Connector Name	A/C AUTO AMP.
Connector Type	TH40FW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	B	GND
3	SB	BAT
4	BR	TX (FR CONT)
5	–	–
6	–	–
7	W	AMB SENS
8	BR	STRG HEATER SW
9	G	SUN SENS
10	–	–
11	–	–
12	–	–
13	W	IGN2(ACC)
14	P	FAN GATE
15	Y	RR DEF ON
16	G	LIN SIG
17	W	VACTR
18	–	–
19	G/R	PTC1 - (WITH CUMMINS 5.0L)
20	P	STRG HEATER FLY
21	P	CAN-L
22	B	P-GND
23	G	IGN
24	V	RX (FR CONT)
25	–	–
26	R	SENS GND
27	G	INCAR SENS
28	P	INTAKE SENS
29	–	–
30	–	–
31	–	–
32	–	–
33	Y	COMP ON
34	L/W	FAN FB
35	B/W	RR DEF F/B
36	–	–
37	B	ACTR GND
38	W	FAN ON
39	LG	PTC2 - (WITH CUMMINS 5.0L)
40	SB	PTC3 - (WITH CUMMINS 5.0L)

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CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITHOUT BLIND SPOT WARNING SYSTEMS

Connector No.	M197
Connector Name	TCU
Connector Type	TH40FB-NH
Connector Color	BLACK

H.S.

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21

39	-	-
40	-	-

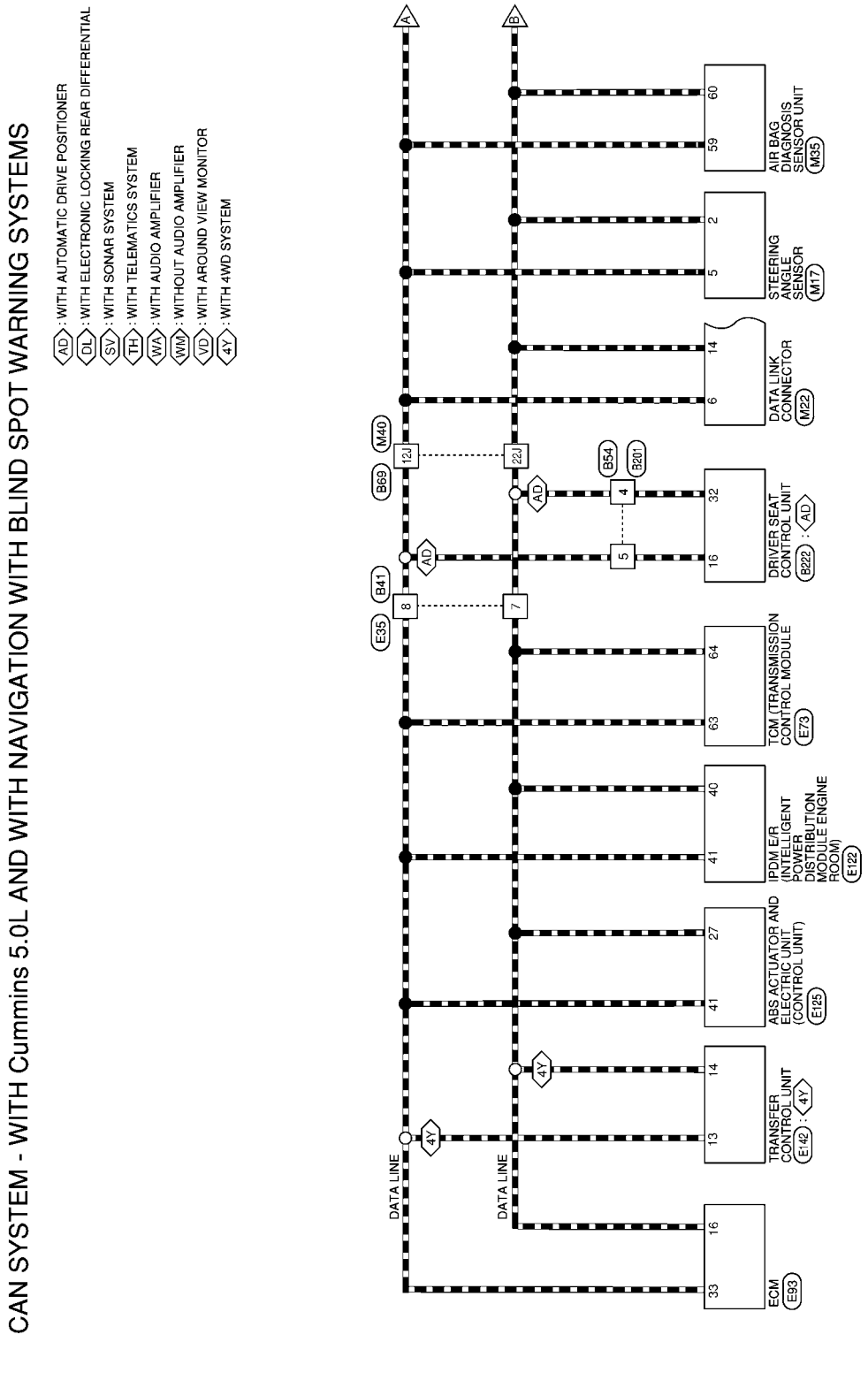
Terminal No.	Color of Wire	Signal Name
1	Y	BAT
2	R	ACC
3	R	ACC OUT
4	-	-
5	W/L	LED A
6	L	CAN-H
7	P	CAN-L
8	-	-
9	-	-
10	G/R	IGN
11	SHIELD	MIC OUT GND
12	W	MIC OUT SIGNAL
13	-	-
14	-	-
15	-	-
16	SHIELD	MIC GND
17	W	MIC SIGNAL
18	R	MIC VCC
19	-	-
20	-	-
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	SB	M-CAN H
27	LG	M-CAN L
28	B	GND
29	B	GND
30	-	-
31	W	AUDIO HU OUT+
32	R	AUDIO HU OUT-
33	-	-
34	-	-
35	-	-
36	-	-
37	P	ECALL SW
38	-	-

AAMIA4446GB

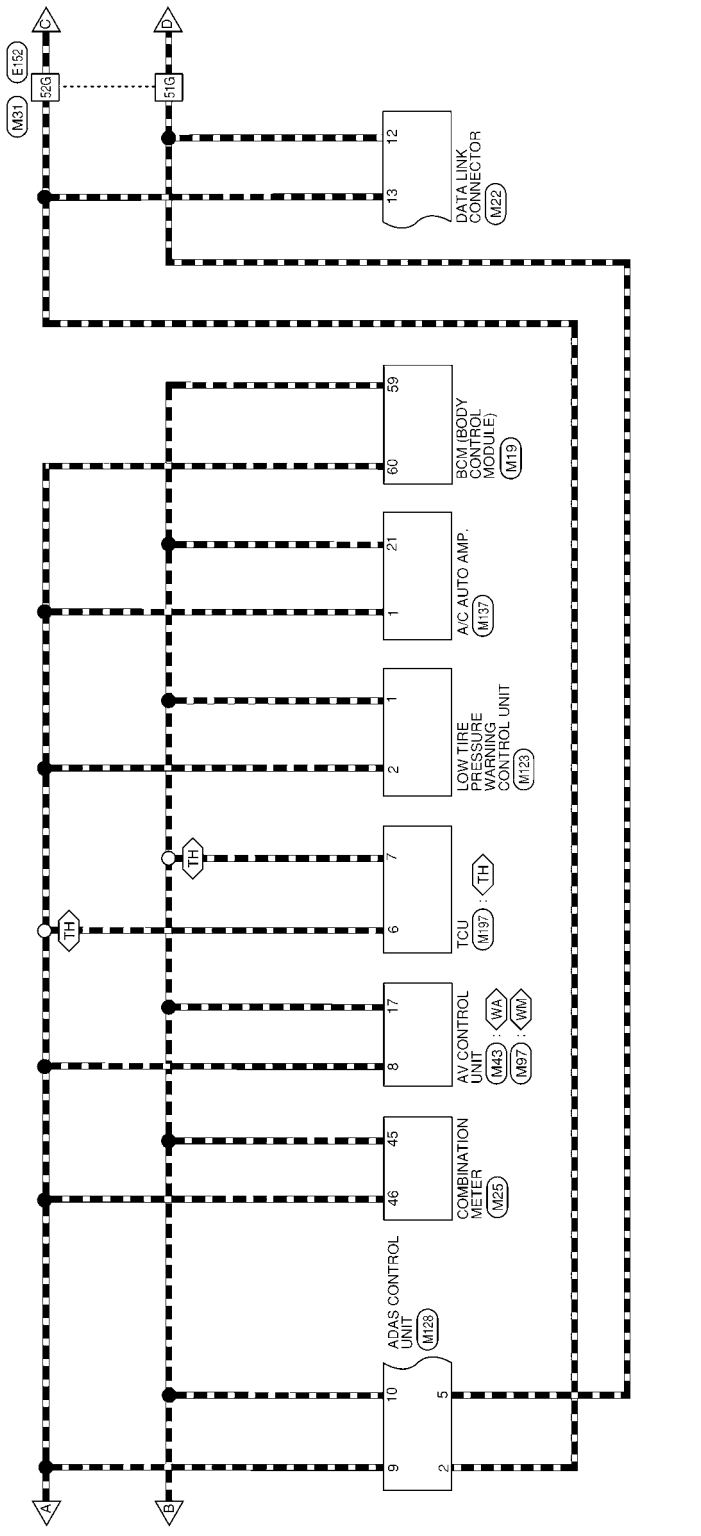
CAN SYSTEM (WITH CUMMINS 5.0L AND WITH NAVIGATION WITH BLIND SPOT WARNING SYSTEMS)

Wiring Diagram

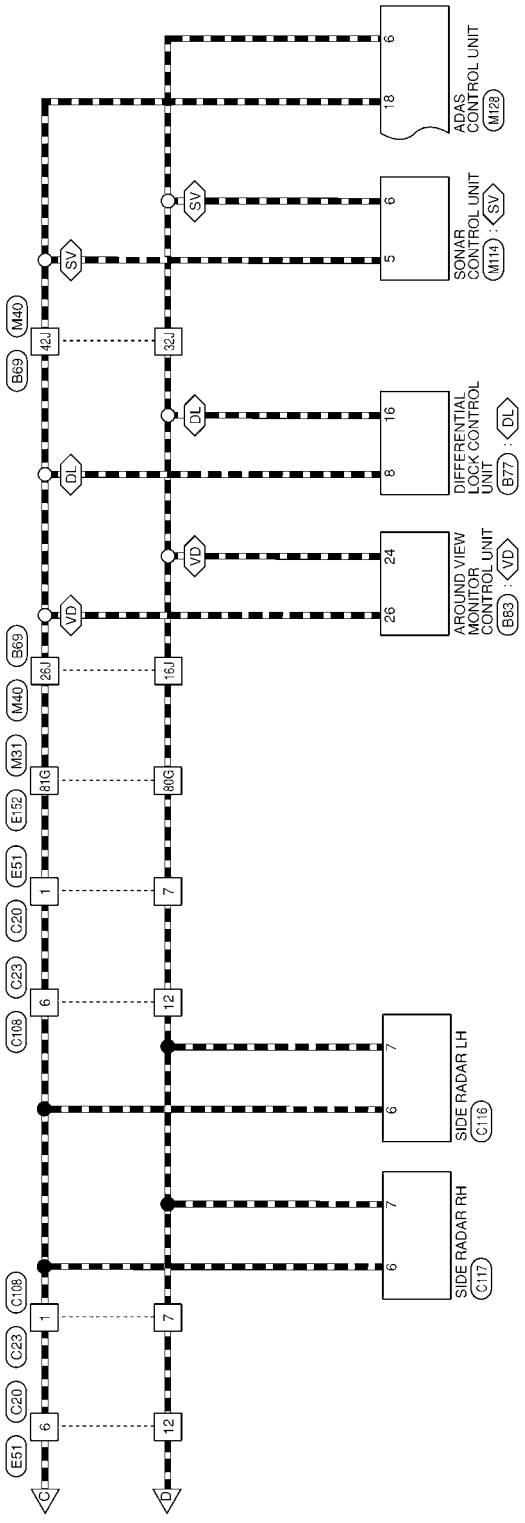
INFOID:0000000014387284



AAMWA2269GB



AAMWA1962GB



AAMWA1963GB

CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITH BLIND SPOT WARNING SYSTEMS

Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Type	NS12MW-CS
Connector Color	WHITE

H.S.

1	2	3		4	5
6	7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	Y	TO ENGINE ROOM HARNESS
2	V	TO ENGINE ROOM HARNESS
3	L	TO ENGINE ROOM HARNESS
4	L/G	TO ENGINE ROOM HARNESS
5	R/G	TO ENGINE ROOM HARNESS
6	SB	TO ENGINE ROOM HARNESS
7	P	TO ENGINE ROOM HARNESS
8	L	TO ENGINE ROOM HARNESS
9	SHIELD	TO ENGINE ROOM HARNESS
10	W/G	TO ENGINE ROOM HARNESS
11	L	TO ENGINE ROOM HARNESS
12	BR	TO ENGINE ROOM HARNESS

Connector No.	B54
Connector Name	WIRE TO WIRE
Connector Type	NS12FBR-CS
Connector Color	BROWN

H.S.

1	2		3	4	5
6	7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	L	TO FRONT SEAT LH HARNESS
2	BR	TO FRONT SEAT LH HARNESS
3	B	TO FRONT SEAT LH HARNESS
4	P	TO FRONT SEAT LH HARNESS
5	L	TO FRONT SEAT LH HARNESS
6	L/B	TO FRONT SEAT LH HARNESS
7	Y/L	TO FRONT SEAT LH HARNESS
8	BR/Y	TO FRONT SEAT LH HARNESS
9	V	TO FRONT SEAT LH HARNESS
10	LG/B	TO FRONT SEAT LH HARNESS
11	SB	TO FRONT SEAT LH HARNESS

12	Y/GR	TO FRONT SEAT LH HARNESS

Connector No.	B77
Connector Name	DIFFERENTIAL LOCK CONTROL UNIT
Connector Type	TH16FW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

Terminal No.	Color of Wire	Signal Name
1	Y	SOLENOID (+)
2	V	SOLENOID (-)
3	-	-
4	-	-
5	G/O	DIFF LOCK ON SW
6	-	-
7	P	IGN
8	L	CAN-H
9	BR	SOL BATT
10	B	GND
11	B	GND
12	L	DIFF LOCK POSITION SW
13	-	-
14	O	DIFF LOCK OFF SW
15	Y/R	VBATT
16	R	CAN-L

Connector No.	B83
Connector Name	AROUND VIEW MONITOR CONTROL UNIT
Connector Type	TH40FW-NH
Connector Color	WHITE

H.S.

2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39

Terminal No.	Color of Wire	Signal Name
1	-	-
2	-	-
3	SHIELD	VIDEO OUTPUT GND
4	G	VIDEO OUTPUT SIGNAL
5	L/G	FV POWER GND
6	L	FV POWER 6.2V
7	SHIELD	FV VIDEO GND
8	W/G	FV VIDEO SIGNAL
9	O/L	SV1 POWER GND
10	O	SV1 POWER 6.2V
11	SHIELD	SV1 VIDEO GND
12	L/G	SV1 VIDEO SIGNAL
13	B	SV2 POWER GND
14	W	SV2 POWER 6.2V
15	SHIELD	SV2 VIDEO GND
16	R	SV2 VIDEO SIGNAL
17	L/W	RV POWER GND
18	L	RV POWER 6.2V
19	R/W	RV VIDEO GND
20	R	RV VIDEO SIGNAL
21	-	-
22	-	-
23	-	-
24	R	CAN-L
25	-	-
26	L	CAN-H
27	-	-
28	-	-
29	-	-
30	-	-
31	-	-
32	G/W	REVERSE
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	-	-
39	B	GND
40	G/R	IGN

Connector No.	B201
Connector Name	WIRE TO WIRE
Connector Type	NS12MBR-CS
Connector Color	BROWN

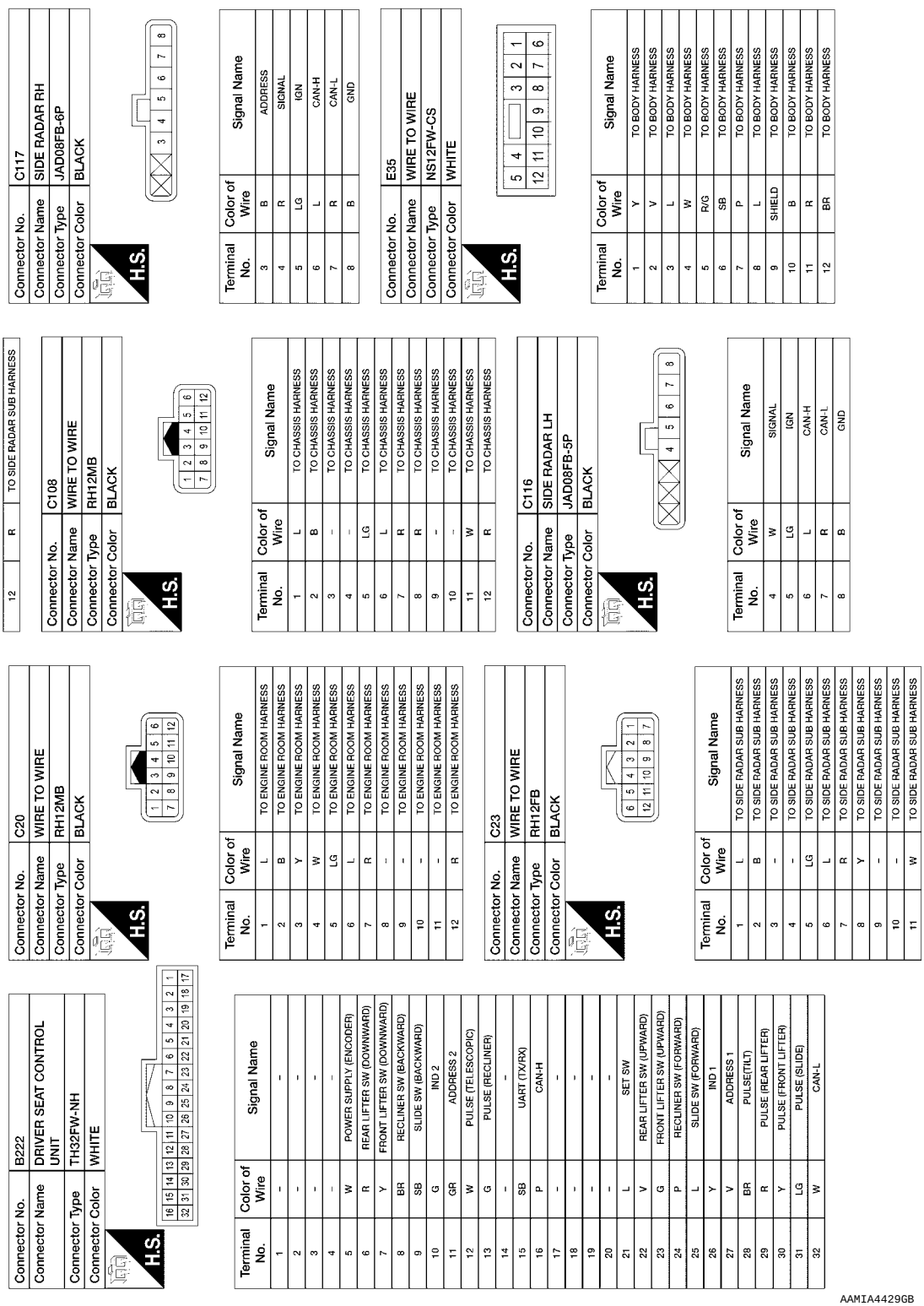
H.S.

5	4	3		2	1
12	11	10	9	8	7	6

Terminal No.	Color of Wire	Signal Name
1	BR	TO BODY HARNESS
2	W	TO BODY HARNESS
3	B	TO BODY HARNESS
4	W	TO BODY HARNESS
5	P	TO BODY HARNESS
6	R	TO BODY HARNESS
7	Y	TO BODY HARNESS
8	G	TO BODY HARNESS
9	V	TO BODY HARNESS
10	GR	TO BODY HARNESS
11	L	TO BODY HARNESS
12	SB	TO BODY HARNESS

AAMIA4428GB

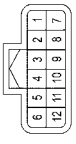
CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITH BLIND SPOT WARNING SYSTEMS



CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITH BLIND SPOT WARNING SYSTEMS

Connector No.	E51
Connector Name	WIRE TO WIRE
Connector Type	RH12FB
Connector Color	BLACK

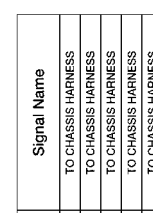
H.S.



Terminal No.	Color of Wire	Signal Name
1	L	TO CHASSIS HARNESS
2	B	TO CHASSIS HARNESS
3	R	TO CHASSIS HARNESS
4	W	TO CHASSIS HARNESS
5	G	TO CHASSIS HARNESS
6	L	TO CHASSIS HARNESS
7	R	TO CHASSIS HARNESS
8	–	TO CHASSIS HARNESS
9	–	TO CHASSIS HARNESS
10	–	TO CHASSIS HARNESS
11	–	TO CHASSIS HARNESS
12	R	TO CHASSIS HARNESS

Connector No.	E73
Connector Name	TCM (TRANSMISSION CONTROL MODULE) (WITH CUMMINS 5.0L)
Connector Type	AAH28FW-TK7
Connector Color	WHITE

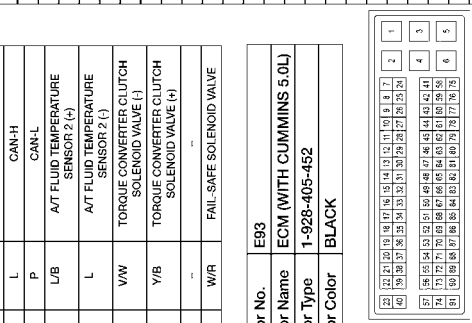
H.S.



Terminal No.	Color of Wire	Signal Name
36	B	GND
37	B	GND
38	L/Y	LINE PRESSURE SOLENOID VALVE (+)
39	O	LINE PRESSURE SOLENOID VALVE (-)
40	–	–
41	R/W	BATT
42	R/W	BATT
43	L/R	C1 CLUTCH SOLENOID VALVE (+)
44	R/W	C1 CLUTCH SOLENOID VALVE (-)
45	R/Y	C2 CLUTCH SOLENOID VALVE (-)
46	R/Y	C2 CLUTCH SOLENOID VALVE (+)
47	B/R	C3 CLUTCH SOLENOID VALVE (+)
48	W	C3 CLUTCH SOLENOID VALVE (-)
49	R/L	B1 BRAKE SOLENOID VALVE (-)
50	L/W	B1 BRAKE SOLENOID VALVE (+)
51	–	–
52	–	–
53	–	–
54	P	ACCESSORY RELAY-2
55	–	–
56	–	–
57	V	A/T FLUID TEMPERATURE SENSOR 1 (+)
58	SB	A/T FLUID TEMPERATURE SENSOR 1 (-)
59	Y	B2 BRAKE SOLENOID VALVE (-)
60	W/L	B2 BRAKE SOLENOID VALVE (+)
61	–	–
62	–	–
63	L	CAN-H
64	P	CAN-L
65	L/B	A/T FLUID TEMPERATURE SENSOR 2 (+)
66	L	A/T FLUID TEMPERATURE SENSOR 2 (-)
67	V/W	TORQUE CONVERTER CLUTCH SOLENOID VALVE (-)
68	Y/B	TORQUE CONVERTER CLUTCH SOLENOID VALVE (+)
69	–	–
70	W/R	FAIL-SAFE SOLENOID VALVE
8	–	–
9	–	–
10	–	–
11	–	–
12	–	–
13	–	–
14	–	–
15	L/R	AT SENSOR RTN
16	P	CAN-L
17	–	–
18	G	J1939 +
19	–	–
20	G	SMART POWER LSD
21	–	–
22	–	–
23	–	–
24	SB	DPF OUT PRESS
25	–	–
26	R/L	REF PRESS SENS SIGNAL
27	–	–
28	–	–
29	–	–
30	–	–
31	–	–
32	Y	AT SSR SUPPLY
33	L	CAN-H
34	–	–
35	Y	J1939 +
36	–	–
37	L	MAIN RLY LSD
38	–	–
39	–	–
40	GR	FUEL PUMP RLY SIG
41	BR	SW RETURN
42	–	–
43	–	–
44	–	–
45	–	–
46	–	–
47	–	–
48	–	–
49	–	–
50	–	–
51	–	–
52	–	–
53	R/G	BRAKE SW OPEN
54	L	BRAKE NC
55	–	–
56	–	–
57	–	–
58	–	–
59	G/Y	ASCD SIGNAL
60	–	–
61	B/Y	ASCD RETURN
62	R	PPS2 RETURN
63	R	PPS1 RETURN
64	R/W	REF PRESS SENS RETURN
65	L/W	IGN/KEYSWITCH
66	–	–
67	–	–
68	–	–
69	–	–
70	–	–
71	–	–
72	–	–
73	B	DOSER RETURN
74	GR/R	DOSER HS
75	L/W	COOLANT SIGNAL
76	–	–
77	L	WIF SIGNAL
78	L	PPS2 SIGNAL
79	BR	PPS1 SIGNAL
80	W	PPS1 SUPPLY
81	B	PPS2 SUPPLY
82	–	–
83	BR	BATTERY
84	–	–
85	–	–
86	–	–
87	–	–
88	–	–
89	–	–
90	–	–
91	–	–

Connector No.	E93
Connector Name	ECM (WITH CUMMINS 5.0L)
Connector Type	1-928-405-452
Connector Color	BLACK

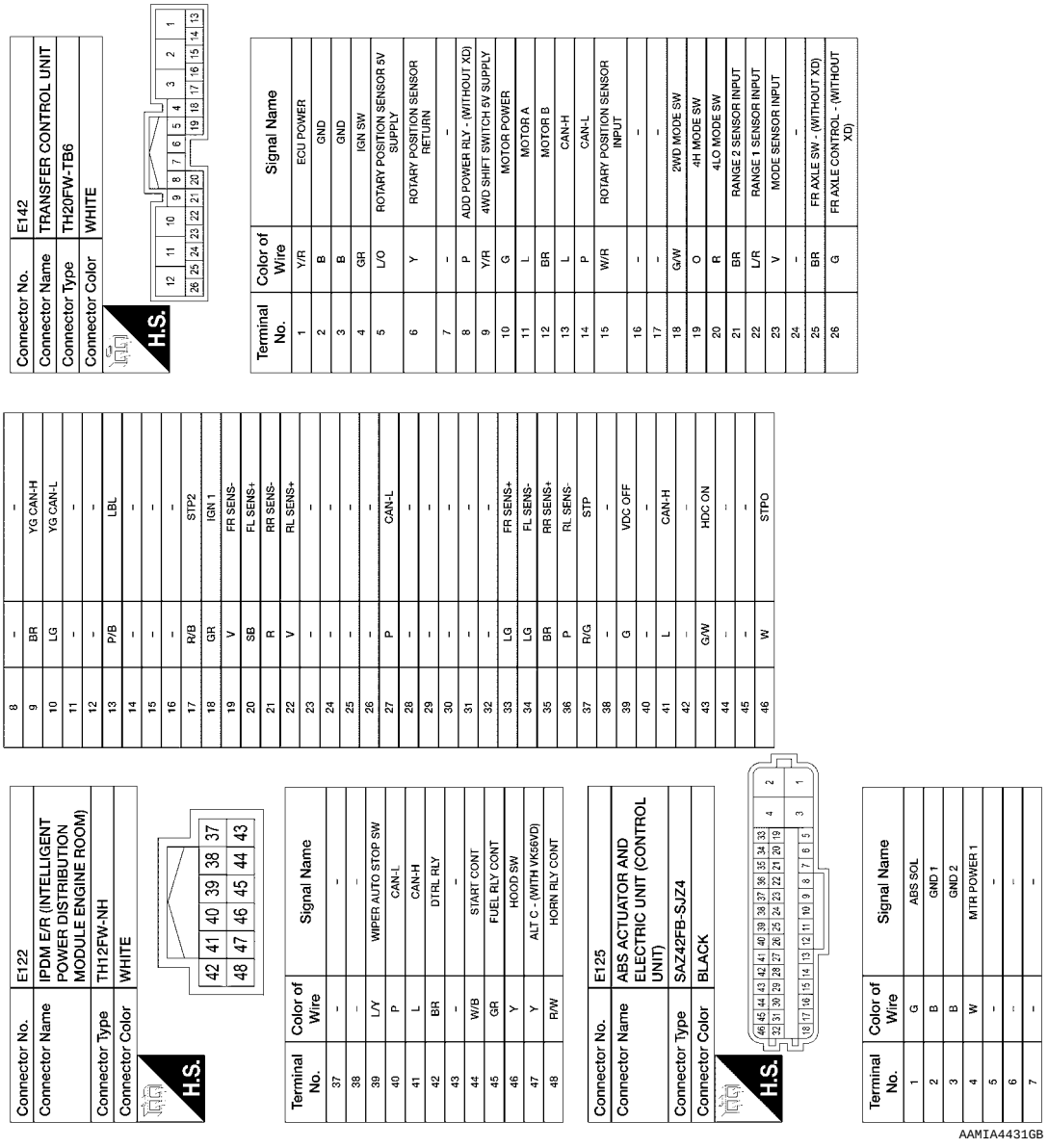
H.S.



Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	B	GROUND
3	BR	SW BATTERY
4	B	GROUND
5	BR	SW BATTERY
6	BR	SW BATTERY
7	O	DOF DELTA PRESS

AAMIA4430GB

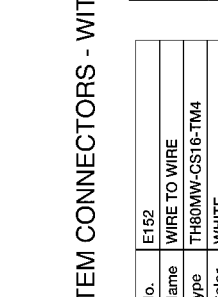
CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITH BLIND SPOT WARNING SYSTEMS



CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITH BLIND SPOT WARNING SYSTEMS

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

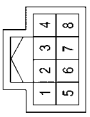
H.S.



Terminal No.	Color of Wire	Signal Name
1G	G	TO MAIN HARNESS
2G	B/R	TO MAIN HARNESS
3G	W/B	TO MAIN HARNESS
4G	BR/W	TO MAIN HARNESS
5G	BR	TO MAIN HARNESS
6G	P	TO MAIN HARNESS - (WITH VK56VD)
6G	R/W	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
7G	Y	TO MAIN HARNESS
8G	G	TO MAIN HARNESS
9G	R	TO MAIN HARNESS
10G	W	TO MAIN HARNESS
11G	R/G	TO MAIN HARNESS
12G	W/B	TO MAIN HARNESS
13G	BR	TO MAIN HARNESS
14G	Y/B	TO MAIN HARNESS
15G	G/W	TO MAIN HARNESS
16G	G	TO MAIN HARNESS
17G	G/Y	TO MAIN HARNESS
18G	G/Y	TO MAIN HARNESS
19G	Y/V	TO MAIN HARNESS
20G	G/Y	TO MAIN HARNESS
21G	B/Y	TO MAIN HARNESS
22G	G/R	TO MAIN HARNESS
23G	Y/R	TO MAIN HARNESS
24G	G/B	TO MAIN HARNESS
25G	R/W	TO MAIN HARNESS
26G	R	TO MAIN HARNESS
27G	LG	TO MAIN HARNESS
28G	G/B	TO MAIN HARNESS
29G	G/B	TO MAIN HARNESS
30G	BR/Y	TO MAIN HARNESS
31G	P	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
31G	R	TO MAIN HARNESS - (WITH VK56VD)
32G	P	TO MAIN HARNESS
33G	Y/L	TO MAIN HARNESS
34G	GR	TO MAIN HARNESS
35G	G/R	TO MAIN HARNESS
36G	SB	TO MAIN HARNESS
37G	R/W	TO MAIN HARNESS
38G	BR	TO MAIN HARNESS
39G	BR	TO MAIN HARNESS
40G	–	TO MAIN HARNESS
41G	R/G	TO MAIN HARNESS
42G	O	TO MAIN HARNESS
43G	B	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
43G	G	TO MAIN HARNESS - (WITH VK56VD)
44G	R/Y	TO MAIN HARNESS
45G	G	TO MAIN HARNESS
46G	LG	TO MAIN HARNESS
47G	R	TO MAIN HARNESS
48G	W	TO MAIN HARNESS
49G	–	TO MAIN HARNESS
50G	BR	TO MAIN HARNESS
51G	R	TO MAIN HARNESS
52G	L	TO MAIN HARNESS
53G	W	TO MAIN HARNESS
54G	W	TO MAIN HARNESS
55G	G	TO MAIN HARNESS
56G	W	TO MAIN HARNESS
57G	Y	TO MAIN HARNESS
58G	BG	TO MAIN HARNESS
59G	BG	TO MAIN HARNESS
60G	BG	TO MAIN HARNESS
61G	B	TO MAIN HARNESS
62G	W	TO MAIN HARNESS
63G	R	TO MAIN HARNESS
64G	W/L	TO MAIN HARNESS
65G	W/R	TO MAIN HARNESS
66G	BG	TO MAIN HARNESS
67G	BG	TO MAIN HARNESS
68G	B	TO MAIN HARNESS
69G	Y	TO MAIN HARNESS
70G	L	TO MAIN HARNESS
71G	R/W	TO MAIN HARNESS
72G	L/W	TO MAIN HARNESS
73G	SHIELD	TO MAIN HARNESS
74G	W	TO MAIN HARNESS
75G	R	TO MAIN HARNESS
76G	R/G	TO MAIN HARNESS
77G	G	TO MAIN HARNESS
78G	W	TO MAIN HARNESS
79G	–	TO MAIN HARNESS
80G	R	TO MAIN HARNESS
81G	L	TO MAIN HARNESS
82G	R	TO MAIN HARNESS
83G	L	TO MAIN HARNESS
84G	L	TO MAIN HARNESS
85G	W/B	TO MAIN HARNESS
86G	B/R	TO MAIN HARNESS
87G	W/B	TO MAIN HARNESS
88G	P	TO MAIN HARNESS
89G	L	TO MAIN HARNESS
90G	G	TO MAIN HARNESS
91G	G	TO MAIN HARNESS
92G	V/W	TO MAIN HARNESS
93G	BR	TO MAIN HARNESS
94G	G	TO MAIN HARNESS
95G	G	TO MAIN HARNESS
96G	W	TO MAIN HARNESS
97G	R	TO MAIN HARNESS
98G	W/B	TO MAIN HARNESS
99G	BR	TO MAIN HARNESS
100G	GR/W	TO MAIN HARNESS

Connector No.	M17
Connector Name	STEERING ANGLE SENSOR
Connector Type	TH08FW-NH
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	B	STRG ANGLE SENS GND
2	P	CAN-L
3	–	–
4	O/L	STRG ANGLE SENS POWER
5	L	CAN-H
6	–	–
7	–	–
8	–	–

AAMIA4432GB

CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITH BLIND SPOT WARNING SYSTEMS

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH
Connector Color	BLACK

H.S.

60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61

Terminal No.	Color of Wire	Signal Name
41	Y/L	TRAILER LIGHT CHECK RELAY OUT
42	R/Y	CARGO LAMP OUT
43	–	–
44	–	–
45	–	–
46	–	–
47	–	–
48	R	HIGH SIDE START SW LED
49	–	–
50	–	–
51	–	–
52	W	AUDIO DONGLE
53	–	–
54	W/L	PW UART
55	W/B	L&R SENSOR K-LINE
56	–	–
57	–	–
58	–	–
59	P	CAN-L
60	L	CAN-H
61	O	REAR DEFOGGER RELAY OUT
62	W	STARTER RELAY OUT
63	–	–
64	P	BUZZER OUT
65	–	–
66	W	BLOWER FAN RELAY OUT
67	G	IGN ELEC RELAY OUT 2
68	L	MR OUTPUT
69	R/B	AT DEVICE OUT
70	P	IGN USM OUT 1
71	O	DR REQUEST SW
72	G	AS REQUEST SW
73	–	–
74	–	–
75	L/W	COMBI SW OUT 5
76	P	COMBI SW OUT 4
77	L	COMBI SW OUT 3
78	O/B	COMBI SW OUT 2
79	R/W	COMBI SW OUT 1
80	–	–

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW
Connector Color	WHITE

H.S.

9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	LG	M-CAN-L
4	B	BODY GND
5	B	ENG GND
6	L	CAN-H
7	BR	K-LINE
8	G/R	IGN SW
9	–	–
10	–	–
11	SB	M-CAN-H
12	R	CAN-L
13	L	CAN-H
14	P	CAN-L
15	–	–
16	Y	BATTERY

Connector No.	M25
Connector Name	COMBINATION METER (WITH TYPE A)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

46	45	44	43	42	41
52	51	50	49	48	47

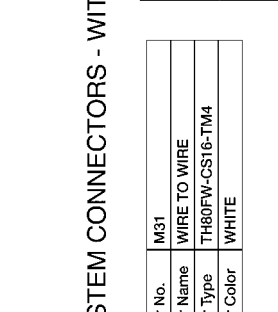
Terminal No.	Color of Wire	Signal Name
41	W	IGN
42	R	BAT
43	Y/V	FUEL SENSOR GND
44	GR	ILL CONT OUTPUT
45	P	CAN-L
46	L	CAN-H
47	B	G1
48	BR/Y	FUEL SENSOR
49	–	–
50	–	–
51	LG	M CAN-L
52	SB	M CAN-H

AAMIA4433GB

CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITH BLIND SPOT WARNING SYSTEMS

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

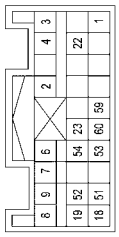
H.S.



Terminal No.	Color of Wire	Signal Name
1G	G	TO ENGINE ROOM HARNESS
2G	B/R	TO ENGINE ROOM HARNESS
3G	W	TO ENGINE ROOM HARNESS
4G	BR/W	TO ENGINE ROOM HARNESS
5G	–	TO ENGINE ROOM HARNESS
6G	R/W	TO ENGINE ROOM HARNESS
7G	Y	TO ENGINE ROOM HARNESS
8G	G	TO ENGINE ROOM HARNESS
9G	R	TO ENGINE ROOM HARNESS
10G	W	TO ENGINE ROOM HARNESS
11G	R/G	TO ENGINE ROOM HARNESS
12G	W/B	TO ENGINE ROOM HARNESS
13G	BR	TO ENGINE ROOM HARNESS
14G	Y/B	TO ENGINE ROOM HARNESS
15G	G/W	TO ENGINE ROOM HARNESS
16G	G	TO ENGINE ROOM HARNESS
17G	O	TO ENGINE ROOM HARNESS
18G	G/Y	TO ENGINE ROOM HARNESS
19G	Y/V	TO ENGINE ROOM HARNESS
20G	G/Y	TO ENGINE ROOM HARNESS
21G	B/Y	TO ENGINE ROOM HARNESS
22G	G/R	TO ENGINE ROOM HARNESS
23G	Y/R	TO ENGINE ROOM HARNESS
24G	G/B	TO ENGINE ROOM HARNESS
25G	R/W	TO ENGINE ROOM HARNESS
26G	R	TO ENGINE ROOM HARNESS
27G	LG	TO ENGINE ROOM HARNESS
28G	G/B	TO ENGINE ROOM HARNESS
29G	G/B	TO ENGINE ROOM HARNESS
30G	BR/Y	TO ENGINE ROOM HARNESS
31G	R	TO ENGINE ROOM HARNESS
32G	R	TO ENGINE ROOM HARNESS
33G	Y/L	TO ENGINE ROOM HARNESS
34G	GR	TO ENGINE ROOM HARNESS
35G	G/R	TO ENGINE ROOM HARNESS
36G	SB	TO ENGINE ROOM HARNESS
37G	R/W	TO ENGINE ROOM HARNESS
38G	BR	TO ENGINE ROOM HARNESS
39G	BR	TO ENGINE ROOM HARNESS
40G	–	TO ENGINE ROOM HARNESS
41G	R/G	TO ENGINE ROOM HARNESS
42G	O	TO ENGINE ROOM HARNESS
43G	G	TO ENGINE ROOM HARNESS
44G	R/Y	TO ENGINE ROOM HARNESS
45G	G	TO ENGINE ROOM HARNESS
46G	LG	TO ENGINE ROOM HARNESS
47G	R	TO ENGINE ROOM HARNESS
48G	W	TO ENGINE ROOM HARNESS
49G	–	TO ENGINE ROOM HARNESS
50G	BR	TO ENGINE ROOM HARNESS
51G	R	TO ENGINE ROOM HARNESS
52G	L	TO ENGINE ROOM HARNESS
53G	W	TO ENGINE ROOM HARNESS
54G	W	TO ENGINE ROOM HARNESS
55G	G	TO ENGINE ROOM HARNESS
56G	W	TO ENGINE ROOM HARNESS
57G	Y	TO ENGINE ROOM HARNESS
58G	BG	TO ENGINE ROOM HARNESS
59G	BG	TO ENGINE ROOM HARNESS
60G	BG	TO ENGINE ROOM HARNESS
61G	O	TO ENGINE ROOM HARNESS
62G	W	TO ENGINE ROOM HARNESS
63G	O	TO ENGINE ROOM HARNESS
64G	W/L	TO ENGINE ROOM HARNESS
65G	W/R	TO ENGINE ROOM HARNESS
66G	BG	TO ENGINE ROOM HARNESS
67G	O	TO ENGINE ROOM HARNESS
68G	B	TO ENGINE ROOM HARNESS
69G	Y	TO ENGINE ROOM HARNESS
70G	L	TO ENGINE ROOM HARNESS
71G	R/W	TO ENGINE ROOM HARNESS
72G	L/W	TO ENGINE ROOM HARNESS
73G	SHIELD	TO ENGINE ROOM HARNESS
74G	W	TO ENGINE ROOM HARNESS
75G	R	TO ENGINE ROOM HARNESS
76G	R/G	TO ENGINE ROOM HARNESS
77G	BG	TO ENGINE ROOM HARNESS
78G	P	TO ENGINE ROOM HARNESS
79G	–	TO ENGINE ROOM HARNESS
80G	R	TO ENGINE ROOM HARNESS
81G	L	TO ENGINE ROOM HARNESS
82G	R	TO ENGINE ROOM HARNESS
83G	L	TO ENGINE ROOM HARNESS
84G	L	TO ENGINE ROOM HARNESS
85G	W	TO ENGINE ROOM HARNESS
86G	B/R	TO ENGINE ROOM HARNESS
87G	W	TO ENGINE ROOM HARNESS
88G	G	TO ENGINE ROOM HARNESS
89G	P	TO ENGINE ROOM HARNESS
90G	G	TO ENGINE ROOM HARNESS
91G	P	TO ENGINE ROOM HARNESS
92G	V/W	TO ENGINE ROOM HARNESS
93G	BR	TO ENGINE ROOM HARNESS
94G	B	TO ENGINE ROOM HARNESS
95G	G	TO ENGINE ROOM HARNESS
96G	R	TO ENGINE ROOM HARNESS
97G	R	TO ENGINE ROOM HARNESS
98G	W/B	TO ENGINE ROOM HARNESS
99G	R	TO ENGINE ROOM HARNESS
100G	GR/W	TO ENGINE ROOM HARNESS

Connector No.	M35
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT (WITHOUT OCCUPANT CLASSIFICATION SYSTEM)
Connector Type	NH28FY-EX
Connector Color	YELLOW

H.S.



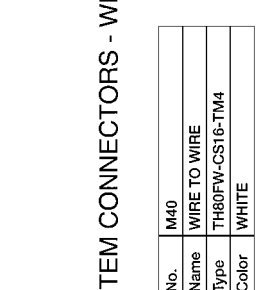
Terminal No.	Color of Wire	Signal Name
1	R	IGN
2	B	GND
3	Y	DR1 (+)
4	Y/B	DR1 (-)
6	O	AS1 (+)
7	G	AS1 (-)
8	P	AS2 (+)
9	Y	AS2 (-)
18	GR/R	ECZS (+)
19	GR/B	ECZS (-)
22	SHIELD	ECZS GND
23	O	AIRBAG WARN LAMP
51	LG/B	RH DOOR SATELLITE SENSOR+
52	Y/B	RH DOOR SATELLITE SENSOR -
53	L	LH DOOR SATELLITE SENSOR+
54	W	LH DOOR SATELLITE SENSOR -
59	L	CAN-H
60	P	CAN-L

AAMIA4434GB

CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITH BLIND SPOT WARNING SYSTEMS

Connector No.	M40
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.



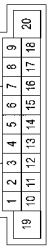
Terminal No.	Color of Wire	Signal Name
1J	G	TO BODY HARNESS
2J	R/Y	TO BODY HARNESS
3J	L	TO BODY HARNESS
4J	L/B	TO BODY HARNESS
5J	B	TO BODY HARNESS
6J	BR	TO BODY HARNESS
7J	BG	TO BODY HARNESS
8J	SB	TO BODY HARNESS
9J	BR	TO BODY HARNESS
10J	R	TO BODY HARNESS
11J	O/B	TO BODY HARNESS
12J	L	TO BODY HARNESS
13J	W	TO BODY HARNESS
14J	Y	TO BODY HARNESS
15J	–	TO BODY HARNESS
16J	R	TO BODY HARNESS
17J	G	TO BODY HARNESS
18J	SB	TO BODY HARNESS
19J	O	TO BODY HARNESS
20J	O/B	TO BODY HARNESS
21J	Y	TO BODY HARNESS
22J	P	TO BODY HARNESS
23J	W	TO BODY HARNESS
24J	W/R	TO BODY HARNESS
25J	P	TO BODY HARNESS
26J	L	TO BODY HARNESS
27J	R	TO BODY HARNESS

28J	L	TO BODY HARNESS
29J	G/O	TO BODY HARNESS
30J	SB	TO BODY HARNESS
31J	L/G	TO BODY HARNESS
32J	R	TO BODY HARNESS
33J	BG	TO BODY HARNESS
34J	Y	TO BODY HARNESS
35J	P	TO BODY HARNESS
36J	G/R	TO BODY HARNESS
37J	LG	TO BODY HARNESS
38J	SB	TO BODY HARNESS
39J	Y	TO BODY HARNESS
40J	SB	TO BODY HARNESS
41J	L	TO BODY HARNESS
42J	L	TO BODY HARNESS
43J	W	TO BODY HARNESS
44J	BR	TO BODY HARNESS
45J	BG	TO BODY HARNESS
46J	P	TO BODY HARNESS
47J	O	TO BODY HARNESS
48J	V	TO BODY HARNESS
49J	BR	TO BODY HARNESS
50J	G/W	TO BODY HARNESS
51J	–	TO BODY HARNESS
52J	SHIELD	TO BODY HARNESS
53J	R	TO BODY HARNESS
54J	L	TO BODY HARNESS
55J	R	TO BODY HARNESS
56J	W	TO BODY HARNESS
57J	R	TO BODY HARNESS
58J	B	TO BODY HARNESS
59J	–	TO BODY HARNESS
60J	SHIELD	TO BODY HARNESS
61J	G	TO BODY HARNESS
62J	–	TO BODY HARNESS
63J	R/W	TO BODY HARNESS
64J	L/W	TO BODY HARNESS
65J	SHIELD	TO BODY HARNESS
66J	B	TO BODY HARNESS
67J	SHIELD	TO BODY HARNESS
68J	W	TO BODY HARNESS
69J	SHIELD	TO BODY HARNESS
70J	B/R	TO BODY HARNESS
71J	L/W	TO BODY HARNESS
72J	–	TO BODY HARNESS
73J	–	TO BODY HARNESS
74J	SHIELD	TO BODY HARNESS
75J	R	TO BODY HARNESS
76J	O	TO BODY HARNESS
77J	SHIELD	TO BODY HARNESS
78J	W	TO BODY HARNESS
79J	B	TO BODY HARNESS
80J	W	TO BODY HARNESS

81J	SHIELD	TO BODY HARNESS
82J	L/R	TO BODY HARNESS
83J	–	TO BODY HARNESS
84J	–	TO BODY HARNESS
85J	W	TO BODY HARNESS
86J	G	TO BODY HARNESS
87J	W	TO BODY HARNESS
88J	SHIELD	TO BODY HARNESS
89J	R	TO BODY HARNESS
90J	L	TO BODY HARNESS
91J	L/B	TO BODY HARNESS
92J	SB	TO BODY HARNESS
93J	B	TO BODY HARNESS
94J	LG	TO BODY HARNESS
95J	L	TO BODY HARNESS
96J	G	TO BODY HARNESS
97J	B/Y	TO BODY HARNESS
98J	L/B	TO BODY HARNESS
99J	W/L	TO BODY HARNESS
100J	Y	TO BODY HARNESS

Connector No.	M43
Connector Name	AV CONTROL UNIT (WITH AUDIO AMPLIFIER)
Connector Type	NH18FW-CS2
Connector Color	WHITE

H.S.

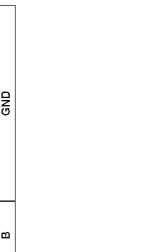


Terminal No.	Color of Wire	Signal Name
1	G/W	AMP ON
2	L	FR SP LH+
3	W	FR SP LH-
4	L	RR SP LH+
5	BR	RR SP LH-
6	–	–
7	R	ACC
8	L	CAN-H
9	L	ILL (+)
10	SHIELD	PRE AMP SHIELD
11	B	FR SP RH+
12	Y	FR SP RH-
13	B/W	RR SP RH+
14	P	RR SP RH-
15	–	–
16	–	–
17	P	CAN-L

18	G	SPEED SIG
19	W	BAT
20	B	GND

Connector No.	M97
Connector Name	AV CONTROL UNIT (WITHOUT AUDIO AMPLIFIER)
Connector Type	NH18FW-CS2
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	–	–
2	L/W	FR SP LH+
3	L/R	FR SP LH-
4	SB	RR SP LH+
5	B/Y	RR SP LH-
6	–	–
7	R	ACC
8	L	CAN-H
9	L	ILL (+)
10	–	–
11	W/B	FR SP RH+
12	L/B	FR SP RH-
13	O/L	RR SP RH+
14	R/L	RR SP RH-
15	–	–
16	–	–
17	P	CAN-L
18	G	SPEED SIG
19	W	BAT
20	B	GND

AAMIA4435GB

CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITH BLIND SPOT WARNING SYSTEMS

Connector No.	M114
Connector Name	SONAR CONTROL UNIT
Connector Type	TH24FW-NH
Connector Color	WHITE

H.S.

12	11	10	9	8	7	6	5	4	3	2	1
24	23	22	21	20	19	18	17	16	15	14	13

Terminal No.	Color of Wire	Signal Name
1	W/L	FRONT INNER RIGHT SENSOR SIGNAL
2	W/R	FRONT INNER LEFT SENSOR SIGNAL
3	O	FRONT OUTER LEFT SENSOR SIGNAL
4	BG	FRONT OUTER RIGHT SENSOR SIGNAL
5	L	CAN-H
6	R	CAN-L
7	–	–
8	–	–
9	L	REAR INNER RIGHT SENSOR SIGNAL
10	O	REAR OUTER RIGHT SENSOR SIGNAL
11	–	–
12	G/R	IGN
13	W	FRONT SENSOR GND
14	BG	REAR SENSOR GND
15	B	SYSTEM GND
16	G	SWITCH INPUT (WITHOUT DRIVER ASSISTANCE SYSTEM)
16	–	- (WITH DRIVER ASSISTANCE SYSTEM)
17	–	- (WITH DRIVER ASSISTANCE SYSTEM)
17	G/B	STATUS LED (WITHOUT DRIVER ASSISTANCE SYSTEM)
18	G	SPEAKER 2 (FRONT) SIGNAL -
19	W	SPEAKER POWER
20	–	–
21	Y	REAR INNER LEFT SENSOR SIGNAL
22	B	REAR OUTER LEFT SENSOR SIGNAL
23	–	–
24	G/W	REVERSE POSITION INPUT

Connector No.	M123
Connector Name	LOW TIRE PRESSURE WARNING CONTROL UNIT
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6
7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	P	CAN-L
2	L	CAN-H
3	–	–
4	–	–
5	–	–
6	–	–
7	W	IGN SW
8	–	–
9	–	–
10	B	GND
11	Y	+B
12	–	–

Connector No.	M128
Connector Name	ADAS CONTROL UNIT
Connector Type	TH24FW-NH
Connector Color	WHITE

H.S.

12	11	10	9	8	7	6	5	4	3	2	1
24	23	22	21	20	19	18	17	16	15	14	13

Terminal No.	Color of Wire	Signal Name
1	B	GND
2	L	ITS CAN-H
3	G	IGN
4	GR	BUZZER OUTPUT
5	R	ITS CAN-L
6	R	CAN-L
7	G/R	SW LED
8	–	–
9	L	CAN-H
10	P	CAN-L

Terminal No.	Color of Wire	N.C
11	G	–
12	–	–
13	–	–
14	–	–
15	–	–
16	–	–
17	BR	N.C
18	L	CAN-H
19	–	–
20	–	–
21	–	–
22	–	–
23	LG	BSW SW
24	–	–

Connector No.	M137
Connector Name	A/C AUTO AMP.
Connector Type	TH40FW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	B	GND
3	SB	BAT
4	BR	TX (FR CONT)
5	–	–
6	–	–
7	W	AMB SENS
8	BR	STRG HEATER SW
9	G	SUN SENS
10	–	–
11	–	–
12	–	–
13	W	IGN2(ACC)
14	P	FAN GATE
15	Y	RR DEF ON
16	G	LIN SIG
17	W	VACTR
18	–	–
19	G/R	PTC1 - (WITH CUMMINS 5.0L)
20	P	STRG HEATER RLY
21	P	CAN-L
22	B	P-GND
23	G	IGN
24	V	RX (FR CONT)

Terminal No.	Color of Wire	–
25	–	–
26	R	SENS GND
27	G	INCAR SENS
28	P	INTAKE SENS
29	–	–
30	–	–
31	–	–
32	–	–
33	Y	COMP ON
34	L/W	FAN FB
35	B/W	RR DEF F/B
36	–	–
37	B	ACTR GND
38	W	FAN ON
39	LG	PTC2 - (WITH CUMMINS 5.0L)
40	SB	PTC3 - (WITH CUMMINS 5.0L)

AAMIA4436GB

CAN SYSTEM CONNECTORS - WITH Cummins 5.0L AND WITH NAVIGATION WITH BLIND SPOT WARNING SYSTEMS

Connector No.	M197
Connector Name	TCU
Connector Type	TH40FB-NH
Connector Color	BLACK

H.S.

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21

39	-	-
40	-	-

Terminal No.	Color of Wire	Signal Name
1	Y	BAT
2	R	ACC
3	R	ACC OUT
4	-	-
5	W/L	LED A
6	L	CAN-H
7	P	CAN-L
8	-	-
9	-	-
10	G/R	IGN
11	SHIELD	MIC OUT GND
12	W	MIC OUT SIGNAL
13	-	-
14	-	-
15	-	-
16	SHIELD	MIC GND
17	W	MIC SIGNAL
18	R	MIC VCC
19	-	-
20	-	-
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	SB	M-CAN H
27	LG	M-CAN L
28	B	GND
29	B	GND
30	-	-
31	W	AUDIO HU OUT+
32	R	AUDIO HU OUT-
33	-	-
34	-	-
35	-	-
36	-	-
37	P	ECALL SW
38	-	-

AAMIA4437GB

CAN SYSTEM (WITH VK56VD AND WITHOUT DRIVER ASSISTANCE SYSTEMS)

Wiring Diagram

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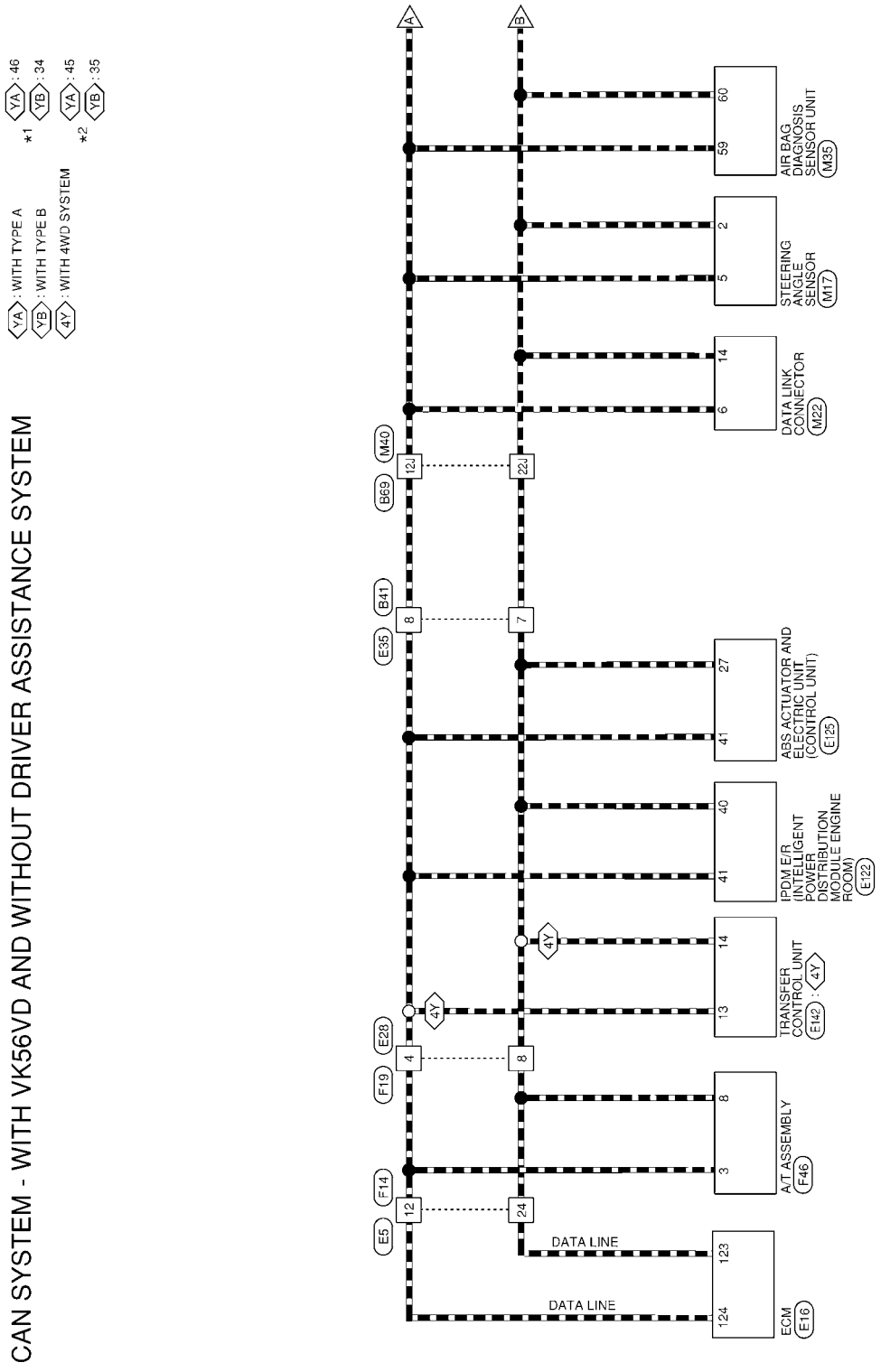

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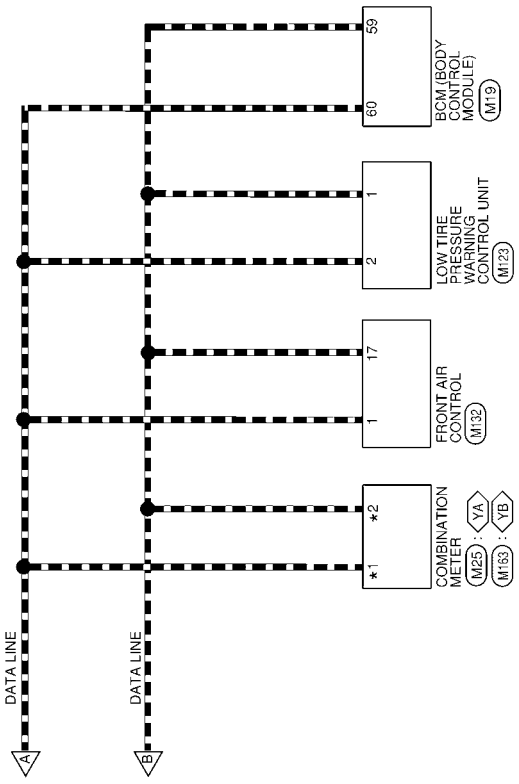

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CAN SYSTEM CONNECTORS - WITH VK56VD AND WITHOUT DRIVER ASSISTANCE SYSTEM

Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Type	NS12MW-CS
Connector Color	WHITE

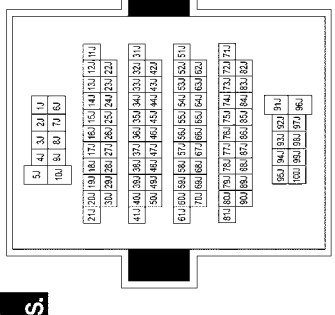
H.S.

1	2	3		4	5
6	7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	Y	TO ENGINE ROOM HARNESS
2	V	TO ENGINE ROOM HARNESS
3	L	TO ENGINE ROOM HARNESS
4	L/G	TO ENGINE ROOM HARNESS
5	R/G	TO ENGINE ROOM HARNESS
6	SB	TO ENGINE ROOM HARNESS
7	P	TO ENGINE ROOM HARNESS
8	L	TO ENGINE ROOM HARNESS
9	SHIELD	TO ENGINE ROOM HARNESS
10	W/G	TO ENGINE ROOM HARNESS
11	L	TO ENGINE ROOM HARNESS
12	BR	TO ENGINE ROOM HARNESS

Connector No.	B69
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1J	P	TO MAIN HARNESS
2J	R/Y	TO MAIN HARNESS
3J	L	TO MAIN HARNESS
4J	L/B	TO MAIN HARNESS
5J	G/W	TO MAIN HARNESS
6J	LG/Y	TO MAIN HARNESS
7J	BR/LG	TO MAIN HARNESS
8J	SB/BR	TO MAIN HARNESS
9J	BR	TO MAIN HARNESS
10J	BR	TO MAIN HARNESS
11J	O/B	TO MAIN HARNESS
12J	L	TO MAIN HARNESS
13J	SB/O	TO MAIN HARNESS
14J	Y	TO MAIN HARNESS
15J	–	TO MAIN HARNESS
16J	R	TO MAIN HARNESS
17J	G	TO MAIN HARNESS
18J	SB	TO MAIN HARNESS
19J	O	TO MAIN HARNESS
20J	O/B	TO MAIN HARNESS
21J	Y/R	TO MAIN HARNESS
22J	P	TO MAIN HARNESS
23J	W	TO MAIN HARNESS
24J	W/R	TO MAIN HARNESS
25J	V	TO MAIN HARNESS
26J	L	TO MAIN HARNESS
27J	R	TO MAIN HARNESS
28J	L	TO MAIN HARNESS
29J	G/O	TO MAIN HARNESS
30J	SB	TO MAIN HARNESS
31J	LG	TO MAIN HARNESS
32J	R	TO MAIN HARNESS
33J	L	TO MAIN HARNESS
34J	Y	TO MAIN HARNESS
35J	P	TO MAIN HARNESS
36J	G/R	TO MAIN HARNESS
37J	LG/B	TO MAIN HARNESS
38J	SB	TO MAIN HARNESS
39J	Y/L	TO MAIN HARNESS
40J	BR	TO MAIN HARNESS
41J	L	TO MAIN HARNESS
42J	L	TO MAIN HARNESS
43J	SB	TO MAIN HARNESS
44J	BR	TO MAIN HARNESS
45J	BG	TO MAIN HARNESS
46J	P/Y	TO MAIN HARNESS
47J	Y/GR	TO MAIN HARNESS
48J	V	TO MAIN HARNESS
49J	BR/Y	TO MAIN HARNESS
50J	G/W	TO MAIN HARNESS
51J	–	TO MAIN HARNESS
52J	SHIELD	TO MAIN HARNESS
53J	R	TO MAIN HARNESS
54J	L	TO MAIN HARNESS
55J	R	TO MAIN HARNESS
56J	W	TO MAIN HARNESS
57J	L/G	TO MAIN HARNESS
58J	O	TO MAIN HARNESS
59J	–	TO MAIN HARNESS
60J	SHIELD	TO MAIN HARNESS
61J	G	TO MAIN HARNESS
62J	–	TO MAIN HARNESS
63J	R/W	TO MAIN HARNESS
64J	L/W	TO MAIN HARNESS
65J	SHIELD	TO MAIN HARNESS
66J	B	TO MAIN HARNESS
67J	SHIELD	TO MAIN HARNESS
68J	O/L	TO MAIN HARNESS
69J	SHIELD	TO MAIN HARNESS
70J	BR	TO MAIN HARNESS
71J	L/W	TO MAIN HARNESS
72J	–	TO MAIN HARNESS
72J	–	TO MAIN HARNESS
73J	–	TO MAIN HARNESS
74J	SHIELD	TO MAIN HARNESS
75J	LG/B	TO MAIN HARNESS
76J	R	TO MAIN HARNESS
77J	SHIELD	TO MAIN HARNESS
78J	GR/B	TO MAIN HARNESS
79J	B	TO MAIN HARNESS
80J	W	TO MAIN HARNESS
81J	SHIELD	TO MAIN HARNESS
82J	L/R	TO MAIN HARNESS
83J	–	TO MAIN HARNESS
84J	Y/B	TO MAIN HARNESS
85J	G	TO MAIN HARNESS
86J	B/R	TO MAIN HARNESS
87J	SHIELD	TO MAIN HARNESS
88J	GR/R	TO MAIN HARNESS
89J	L	TO MAIN HARNESS
90J	L/B	TO MAIN HARNESS
91J	SB	TO MAIN HARNESS
92J	B	TO MAIN HARNESS
93J	L	TO MAIN HARNESS
94J	LG	TO MAIN HARNESS
95J	R	TO MAIN HARNESS
96J	B/Y	TO MAIN HARNESS
97J	L/B	TO MAIN HARNESS
98J	W/L	TO MAIN HARNESS
99J	SB	TO MAIN HARNESS
100J		

Connector No.	E5
Connector Name	WIRE TO WIRE
Connector Type	TH24MW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

Terminal No.	Color of Wire	Signal Name
1	L/R	TO ENGINE CONTROL HARNESS
2	BR	TO ENGINE CONTROL HARNESS
3	V	TO ENGINE CONTROL HARNESS
4	L/O	TO ENGINE CONTROL HARNESS
5	W	TO ENGINE CONTROL HARNESS
6	B/R	TO ENGINE CONTROL HARNESS
7	Y/R	TO ENGINE CONTROL HARNESS
8	BR	TO ENGINE CONTROL HARNESS
9	W/L	TO ENGINE CONTROL HARNESS
10	L/Y	TO ENGINE CONTROL HARNESS
11	SB	TO ENGINE CONTROL HARNESS
12	L	TO ENGINE CONTROL HARNESS
13	W/R	TO ENGINE CONTROL HARNESS
14	Y	TO ENGINE CONTROL HARNESS
15	B	TO ENGINE CONTROL HARNESS
16	B	TO ENGINE CONTROL HARNESS
17	R	TO ENGINE CONTROL HARNESS
18	B	TO ENGINE CONTROL HARNESS
19	B/R	TO ENGINE CONTROL HARNESS
20	GR	TO ENGINE CONTROL HARNESS
21	V/R	TO ENGINE CONTROL HARNESS
22		
23	B	TO ENGINE CONTROL HARNESS
24	P	TO ENGINE CONTROL HARNESS

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CAN SYSTEM CONNECTORS - WITH VK56VD AND WITHOUT DRIVER ASSISTANCE SYSTEM

Connector No.	E16
Connector Name	ECM (WITH VK56VD)
Connector Type	MAA24FB-MEA8-RH
Connector Color	BLACK

H.S.

121	125	129	133	137	141	145	149
122	126	130	134	138	142	146	150
123	127	131	135	139	143	147	151
124	128	132	136	140	144	148	152

Terminal No.	Color of Wire	Signal Name
121	O/B	EVAP CONTROL SYSTEM PRESSURE SENSOR
122	–	–
123	P	CAN COMMUNICATION LINE (CAN-L)
124	L	CAN COMMUNICATION LINE (CAN-H)
125	SB	SENSOR POWER SUPPLY
126	–	–
127	–	–
128	V/W	FUEL TEMPERATURE SENSOR
129	–	–
130	R/W	FUEL PUMP CONTROL MODULE (FPCM) CHECK
131	–	–
132	–	–
133	W	IGNITION SWITCH
134	G/Y	ASCD STEERING SWITCH
135	B/Y	SENSOR GROUND
136	GR	FUEL PUMP CONTROL MODULE (FPCM)
137	R/W	ENG COMMUNICATION LINE
138	W	ENG COMMUNICATION LINE
139	R/G	STOP LAMP SWITCH
140	G/Y	BRAKE PEDAL POSITION SWITCH
141	Y	EVAP CANISTER VENT CONTROL VALVE
142	L/W	SENSOR POWER SUPPLY
143	O	ACCELERATOR PEDAL POSITION SENSOR 2
144	P/L	SENSOR GROUND
145	W	POWER SUPPLY FOR ECM
146	W/G	SENSOR POWER SUPPLY
147	B	ECM GROUND
148	R	SENSOR GROUND
149	B	ECM GROUND
150	W/R	ACCELERATOR PEDAL POSITION SENSOR 1
151	R/Y	SENSOR GROUND
152	B	ECM GROUND

Connector No.	E28
Connector Name	WIRE TO WIRE
Connector Type	RH08MB
Connector Color	BLACK

H.S.

1	2	3	4
5	6	7	8

Terminal No.	Color of Wire	Signal Name
1	V	TO ENGINE CONTROL HARNESS
2	G	TO ENGINE CONTROL HARNESS
3	–	TO ENGINE CONTROL HARNESS
4	L	TO ENGINE CONTROL HARNESS
5	R	TO ENGINE CONTROL HARNESS
6	SB	TO ENGINE CONTROL HARNESS
7	L	TO ENGINE CONTROL HARNESS
8	P	TO ENGINE CONTROL HARNESS

Connector No.	E35
Connector Name	WIRE TO WIRE
Connector Type	NS12FW-CS
Connector Color	WHITE

H.S.

5	4		3	2	1
12	11	10	9	8	7	6

Terminal No.	Color of Wire	Signal Name
1	Y	TO BODY HARNESS
2	V	TO BODY HARNESS
3	L	TO BODY HARNESS
4	W	TO BODY HARNESS
5	R/G	TO BODY HARNESS
6	SB	TO BODY HARNESS
7	P	TO BODY HARNESS
8	L	TO BODY HARNESS
9	SHIELD	TO BODY HARNESS
10	B	TO BODY HARNESS
11	R	TO BODY HARNESS
12	BR	TO BODY HARNESS

Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

42	41	40	39	38	37
48	47	46	45	44	43

Terminal No.	Color of Wire	Signal Name
37	–	–
38	–	–
39	L/Y	WIPER AUTO STOP SW
40	P	CAN-L
41	L	CAN-H
42	BR	DTRL RLY
43	–	–
44	W/B	START CONT
45	GR	FUEL RLY CONT
46	Y	HOOD SW
47	Y	ALT C - (WITH VK56VD)
48	R/W	HORN RLY CONT

Connector No.	E125
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	SAZ42FB-SJZ4
Connector Color	BLACK

H.S.

46	45	44	43	42	41	40	39	38	37	36	35	34	33	4	2
32	31	30	29	28	27	26	25	24	23	22	21	20	19		
18	17	16	15	14	13	12	11	10	9	8	7	6	5	3	1

Terminal No.	Color of Wire	Signal Name
1	G	ABS SOL
2	B	GND 1
3	B	GND 2
4	W	MTR POWER 1
5	–	–
6	–	–
7	–	–
8	–	–
9	BR	HDC ON
10	LG	YG CAN-H
11	–	YG CAN-L
12	–	–
13	P/B	LBL
14	–	–
15	–	–
16	–	–
17	R/B	STP2
18	GR	IGN 1
19	V	FR SENS-
20	SB	FL SENS+
21	R	RR SENS-
22	V	RL SENS+
23	–	–
24	–	–
25	–	–
26	–	–
27	P	CAN-L
28	–	–
29	–	–
30	–	–
31	–	–
32	–	–
33	LG	FR SENS-
34	LG	FL SENS-
35	BR	RR SENS+
36	P	RL SENS-
37	R/G	STP
38	–	–
39	G	VDC OFF
40	–	–
41	L	CAN-H
42	–	–
43	G/W	HDC ON
44	–	–
45	–	–
46	W	STPO

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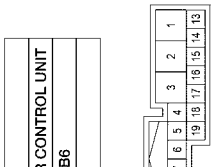
CAN SYSTEM CONNECTORS - WITH VK56VD AND WITHOUT DRIVER ASSISTANCE SYSTEM

Connector No.	E142
Connector Name	TRANSFER CONTROL UNIT
Connector Type	TH20FW-TB6
Connector Color	WHITE

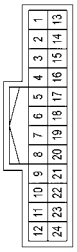
H.S.



Terminal No.	Color of Wire	Signal Name
1	Y/R	ECU POWER
2	B	GND
3	B	GND
4	GR	IGN SW
5	L/O	ROTARY POSITION SENSOR 5V SUPPLY
6	Y	ROTARY POSITION SENSOR RETURN
7	–	–
8	P	ADD POWER RLY - (WITHOUT XD)
9	Y/R	4WD SHIFT SWITCH 5V SUPPLY
10	G	MOTOR POWER
11	L	MOTOR A
12	BR	MOTOR B
13	L	CAN-H
14	P	CAN-L
15	W/R	ROTARY POSITION SENSOR INPUT
16	–	–
17	–	–
18	G/W	2WD MODE SW
19	O	4H MODE SW
20	R	4LO MODE SW
21	BR	RANGE 2 SENSOR INPUT
22	L/R	RANGE 1 SENSOR INPUT
23	V	MODE SENSOR INPUT
24	–	–
25	BR	FR AXLE SW - (WITHOUT XD)
26	G	FR AXLE CONTROL - (WITHOUT XD)

Connector No.	F14
Connector Name	WIRE TO WIRE
Connector Type	TH24FW-NH
Connector Color	WHITE

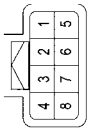
H.S.



Terminal No.	Color of Wire	Signal Name
1	L/R	TO ENGINE ROOM HARNESS
2	BR	TO ENGINE ROOM HARNESS
3	V	TO ENGINE ROOM HARNESS
4	L/O	TO ENGINE ROOM HARNESS
5	W	TO ENGINE ROOM HARNESS
6	B/R	TO ENGINE ROOM HARNESS
7	Y/R	TO ENGINE ROOM HARNESS
8	BR	TO ENGINE ROOM HARNESS
9	W/L	TO ENGINE ROOM HARNESS
10	L/Y	TO ENGINE ROOM HARNESS
11	SB	TO ENGINE ROOM HARNESS
12	L	TO ENGINE ROOM HARNESS
13	W/R	TO ENGINE ROOM HARNESS
14	Y	TO ENGINE ROOM HARNESS
15	B	TO ENGINE ROOM HARNESS
16	B	TO ENGINE ROOM HARNESS
17	R	TO ENGINE ROOM HARNESS
18	B	TO ENGINE ROOM HARNESS
19	B/R	TO ENGINE ROOM HARNESS
20	GR	TO ENGINE ROOM HARNESS
21	V/R	TO ENGINE ROOM HARNESS
22	SHIELD	TO ENGINE ROOM HARNESS
23	SHIELD	TO ENGINE ROOM HARNESS
24	P	TO ENGINE ROOM HARNESS

Connector No.	F19
Connector Name	WIRE TO WIRE
Connector Type	RH08FB
Connector Color	BLACK

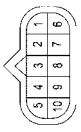
H.S.



Terminal No.	Color of Wire	Signal Name
1	V	TO ENGINE ROOM HARNESS
2	LG	TO ENGINE ROOM HARNESS
3	–	TO ENGINE ROOM HARNESS
4	L	TO ENGINE ROOM HARNESS
5	R	TO ENGINE ROOM HARNESS
6	SB	TO ENGINE ROOM HARNESS
7	L	TO ENGINE ROOM HARNESS
8	P	TO ENGINE ROOM HARNESS

Connector No.	F46
Connector Name	A/T ASSEMBLY (WITH VK56VD)
Connector Type	RK10FG
Connector Color	GREEN

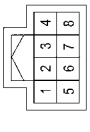
H.S.



Terminal No.	Color of Wire	Signal Name
1	Y/R	VIGN
2	P	BATT
3	L	CAN-H
4	BR	K-LINE
5	B	GND
6	Y/R	VIGN
7	R	REV LAMP RELAY
8	P	CAN-L
9	B/R	STARTER RELAY
10	B	GND

Connector No.	M17
Connector Name	STEERING ANGLE SENSOR
Connector Type	TH08FW-NH
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	B	STRG ANGLE SENS GND
2	P	CAN-L
3	–	–
4	O/L	STRG ANGLE SENS POWER
5	L	CAN-H
6	–	–
7	–	–
8	–	–

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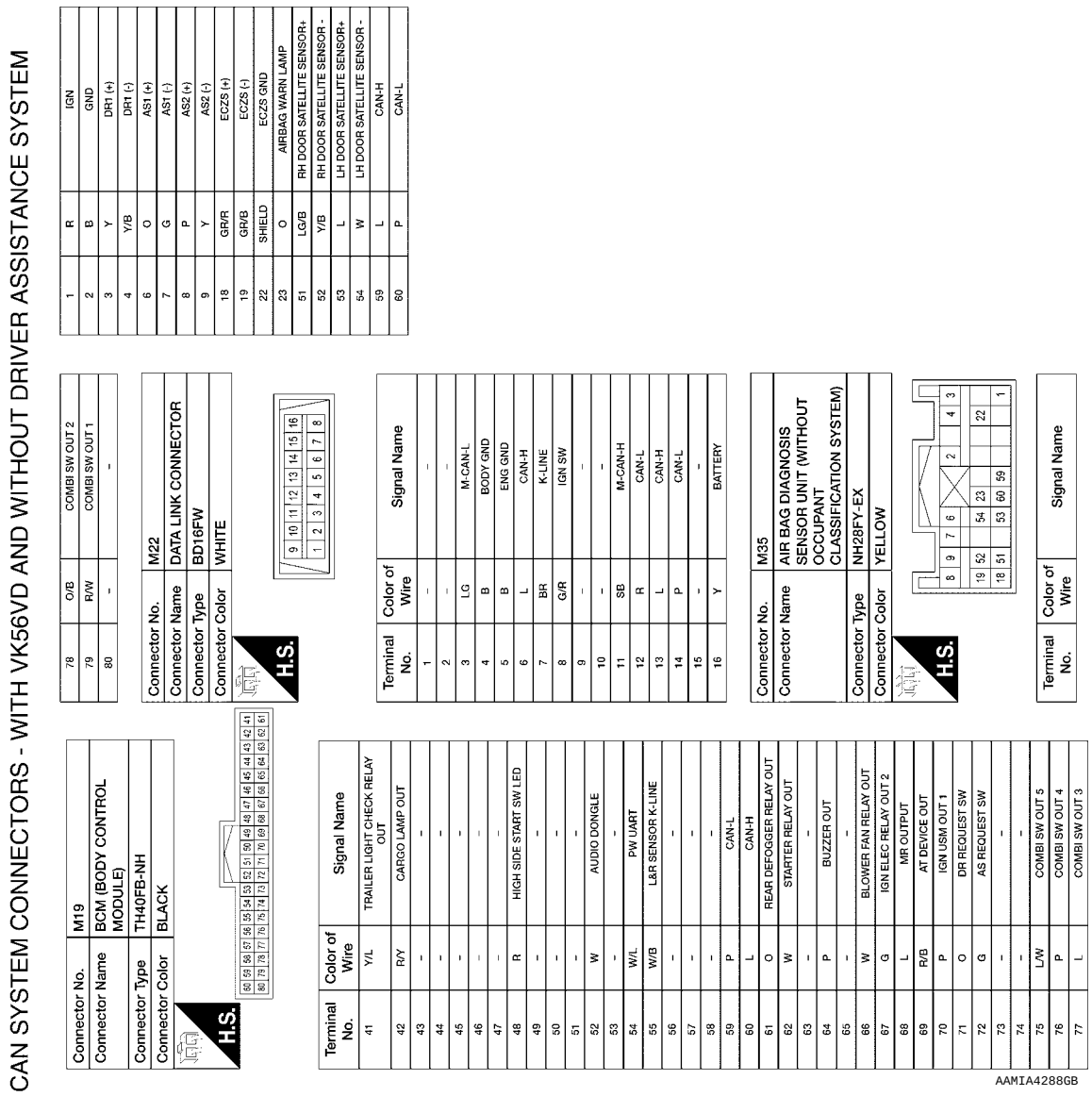
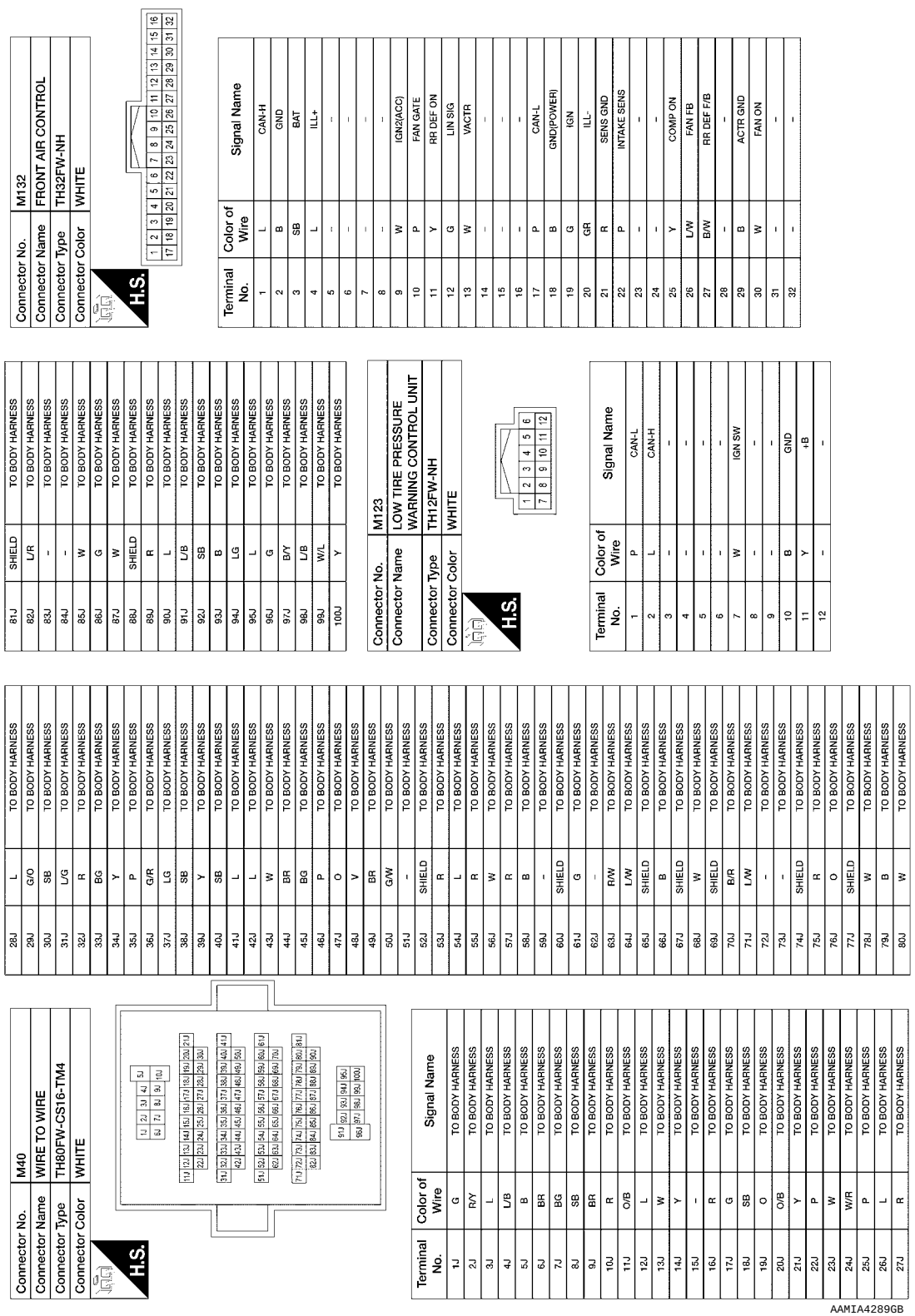
CAN SYSTEM CONNECTORS - WITH VK56VD AND WITHOUT DRIVER ASSISTANCE SYSTEM



CAN SYSTEM CONNECTORS - WITH VK56VD AND WITHOUT DRIVER ASSISTANCE SYSTEM



CAN SYSTEM (WITH VK56VD AND WITH DRIVER ASSISTANCE SYSTEMS)

Wiring Diagram

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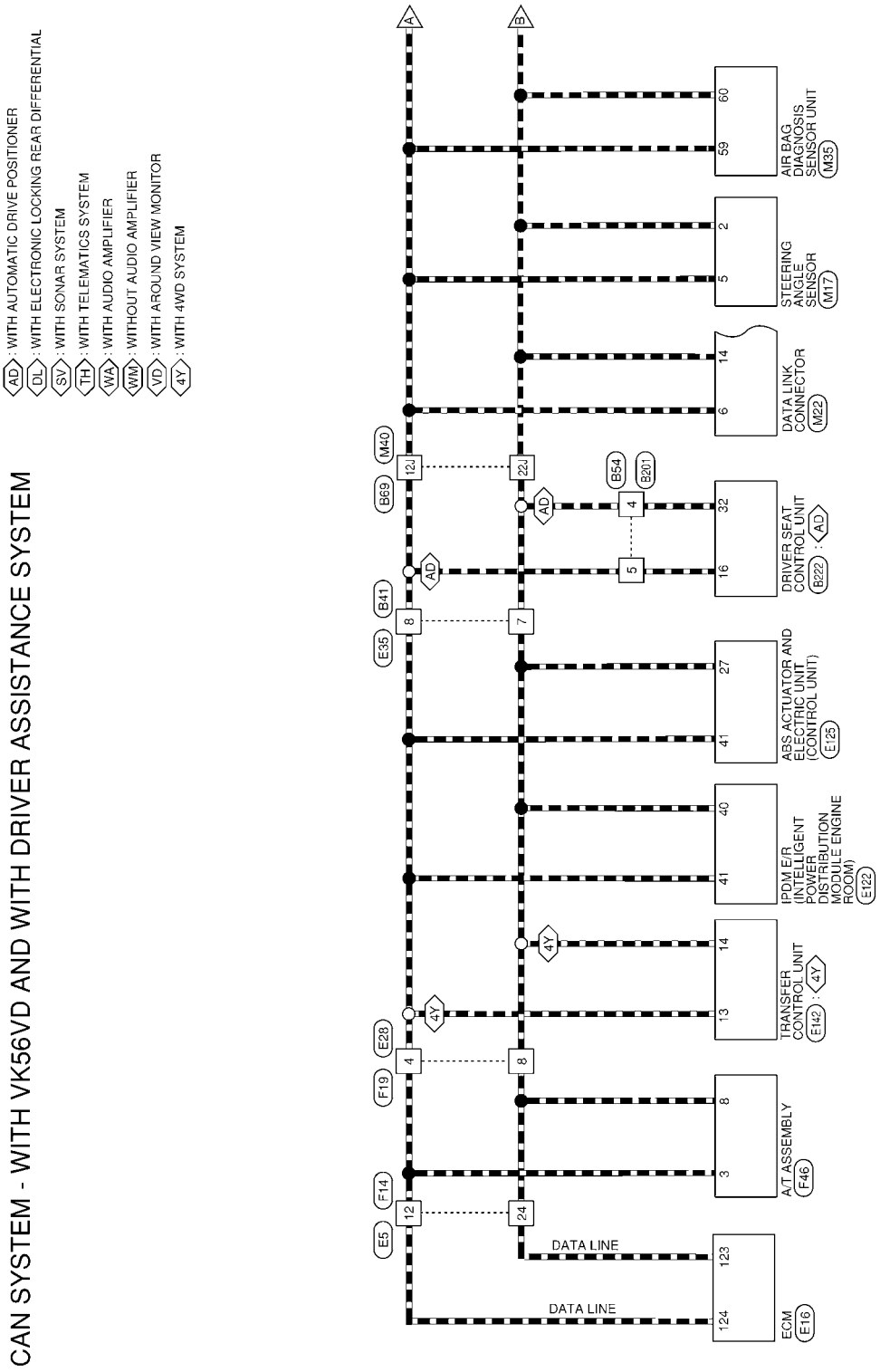

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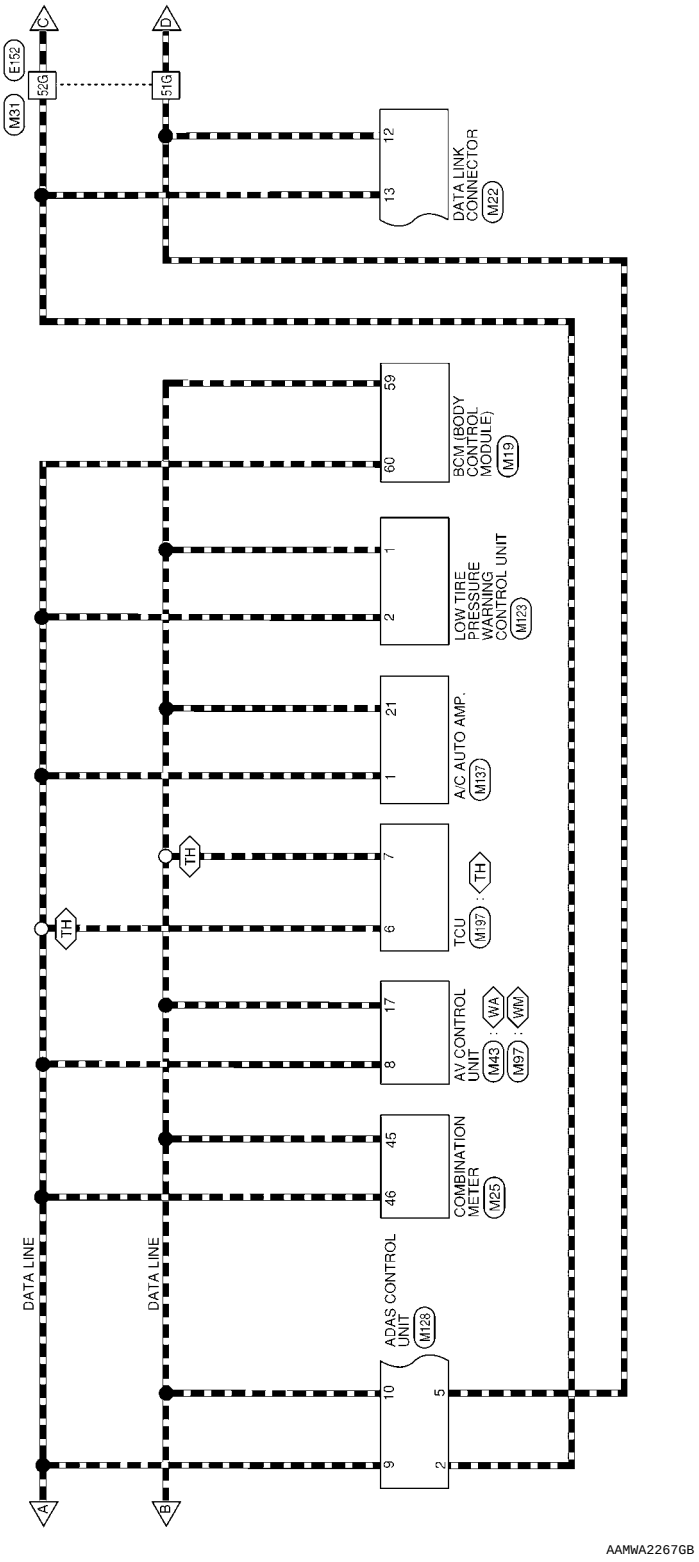
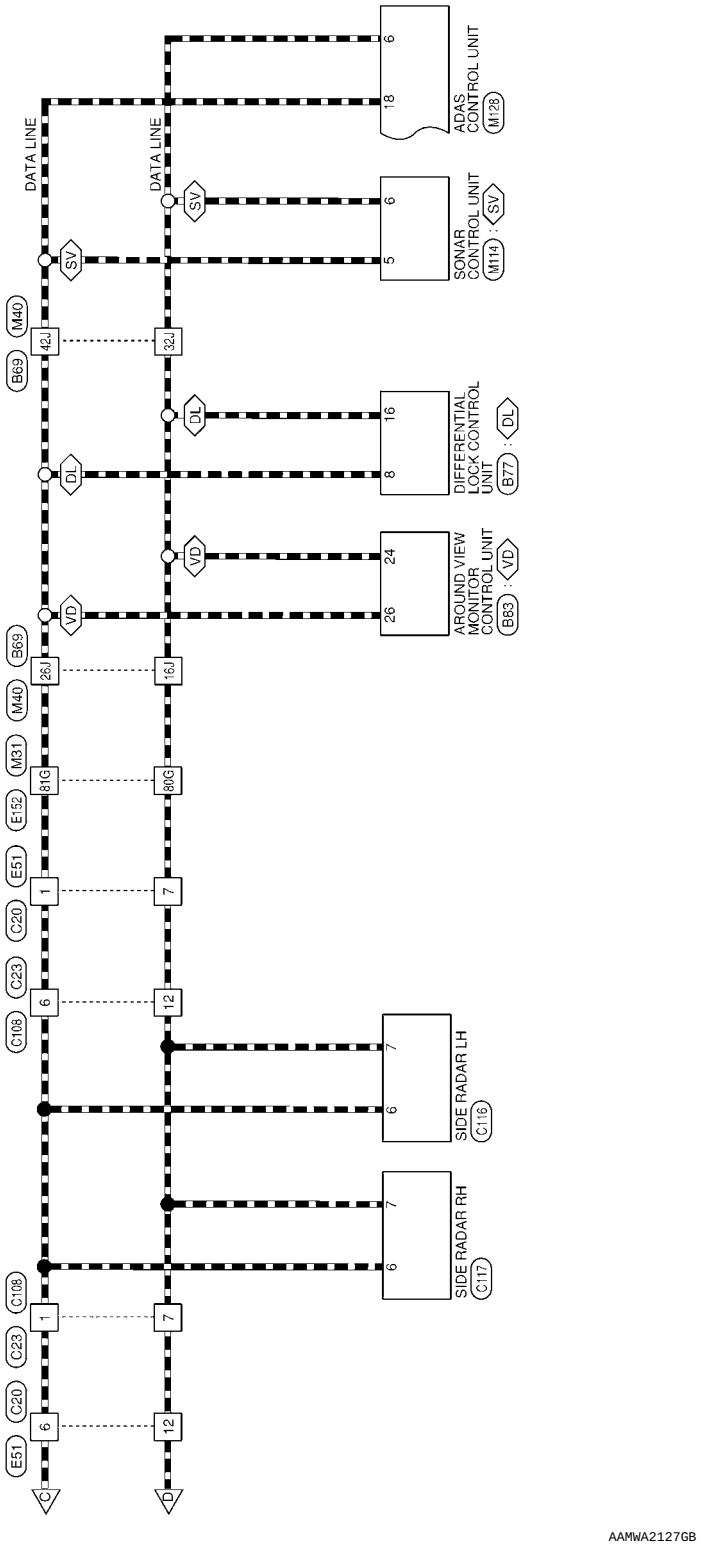


AAMWA2267GB


ADAS CONTROL UNIT (M128)
SONAR CONTROL UNIT (M114)
DIFFERENTIAL LOCK CONTROL UNIT (B77)
AROUND VIEW MONITOR CONTROL UNIT (B83)
SIDE RADAR LH (C116)
SIDE RADAR RH (C117)
DATA LINE
DATA LINE
SV
DL
VD
M40
B69
M31
E152
E51
C20
C23
C108
42J
32J
26J
16J
81G
80G
C
D
AAMWA2127GB

CAN SYSTEM CONNECTORS - WITH VK56VD AND WITH DRIVER ASSISTANCE SYSTEM

Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Type	NS12MW-CS
Connector Color	WHITE

H.S.

1	2	3		4	5
6	7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	Y	TO ENGINE ROOM HARNESS
2	V	TO ENGINE ROOM HARNESS
3	L	TO ENGINE ROOM HARNESS
4	L/G	TO ENGINE ROOM HARNESS
5	R/G	TO ENGINE ROOM HARNESS
6	SB	TO ENGINE ROOM HARNESS
7	P	TO ENGINE ROOM HARNESS
8	L	TO ENGINE ROOM HARNESS
9	SHIELD	TO ENGINE ROOM HARNESS
10	W/G	TO ENGINE ROOM HARNESS
11	L	TO ENGINE ROOM HARNESS
12	BR	TO ENGINE ROOM HARNESS

12	Y/GR	TO FRONT SEAT LH HARNESS

Connector No.	B69
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1J	P	TO MAIN HARNESS
2J	R/Y	TO MAIN HARNESS
3J	L	TO MAIN HARNESS
4J	L/B	TO MAIN HARNESS
5J	G/W	TO MAIN HARNESS
6J	LG/Y	TO MAIN HARNESS
7J	BR/LG	TO MAIN HARNESS
8J	SB/BR	TO MAIN HARNESS
9J	BR	TO MAIN HARNESS
10J	BR	TO MAIN HARNESS
11J	O/B	TO MAIN HARNESS
12J	L	TO MAIN HARNESS
13J	SB/O	TO MAIN HARNESS
14J	Y	TO MAIN HARNESS
15J	–	TO MAIN HARNESS
16J	R	TO MAIN HARNESS
17J	G	TO MAIN HARNESS
18J	SB	TO MAIN HARNESS
19J	O	TO MAIN HARNESS
20J	O/B	TO MAIN HARNESS
21J	Y/R	TO MAIN HARNESS
22J	P	TO MAIN HARNESS
23J	W	TO MAIN HARNESS
24J	W/R	TO MAIN HARNESS
25J	V	TO MAIN HARNESS

26J	L	TO MAIN HARNESS
27J	R	TO MAIN HARNESS
28J	L	TO MAIN HARNESS
29J	G/O	TO MAIN HARNESS
30J	SB	TO MAIN HARNESS
31J	LG	TO MAIN HARNESS
32J	R	TO MAIN HARNESS
33J	L	TO MAIN HARNESS
34J	Y	TO MAIN HARNESS
35J	P	TO MAIN HARNESS
36J	G/R	TO MAIN HARNESS
37J	LG/B	TO MAIN HARNESS
38J	SB	TO MAIN HARNESS
39J	Y/L	TO MAIN HARNESS
40J	BR	TO MAIN HARNESS
41J	L	TO MAIN HARNESS
42J	L	TO MAIN HARNESS
43J	SB	TO MAIN HARNESS
44J	BR	TO MAIN HARNESS
45J	BG	TO MAIN HARNESS
46J	P/Y	TO MAIN HARNESS
47J	Y/GR	TO MAIN HARNESS
48J	V	TO MAIN HARNESS
49J	BR/Y	TO MAIN HARNESS
50J	G/W	TO MAIN HARNESS
51J	–	TO MAIN HARNESS
52J	SHIELD	TO MAIN HARNESS
53J	R	TO MAIN HARNESS
54J	L	TO MAIN HARNESS
55J	R	TO MAIN HARNESS
56J	W	TO MAIN HARNESS
57J	L/G	TO MAIN HARNESS
58J	O	TO MAIN HARNESS
59J	–	TO MAIN HARNESS
60J	SHIELD	TO MAIN HARNESS
61J	G	TO MAIN HARNESS
62J	–	TO MAIN HARNESS
63J	R/W	TO MAIN HARNESS
64J	L/W	TO MAIN HARNESS
65J	SHIELD	TO MAIN HARNESS
66J	B	TO MAIN HARNESS
67J	SHIELD	TO MAIN HARNESS
68J	O/L	TO MAIN HARNESS
69J	SHIELD	TO MAIN HARNESS
70J	BR	TO MAIN HARNESS
71J	L/W	TO MAIN HARNESS
72J	–	TO MAIN HARNESS
73J	–	TO MAIN HARNESS
74J	SHIELD	TO MAIN HARNESS
75J	LG/B	TO MAIN HARNESS
76J	R	TO MAIN HARNESS
77J	SHIELD	TO MAIN HARNESS

78J	GR/B	TO MAIN HARNESS
79J	B	TO MAIN HARNESS
80J	W	TO MAIN HARNESS
81J	SHIELD	TO MAIN HARNESS
82J	L/R	TO MAIN HARNESS
83J	–	TO MAIN HARNESS
84J	–	TO MAIN HARNESS
85J	Y/B	TO MAIN HARNESS
86J	G	TO MAIN HARNESS
87J	B/R	TO MAIN HARNESS
88J	SHIELD	TO MAIN HARNESS
89J	GR/R	TO MAIN HARNESS
90J	L	TO MAIN HARNESS
91J	L/B	TO MAIN HARNESS
92J	SB	TO MAIN HARNESS
93J	B	TO MAIN HARNESS
94J	L	TO MAIN HARNESS
95J	LG	TO MAIN HARNESS
96J	R	TO MAIN HARNESS
97J	B/Y	TO MAIN HARNESS
98J	L/B	TO MAIN HARNESS
99J	W/L	TO MAIN HARNESS
100J	SB	TO MAIN HARNESS

Connector No.	B54
Connector Name	WIRE TO WIRE
Connector Type	NS12FBR-CS
Connector Color	BROWN

H.S.

1	2		3	4	5
6	7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	L	TO FRONT SEAT LH HARNESS
2	BR	TO FRONT SEAT LH HARNESS
3	B	TO FRONT SEAT LH HARNESS
4	P	TO FRONT SEAT LH HARNESS
5	L	TO FRONT SEAT LH HARNESS
6	L/B	TO FRONT SEAT LH HARNESS
7	Y/L	TO FRONT SEAT LH HARNESS
8	BR/Y	TO FRONT SEAT LH HARNESS
9	V	TO FRONT SEAT LH HARNESS
10	LG/B	TO FRONT SEAT LH HARNESS
11	SB	TO FRONT SEAT LH HARNESS

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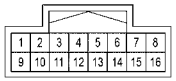
CAN SYSTEM CONNECTORS - WITH VK56VD AND WITH DRIVER ASSISTANCE SYSTEM

Connector No.	B77
Connector Name	DIFFERENTIAL LOCK CONTROL UNIT
Connector Type	TH16FW-NH
Connector Color	WHITE

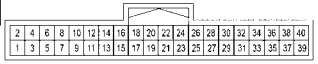
H.S.



Terminal No.	Color of Wire	Signal Name
1	Y	SOLENOID (+)
2	V	SOLENOID (-)
3	–	–
4	–	–
5	G/O	DIFF LOCK ON SW
6	–	–
7	P	IGN
8	L	CAN-H
9	BR	SOL BATT
10	B	GND
11	B	GND
12	L	DIFF LOCK POSITION SW
13	–	–
14	O	DIFF LOCK OFF SW
15	Y/R	VBATT
16	R	CAN-L

Connector No.	B83
Connector Name	AROUND VIEW MONITOR CONTROL UNIT
Connector Type	TH40FW-NH
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	SHIELD	VIDEO OUTPUT GND
4	G	VIDEO OUTPUT SIGNAL
5	L/G	FV POWER GND
6	L	FV POWER 6.2V
7	SHIELD	FV VIDEO GND
8	W/G	FV VIDEO SIGNAL
9	O/L	SV1 POWER GND
10	O	SV1 POWER 6.2V
11	SHIELD	SV1 VIDEO GND
12	L/G	SV1 VIDEO SIGNAL
13	B	SV2 POWER GND
14	W	SV2 POWER 6.2V
15	SHIELD	SV2 VIDEO GND
16	R	SV2 VIDEO SIGNAL
17	L/W	RV POWER GND
18	L	RV POWER 6.2V
19	R/W	RV VIDEO GND
20	R	RV VIDEO SIGNAL
21	–	–
22	–	–
23	–	–
24	R	CAN-L
25	–	–
26	L	CAN-H
27	–	–
28	–	–
29	–	–
30	–	–
31	–	–
32	G/W	REVERSE
33	–	–
34	–	–
35	–	–
36	–	–
37	–	–
38	–	–
39	B	GND
40	G/R	IGN

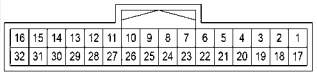
Connector No.	B201
Connector Name	WIRE TO WIRE
Connector Type	NS12MBR-CS
Connector Color	BROWN

H.S.

Terminal No.	Color of Wire	Signal Name
1	BR	TO BODY HARNESS
2	W	TO BODY HARNESS
3	B	TO BODY HARNESS
4	W	TO BODY HARNESS
5	P	TO BODY HARNESS
6	R	TO BODY HARNESS
7	Y	TO BODY HARNESS
8	G	TO BODY HARNESS
9	V	TO BODY HARNESS
10	GR	TO BODY HARNESS
11	L	TO BODY HARNESS
12	SB	TO BODY HARNESS

Connector No.	B222
Connector Name	DRIVER SEAT CONTROL UNIT
Connector Type	TH32FW-NH
Connector Color	WHITE

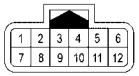
H.S.



Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	–	–
4	–	–
5	W	POWER SUPPLY (ENCODER)
6	R	REAR LIFTER SW (DOWNWARD)
7	Y	FRONT LIFTER SW (DOWNWARD)
8	BR	RECLINER SW (BACKWARD)
9	SB	SLIDE SW (BACKWARD)
10	G	IND 2
11	GR	ADDRESS 2
12	W	PULSE (TELESCOPIC)
13	G	PULSE (RECLINER)
14	–	–
15	SB	UART (TX/RX)
16	P	CAN-H
17	–	–
18	–	–
19	–	–
20	–	–
21	L	SET SW
22	V	REAR LIFTER SW (UPWARD)
23	G	FRONT LIFTER SW (UPWARD)
24	P	RECLINER SW (FORWARD)
25	L	SLIDE SW (FORWARD)
26	Y	IND 1
27	V	ADDRESS 1
28	BR	PULSE(TILT)
29	R	PULSE (REAR LIFTER)
30	Y	PULSE (FRONT LIFTER)
31	LG	PULSE (SLIDE)
32	W	CAN-L

Connector No.	C20
Connector Name	WIRE TO WIRE
Connector Type	RH12MB
Connector Color	BLACK

H.S.



Terminal No.	Color of Wire	Signal Name
1	L	TO ENGINE ROOM HARNESS
2	B	TO ENGINE ROOM HARNESS
3	Y	TO ENGINE ROOM HARNESS
4	W	TO ENGINE ROOM HARNESS
5	LG	TO ENGINE ROOM HARNESS
6	L	TO ENGINE ROOM HARNESS
7	R	TO ENGINE ROOM HARNESS
8	–	TO ENGINE ROOM HARNESS
9	–	TO ENGINE ROOM HARNESS
10	–	TO ENGINE ROOM HARNESS
11	–	TO ENGINE ROOM HARNESS
12	R	TO ENGINE ROOM HARNESS

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CAN SYSTEM CONNECTORS - WITH VK56VD AND WITH DRIVER ASSISTANCE SYSTEM

Connector No.	C23
Connector Name	WIRE TO WIRE
Connector Type	RH12FB
Connector Color	BLACK

H.S.

6	5	4	3	2	1
12	11	10	9	8	7

Terminal No.	Color of Wire	Signal Name
1	L	TO SIDE RADAR SUB HARNESS
2	B	TO SIDE RADAR SUB HARNESS
3	–	TO SIDE RADAR SUB HARNESS
4	–	TO SIDE RADAR SUB HARNESS
5	LG	TO SIDE RADAR SUB HARNESS
6	L	TO SIDE RADAR SUB HARNESS
7	R	TO SIDE RADAR SUB HARNESS
8	Y	TO SIDE RADAR SUB HARNESS
9	–	TO SIDE RADAR SUB HARNESS
10	–	TO SIDE RADAR SUB HARNESS
11	W	TO SIDE RADAR SUB HARNESS
12	R	TO SIDE RADAR SUB HARNESS

Connector No.	C108
Connector Name	WIRE TO WIRE
Connector Type	RH12MB
Connector Color	BLACK

H.S.

1	2	3	4	5	6
7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	L	TO CHASSIS HARNESS
2	B	TO CHASSIS HARNESS
3	–	TO CHASSIS HARNESS
4	–	TO CHASSIS HARNESS
5	LG	TO CHASSIS HARNESS
6	L	TO CHASSIS HARNESS
7	R	TO CHASSIS HARNESS
8	R	TO CHASSIS HARNESS
9	–	TO CHASSIS HARNESS
10	–	TO CHASSIS HARNESS
11	W	TO CHASSIS HARNESS

12	R	TO CHASSIS HARNESS

Connector No.	C116
Connector Name	SIDE RADAR LH
Connector Type	JAD08FB-5P
Connector Color	BLACK

H.S.

4	5	6	7	8

Terminal No.	Color of Wire	Signal Name
4	W	SIGNAL
5	LG	IGN
6	L	CAN-H
7	R	CAN-L
8	B	GND

Connector No.	C117
Connector Name	SIDE RADAR RH
Connector Type	JAD08FB-6P
Connector Color	BLACK

H.S.

3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name
3	B	ADDRESS
4	R	SIGNAL
5	LG	IGN
6	L	CAN-H
7	R	CAN-L
8	B	GND

Connector No.	E5
Connector Name	WIRE TO WIRE
Connector Type	TH24MW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

Terminal No.	Color of Wire	Signal Name
1	L/R	TO ENGINE CONTROL HARNESS
2	BR	TO ENGINE CONTROL HARNESS
3	V	TO ENGINE CONTROL HARNESS
4	L/O	TO ENGINE CONTROL HARNESS
5	W	TO ENGINE CONTROL HARNESS
6	B/R	TO ENGINE CONTROL HARNESS
7	Y/R	TO ENGINE CONTROL HARNESS
8	BR	TO ENGINE CONTROL HARNESS
9	W/L	TO ENGINE CONTROL HARNESS
10	L/Y	TO ENGINE CONTROL HARNESS
11	SB	TO ENGINE CONTROL HARNESS
12	L	TO ENGINE CONTROL HARNESS
13	W/R	TO ENGINE CONTROL HARNESS
14	Y	TO ENGINE CONTROL HARNESS
15	B	TO ENGINE CONTROL HARNESS
16	B	TO ENGINE CONTROL HARNESS
17	R	TO ENGINE CONTROL HARNESS
18	B	TO ENGINE CONTROL HARNESS
19	B/R	TO ENGINE CONTROL HARNESS
20	GR	TO ENGINE CONTROL HARNESS
21	V/R	TO ENGINE CONTROL HARNESS
22	B	TO ENGINE CONTROL HARNESS
23	B	TO ENGINE CONTROL HARNESS
24	P	TO ENGINE CONTROL HARNESS

Connector No.	E16
Connector Name	ECM (WITH VK56VD)
Connector Type	MAA24FB-MEA8-RH
Connector Color	BLACK

H.S.

121	125	129	133	137	141	145	149
122	126	130	134	138	142	146	150
123	127	131	135	139	143	147	151
124	128	132	136	140	144	148	152

Terminal No.	Color of Wire	Signal Name
121	O/B	EVAP CONTROL SYSTEM PRESSURE SENSOR
122	–	–
123	P	CAN COMMUNICATION LINE (CAN-L)
124	L	CAN COMMUNICATION LINE (CAN-H)
125	SB	SENSOR POWER SUPPLY
126	–	–
127	–	–
128	V/W	FUEL TEMPERATURE SENSOR
129	–	–
130	R/W	FUEL PUMP CONTROL MODULE (FPCM) CHECK
131	–	–
132	–	–
133	W	IGNITION SWITCH
134	G/Y	ASCD STEERING SWITCH
135	B/Y	SENSOR GROUND
136	GR	FUEL PUMP CONTROL MODULE (FPCM)
137	R/W	ENG COMMUNICATION LINE
138	W	ENG COMMUNICATION LINE
139	R/G	STOP LAMP SWITCH
140	G/Y	BRAKE PEDAL POSITION SWITCH
141	Y	EVAP CANISTER VENT CONTROL VALVE
142	L/W	SENSOR POWER SUPPLY
143	O	ACCELERATOR PEDAL POSITION SENSOR 2
144	P/L	SENSOR GROUND
145	W	POWER SUPPLY FOR ECM
146	W/G	SENSOR POWER SUPPLY
147	B	ECM GROUND
148	R	SENSOR GROUND
149	B	ECM GROUND
150	W/R	ACCELERATOR PEDAL POSITION SENSOR 1
151	R/Y	SENSOR GROUND
152	B	ECM GROUND

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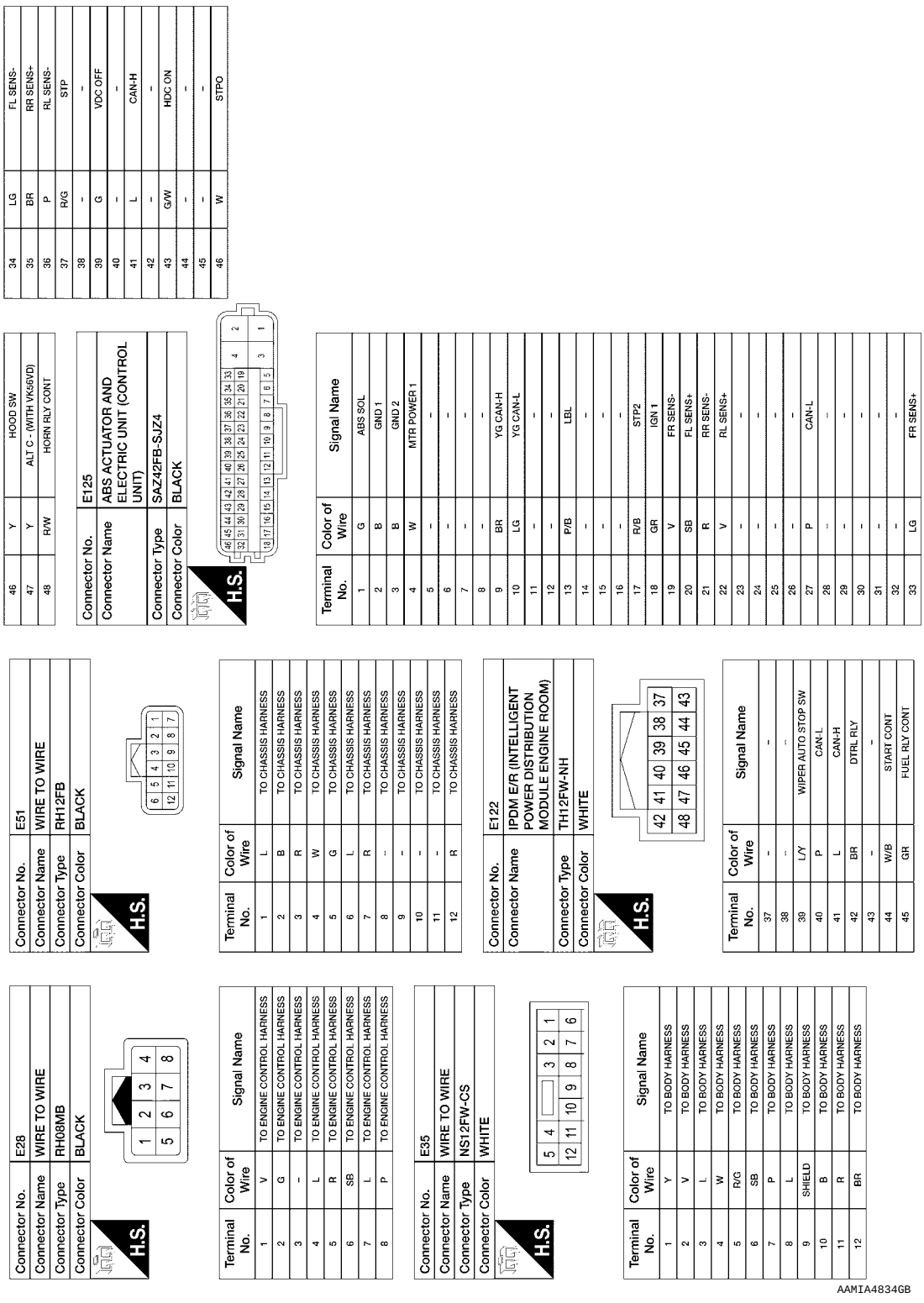
CAN SYSTEM CONNECTORS - WITH VK56VD AND WITH DRIVER ASSISTANCE SYSTEM



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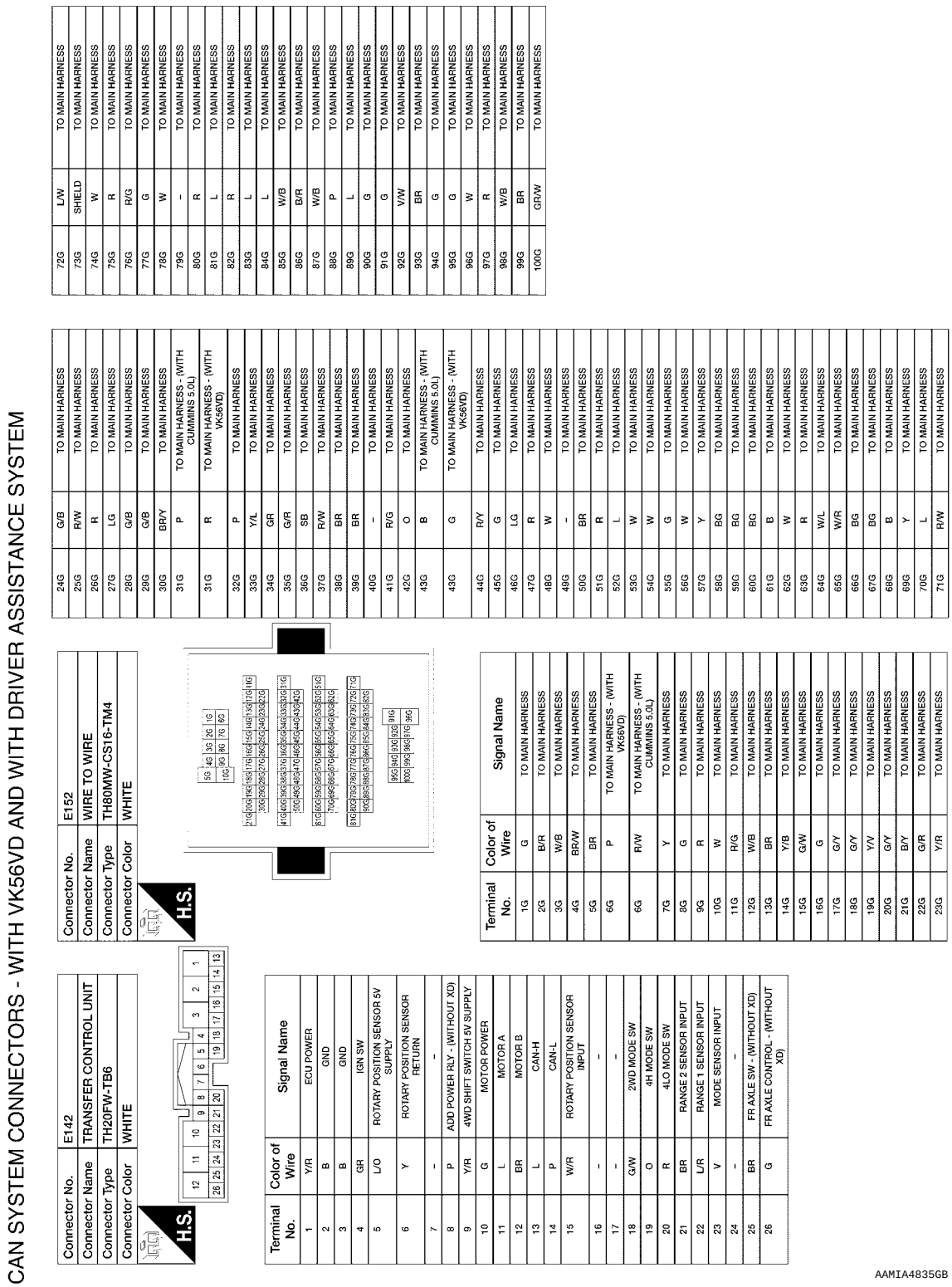
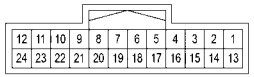
CAN SYSTEM CONNECTORS - WITH VK56VD AND WITH DRIVER ASSISTANCE SYSTEM



CAN SYSTEM CONNECTORS - WITH VK56VD AND WITH DRIVER ASSISTANCE SYSTEM

Connector No.	F14
Connector Name	WIRE TO WIRE
Connector Type	TH24FW-NH
Connector Color	WHITE

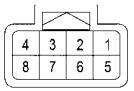
H.S.



Terminal No.	Color of Wire	Signal Name
1	L/R	TO ENGINE ROOM HARNESS
2	BR	TO ENGINE ROOM HARNESS
3	V	TO ENGINE ROOM HARNESS
4	L/O	TO ENGINE ROOM HARNESS
5	W	TO ENGINE ROOM HARNESS
6	B/R	TO ENGINE ROOM HARNESS
7	Y/R	TO ENGINE ROOM HARNESS
8	BR	TO ENGINE ROOM HARNESS
9	W/L	TO ENGINE ROOM HARNESS
10	L/Y	TO ENGINE ROOM HARNESS
11	SB	TO ENGINE ROOM HARNESS
12	L	TO ENGINE ROOM HARNESS
13	W/R	TO ENGINE ROOM HARNESS
14	Y	TO ENGINE ROOM HARNESS
15	B	TO ENGINE ROOM HARNESS
16	B	TO ENGINE ROOM HARNESS
17	R	TO ENGINE ROOM HARNESS
18	B	TO ENGINE ROOM HARNESS
19	B/R	TO ENGINE ROOM HARNESS
20	GR	TO ENGINE ROOM HARNESS
21	V/R	TO ENGINE ROOM HARNESS
22	SHIELD	TO ENGINE ROOM HARNESS
23	SHIELD	TO ENGINE ROOM HARNESS
24	P	TO ENGINE ROOM HARNESS

Connector No.	F19
Connector Name	WIRE TO WIRE
Connector Type	RH08FB
Connector Color	BLACK

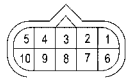
H.S.



Terminal No.	Color of Wire	Signal Name
1	V	TO ENGINE ROOM HARNESS
2	LG	TO ENGINE ROOM HARNESS
3	–	TO ENGINE ROOM HARNESS
4	L	TO ENGINE ROOM HARNESS
5	R	TO ENGINE ROOM HARNESS
6	SB	TO ENGINE ROOM HARNESS
7	L	TO ENGINE ROOM HARNESS
8	P	TO ENGINE ROOM HARNESS

Connector No.	F46
Connector Name	A/T ASSEMBLY (WITH VK56VD)
Connector Type	RK10FG
Connector Color	GREEN

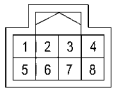
H.S.



Terminal No.	Color of Wire	Signal Name
1	Y/R	VIGN
2	P	BATT
3	L	CAN-H
4	BR	K-LINE
5	B	GND
6	Y/R	VIGN
7	R	REV LAMP RELAY
8	P	CAN-L
9	B/R	STARTER RELAY
10	B	GND

Connector No.	M17
Connector Name	STEERING ANGLE SENSOR
Connector Type	TH08FW-NH
Connector Color	WHITE

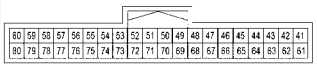
H.S.



Terminal No.	Color of Wire	Signal Name
1	B	STRG ANGLE SENS GND
2	P	CAN-L
3	–	–
4	O/L	STRG ANGLE SENS POWER
5	L	CAN-H
6	–	–
7	–	–
8	–	–

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH
Connector Color	BLACK

H.S.



Terminal No.	Color of Wire	Signal Name
41	Y/L	TRAILER LIGHT CHECK RELAY OUT
42	R/Y	CARGO LAMP OUT
43	–	–
44	–	–
45	–	–
46	–	–
47	–	–
48	R	HIGH SIDE START SW LED
49	–	–
50	–	–
51	–	–
52	W	AUDIO DONGLE
53	–	–
54	W/L	PW UART
55	W/B	L&R SENSOR K-LINE
56	–	–
57	–	–
58	–	–
59	P	CAN-L
60	L	CAN-H
61	O	REAR DEFOGGER RELAY OUT
62	W	STARTER RELAY OUT
63	–	–
64	P	BUZZER OUT
65	–	–
66	W	BLOWER FAN RELAY OUT
67	G	IGN ELEC RELAY OUT 2
68	L	MR OUTPUT
69	R/B	AT DEVICE OUT
70	P	IGN USM OUT 1
71	O	DR REQUEST SW
72	G	AS REQUEST SW
73	–	–
74	–	–
75	L/W	COMBI SW OUT 5
76	P	COMBI SW OUT 4
77	L	COMBI SW OUT 3
78	O/B	COMBI SW OUT 2
79	R/W	COMBI SW OUT 1
80	–	–

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CAN SYSTEM CONNECTORS - WITH VK56VD AND WITH DRIVER ASSISTANCE SYSTEM

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW
Connector Color	WHITE

H.S.

9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	LG	M-CAN-L
4	B	BODY GND
5	B	ENG GND
6	L	CAN-H
7	BR	K-LINE
8	G/R	IGN SW
9	–	–
10	–	–
11	SB	M-CAN-H
12	R	CAN-L
13	L	CAN-H
14	P	CAN-L
15	–	–
16	Y	BATTERY

Connector No.	M25
Connector Name	COMBINATION METER (WITH TYPE A)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

46	45	44	43	42	41
52	51	50	49	48	47

Terminal No.	Color of Wire	Signal Name
41	W	IGN
42	R	BAT
43	Y/V	FUEL SENSOR GND
44	G/R	ILL CONT OUTPUT
45	P	CAN-L
46	L	CAN-H

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.

1G	2G	3G	4G	5G
6G	7G	8G	9G	10G

Terminal No.	Color of Wire	Signal Name
1G	G	TO ENGINE ROOM HARNESS
2G	B/R	TO ENGINE ROOM HARNESS
3G	W	TO ENGINE ROOM HARNESS
4G	BR/W	TO ENGINE ROOM HARNESS
5G	–	TO ENGINE ROOM HARNESS
6G	R/W	TO ENGINE ROOM HARNESS
7G	Y	TO ENGINE ROOM HARNESS
8G	G	TO ENGINE ROOM HARNESS
9G	R	TO ENGINE ROOM HARNESS
10G	W	TO ENGINE ROOM HARNESS
11G	R/G	TO ENGINE ROOM HARNESS
12G	W/B	TO ENGINE ROOM HARNESS
13G	BR	TO ENGINE ROOM HARNESS
14G	Y/B	TO ENGINE ROOM HARNESS
15G	G/W	TO ENGINE ROOM HARNESS
16G	G	TO ENGINE ROOM HARNESS
17G	O	TO ENGINE ROOM HARNESS
18G	G/Y	TO ENGINE ROOM HARNESS
19G	Y/V	TO ENGINE ROOM HARNESS
20G	G/Y	TO ENGINE ROOM HARNESS
21G	B/Y	TO ENGINE ROOM HARNESS
22G	G/R	TO ENGINE ROOM HARNESS
23G	Y/R	TO ENGINE ROOM HARNESS
24G	G/B	TO ENGINE ROOM HARNESS
25G	R/W	TO ENGINE ROOM HARNESS
26G	R	TO ENGINE ROOM HARNESS
27G	LG	TO ENGINE ROOM HARNESS
28G	G/B	TO ENGINE ROOM HARNESS
29G	G/B	TO ENGINE ROOM HARNESS
30G	BR/Y	TO ENGINE ROOM HARNESS
31G	R	TO ENGINE ROOM HARNESS
32G	R	TO ENGINE ROOM HARNESS
33G	Y/L	TO ENGINE ROOM HARNESS
34G	GR	TO ENGINE ROOM HARNESS
35G	G/R	TO ENGINE ROOM HARNESS
36G	SB	TO ENGINE ROOM HARNESS
37G	R/W	TO ENGINE ROOM HARNESS
38G	BR	TO ENGINE ROOM HARNESS
39G	BR	TO ENGINE ROOM HARNESS
40G	–	TO ENGINE ROOM HARNESS
41G	R/G	TO ENGINE ROOM HARNESS
42G	O	TO ENGINE ROOM HARNESS
43G	G	TO ENGINE ROOM HARNESS
44G	R/Y	TO ENGINE ROOM HARNESS
45G	G	TO ENGINE ROOM HARNESS
46G	LG	TO ENGINE ROOM HARNESS
47G	R	TO ENGINE ROOM HARNESS
48G	W	TO ENGINE ROOM HARNESS
49G	–	TO ENGINE ROOM HARNESS
50G	BR	TO ENGINE ROOM HARNESS
51G	R	TO ENGINE ROOM HARNESS
52G	L	TO ENGINE ROOM HARNESS
53G	W	TO ENGINE ROOM HARNESS
54G	W	TO ENGINE ROOM HARNESS
55G	G	TO ENGINE ROOM HARNESS
56G	W	TO ENGINE ROOM HARNESS
57G	Y	TO ENGINE ROOM HARNESS
58G	BG	TO ENGINE ROOM HARNESS
59G	BG	TO ENGINE ROOM HARNESS
60G	BG	TO ENGINE ROOM HARNESS
61G	O	TO ENGINE ROOM HARNESS
62G	W	TO ENGINE ROOM HARNESS
63G	O	TO ENGINE ROOM HARNESS
64G	W/L	TO ENGINE ROOM HARNESS
65G	W/R	TO ENGINE ROOM HARNESS
66G	BG	TO ENGINE ROOM HARNESS
67G	O	TO ENGINE ROOM HARNESS
68G	B	TO ENGINE ROOM HARNESS
69G	Y	TO ENGINE ROOM HARNESS
70G	L	TO ENGINE ROOM HARNESS
71G	R/W	TO ENGINE ROOM HARNESS
72G	L/W	TO ENGINE ROOM HARNESS
73G	SHIELD	TO ENGINE ROOM HARNESS
74G	W	TO ENGINE ROOM HARNESS
75G	R	TO ENGINE ROOM HARNESS
76G	P/G	TO ENGINE ROOM HARNESS
77G	BG	TO ENGINE ROOM HARNESS
78G	P	TO ENGINE ROOM HARNESS
79G	–	TO ENGINE ROOM HARNESS
80G	R	TO ENGINE ROOM HARNESS
81G	L	TO ENGINE ROOM HARNESS
82G	R	TO ENGINE ROOM HARNESS
83G	L	TO ENGINE ROOM HARNESS
84G	L	TO ENGINE ROOM HARNESS
85G	W	TO ENGINE ROOM HARNESS
86G	B/R	TO ENGINE ROOM HARNESS
87G	W	TO ENGINE ROOM HARNESS
88G	G	TO ENGINE ROOM HARNESS
89G	P	TO ENGINE ROOM HARNESS
90G	G	TO ENGINE ROOM HARNESS
91G	P	TO ENGINE ROOM HARNESS
92G	V/W	TO ENGINE ROOM HARNESS
93G	BR	TO ENGINE ROOM HARNESS
94G	B	TO ENGINE ROOM HARNESS
95G	G	TO ENGINE ROOM HARNESS
96G	R	TO ENGINE ROOM HARNESS
97G	R	TO ENGINE ROOM HARNESS
98G	W/B	TO ENGINE ROOM HARNESS
99G	R	TO ENGINE ROOM HARNESS
100G	GR/W	TO ENGINE ROOM HARNESS

Connector No.	M24
Connector Name	FUEL SENSOR
Connector Type	–
Connector Color	–

H.S.

47	48	49	50	51	52

Terminal No.	Color of Wire	Signal Name
47	B	G1
48	BR/Y	FUEL SENSOR
49	–	–
50	–	–
51	LG	M CAN-L
52	SB	M CAN-H

AAMIA4837GB

CAN SYSTEM CONNECTORS - WITH VK56VD AND WITH DRIVER ASSISTANCE SYSTEM

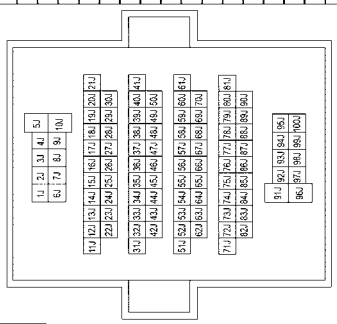
Connector No.	M35
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT (WITHOUT OCCUPANT CLASSIFICATION SYSTEM)
Connector Type	NH28FY-EX
Connector Color	YELLOW

H.S.

Terminal No.	Color of Wire	Signal Name
1	R	IGN
2	B	GND
3	Y	DR1 (+)
4	Y/B	DR1 (-)
6	O	AS1 (+)
7	G	AS1 (-)
8	P	AS2 (+)
9	Y	AS2 (-)
18	GR/R	ECZS (+)
19	GR/B	ECZS (-)
22	SHIELD	ECZS GND
23	O	AIRBAG WARN LAMP
51	LG/B	RH DOOR SATELLITE SENSOR+
52	Y/B	RH DOOR SATELLITE SENSOR -
53	L	LH DOOR SATELLITE SENSOR+
54	W	LH DOOR SATELLITE SENSOR -
59	L	CAN-H
60	P	CAN-L

Connector No.	M40
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1J	G	TO BODY HARNESS
2J	R/Y	TO BODY HARNESS
3J	L	TO BODY HARNESS
4J	L/B	TO BODY HARNESS
5J	B	TO BODY HARNESS
6J	BR	TO BODY HARNESS
7J	BG	TO BODY HARNESS
8J	SB	TO BODY HARNESS
9J	BR	TO BODY HARNESS
10J	R	TO BODY HARNESS
11J	O/B	TO BODY HARNESS
12J	L	TO BODY HARNESS
13J	W	TO BODY HARNESS
14J	Y	TO BODY HARNESS
15J	-	TO BODY HARNESS
16J	R	TO BODY HARNESS
17J	G	TO BODY HARNESS
18J	SB	TO BODY HARNESS
19J	O	TO BODY HARNESS
20J	O/B	TO BODY HARNESS
21J	Y	TO BODY HARNESS
22J	P	TO BODY HARNESS
23J	W	TO BODY HARNESS
24J	W/R	TO BODY HARNESS
25J	P	TO BODY HARNESS
26J	L	TO BODY HARNESS
27J	R	TO BODY HARNESS
28J	L	TO BODY HARNESS
29J	G/O	TO BODY HARNESS
30J	SB	TO BODY HARNESS
31J	L/G	TO BODY HARNESS
32J	R	TO BODY HARNESS
33J	BG	TO BODY HARNESS
34J	Y	TO BODY HARNESS
35J	P	TO BODY HARNESS
36J	G/R	TO BODY HARNESS
37J	LG	TO BODY HARNESS
38J	SB	TO BODY HARNESS
39J	Y	TO BODY HARNESS
40J	SB	TO BODY HARNESS
41J	L	TO BODY HARNESS
42J	L	TO BODY HARNESS
43J	W	TO BODY HARNESS
44J	BR	TO BODY HARNESS
45J	BG	TO BODY HARNESS
46J	P	TO BODY HARNESS
47J	O	TO BODY HARNESS
48J	V	TO BODY HARNESS
49J	BR	TO BODY HARNESS
50J	G/W	TO BODY HARNESS
51J	-	TO BODY HARNESS
52J	SHIELD	TO BODY HARNESS
53J	R	TO BODY HARNESS
54J	L	TO BODY HARNESS
55J	R	TO BODY HARNESS
56J	W	TO BODY HARNESS
57J	R	TO BODY HARNESS
58J	B	TO BODY HARNESS
59J	-	TO BODY HARNESS
60J	SHIELD	TO BODY HARNESS
61J	G	TO BODY HARNESS
62J	-	TO BODY HARNESS
63J	R/W	TO BODY HARNESS
64J	L/W	TO BODY HARNESS
65J	SHIELD	TO BODY HARNESS
66J	B	TO BODY HARNESS
67J	SHIELD	TO BODY HARNESS
68J	W	TO BODY HARNESS
69J	SHIELD	TO BODY HARNESS
70J	B/R	TO BODY HARNESS
71J	L/W	TO BODY HARNESS
72J	-	TO BODY HARNESS
73J	-	TO BODY HARNESS
74J	SHIELD	TO BODY HARNESS
75J	R	TO BODY HARNESS
76J	O	TO BODY HARNESS
77J	SHIELD	TO BODY HARNESS
78J	W	TO BODY HARNESS
79J	B	TO BODY HARNESS
80J	W	TO BODY HARNESS
81J	SHIELD	TO BODY HARNESS
82J	L/R	TO BODY HARNESS
83J	-	TO BODY HARNESS
84J	-	TO BODY HARNESS
85J	W	TO BODY HARNESS
86J	G	TO BODY HARNESS
87J	W	TO BODY HARNESS
88J	SHIELD	TO BODY HARNESS
89J	R	TO BODY HARNESS
90J	L	TO BODY HARNESS
91J	L/B	TO BODY HARNESS
92J	SB	TO BODY HARNESS
93J	B	TO BODY HARNESS
94J	LG	TO BODY HARNESS
95J	L	TO BODY HARNESS
96J	G	TO BODY HARNESS
97J	B/Y	TO BODY HARNESS
98J	L/B	TO BODY HARNESS
99J	W/L	TO BODY HARNESS
100J	Y	TO BODY HARNESS

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CAN SYSTEM CONNECTORS - WITH VK56VD AND WITH DRIVER ASSISTANCE SYSTEM

Connector No.	M43
Connector Name	AV CONTROL UNIT (WITH AUDIO AMPLIFIER)
Connector Type	NH18FW-CS2
Connector Color	WHITE

H.S.

19	10	11	12	13	14	15	16	17	18	20
	1	2	3	4	5	6	7	8	9	

Terminal No.	Color of Wire	Signal Name
1	G/W	AMP ON
2	L	FR SP LH+
3	W	FR SP LH-
4	L	RR SP LH+
5	BR	RR SP LH-
6	–	–
7	R	ACC
8	L	CAN-H
9	L	ILL (+)
10	SHIELD	PRE AMP SHIELD
11	B	FR SP RH+
12	Y	FR SP RH-
13	B/W	RR SP RH+
14	P	RR SP RH-
15	–	–
16	–	–
17	P	CAN-L
18	G	SPEED SIG
19	W	BAT
20	B	GND

Connector No.	M97
Connector Name	AV CONTROL UNIT (WITHOUT AUDIO AMPLIFIER)
Connector Type	NH18FW-CS2
Connector Color	WHITE

H.S.

19	10	11	12	13	14	15	16	17	18	20
	1	2	3	4	5	6	7	8	9	

Terminal No.	Color of Wire	Signal Name
1	–	–
2	L/W	FR SP LH+
3	L/R	FR SP LH-
4	SB	RR SP LH+
5	B/Y	RR SP LH-
6	–	–
7	R	ACC
8	L	CAN-H
9	L	ILL (+)
10	–	–
11	W/B	FR SP RH+
12	L/B	FR SP RH-
13	O/L	RR SP RH+
14	R/L	RR SP RH-
15	–	–
16	–	–
17	P	CAN-L
18	G	SPEED SIG
19	W	BAT
20	B	GND

Connector No.	M114
Connector Name	SONAR CONTROL UNIT
Connector Type	TH24FW-NH
Connector Color	WHITE

H.S.

12	11	10	9	8	7	6	5	4	3	2	1
24	23	22	21	20	19	18	17	16	15	14	13

Terminal No.	Color of Wire	Signal Name
1	W/L	FRONT INNER RIGHT SENSOR SIGNAL
2	W/R	FRONT INNER LEFT SENSOR SIGNAL
3	O	FRONT OUTER LEFT SENSOR SIGNAL
4	BG	FRONT OUTER RIGHT SENSOR SIGNAL
5	L	CAN-H
6	R	CAN-L
7	–	–
8	–	–
9	L	REAR INNER RIGHT SENSOR SIGNAL
10	O	REAR OUTER RIGHT SENSOR SIGNAL
11	–	–
12	G/R	IGN
13	W	FRONT SENSOR GND
14	BG	REAR SENSOR GND

15	B	SYSTEM GND
16	–	- (WITH DRIVER ASSISTANCE SYSTEM)
16	G	SWITCH INPUT (WITHOUT DRIVER ASSISTANCE SYSTEM)
17	–	- (WITH DRIVER ASSISTANCE SYSTEM)
17	G/B	STATUS LED (WITHOUT DRIVER ASSISTANCE SYSTEM)
18	G	SPEAKER 2 (FRONT) SIGNAL -
19	W	SPEAKER POWER
20	–	–
21	Y	REAR INNER LEFT SENSOR SIGNAL
22	B	REAR OUTER LEFT SENSOR SIGNAL
23	–	–
24	G/W	REVERSE POSITION INPUT

Connector No.	M123
Connector Name	LOW TIRE PRESSURE WARNING CONTROL UNIT
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6
7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	P	CAN-L
2	L	CAN-H
3	–	–
4	–	–
5	–	–
6	–	–
7	W	IGN SW
8	–	–
9	–	–
10	B	GND
11	Y	+B
12	–	–

Connector No.	M128
Connector Name	ADAS CONTROL UNIT
Connector Type	TH24FW-NH
Connector Color	WHITE

H.S.

12	11	10	9	8	7	6	5	4	3	2	1
24	23	22	21	20	19	18	17	16	15	14	13

Terminal No.	Color of Wire	Signal Name
1	B	GND
2	L	ITS CAN-H
3	G	IGN
4	GR	BUZZER OUTPUT
5	R	ITS CAN-L
6	R	CAN-L
7	G/R	SW LED
8	–	–
9	L	CAN-H
10	P	CAN-L
11	G	N.C
12	–	–
13	–	–
14	–	–
15	–	–
16	–	–
17	BR	N.C
18	L	CAN-H
19	–	–
20	–	–
21	–	–
22	–	–
23	LG	BSW SW
24	–	–

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CAN SYSTEM CONNECTORS - WITH VK56VD AND WITH DRIVER ASSISTANCE SYSTEM

Connector No.	M137
Connector Name	A/C AUTO AMP.
Connector Type	TH40FW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	B	GND
3	SB	BAT
4	BR	TX (FR CONT)
5	–	–
6	–	–
7	W	AMB SENS
8	BR	STRG HEATER SW
9	G	SUN SENS
10	–	–
11	–	–
12	–	–
13	W	IGN2(ACC)
14	P	FAN GATE
15	Y	RR DEF ON
16	G	LIN SIG
17	W	VACTR
18	–	–
19	G/R	PTC1 - (WITH CUMMINS 5.0L)
20	P	STRG HEATER RLY
21	P	CAN-L
22	B	P-GND
23	G	IGN
24	V	RX (FR CONT)
25	–	–
26	R	SENS GND
27	G	INCAR SENS
28	P	INTAKE SENS
29	–	–
30	–	–
31	–	–
32	–	–
33	Y	COMP ON
34	L/W	FAN FB
35	B/W	RR DEF F/B
36	–	–
37	B	ACTR GND
38	W	FAN ON
39	LG	PTC2 - (WITH CUMMINS 5.0L)
40	SB	PTC3 - (WITH CUMMINS 5.0L)

Connector No.	M197
Connector Name	TCU
Connector Type	TH40FB-NH
Connector Color	BLACK

H.S.

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21

Terminal No.	Color of Wire	Signal Name
1	Y	BAT
2	R	ACC
3	R	ACC OUT
4	–	–
5	W/L	LED A
6	L	CAN-H
7	P	CAN-L
8	–	–
9	–	–
10	G/R	IGN
11	SHIELD	MIC OUT GND
12	W	MIC OUT SIGNAL
13	–	–
14	–	–
15	–	–
16	SHIELD	MIC GND
17	W	MIC SIGNAL
18	R	MIC VCC
19	–	–
20	–	–
21	–	–
22	–	–
23	–	–
24	–	–
25	–	–
26	SB	M-CAN H
27	LG	M-CAN L
28	B	GND
29	B	GND
30	–	–
31	W	AUDIO HU OUT+
32	R	AUDIO HU OUT-
33	–	–
34	–	–
35	–	–
36	–	–
37	P	ECALL SW
38	–	–
39	–	–
40	–	–

AAMIA4840GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Interview Sheet

INFOID:0000000014387288

NOTE:
Refer to LAN-53, "Trouble Diagnosis Flow Chart" for how to use interview sheet.

CAN Communication System Diagnosis Interview Sheet

Date received:

Type: VIN No.:

Model:

First registration: Mileage:

CAN system type:

Symptom (Results from interview with customer)

Condition at inspection

Error symptom : Present / Past

SKIB8898E

DTC/CIRCUIT DIAGNOSIS

MALFUNCTION AREA CHART

CAN Communication Circuit

INFOID:0000000014387289

MAIN LINE

Diesel Engine Models

Malfunction area	Reference
Main line between transfer control unit and ABS actuator and electric unit (control unit)	LAN-135, "Diagnosis Procedure"
Main line between ABS actuator and electric unit (control unit) and IPDM E/R	LAN-136, "Diagnosis Procedure"
Main line between IPDM E/R and TCM	LAN-137, "Diagnosis Procedure"
Main line between TCM and driver seat control unit	LAN-138, "Diagnosis Procedure"
Main line between TCM and data link connector	LAN-139, "Diagnosis Procedure"
Main line between driver seat control unit and data link connector	LAN-140, "Diagnosis Procedure"
Main line between data link connector and steering angle sensor	LAN-141, "Diagnosis Procedure"
Main line between steering angle sensor and air bag diagnosis sensor unit	LAN-142, "Diagnosis Procedure"
Main line between air bag diagnosis sensor unit and CAN gateway	LAN-143, "Diagnosis Procedure"
Main line between air bag diagnosis sensor unit and ADAS control unit	LAN-144, "Diagnosis Procedure"
Main line between CAN gateway and combination meter	LAN-145, "Diagnosis Procedure"
Main line between ADAS control unit and combination meter	LAN-146, "Diagnosis Procedure"
Main line between air bag diagnosis sensor unit and combination meter	LAN-147, "Diagnosis Procedure"
Main line between combination meter and AV control unit	LAN-148, "Diagnosis Procedure"
Main line between AV control unit and TCU	LAN-149, "Diagnosis Procedure"
Main line between AV control unit and low tire pressure warning control unit	LAN-150, "Diagnosis Procedure"
Main line between TCU and low tire pressure warning control unit	LAN-151, "Diagnosis Procedure"
Main line between combination meter and low tire pressure warning control unit	LAN-152, "Diagnosis Procedure"
Main line between low tire pressure warning control unit and front air control or A/C auto amp.	LAN-153, "Diagnosis Procedure"
Main line between front air control and PTC heater control unit	LAN-154, "Diagnosis Procedure"
Main line between data link connector and around view monitor control unit	LAN-155, "Diagnosis Procedure"
Main line between data link connector and differential lock control unit	LAN-156, "Diagnosis Procedure"
Main line between data link connector and sonar control unit	LAN-157, "Diagnosis Procedure"
Main line between around view monitor control unit and differential lock control unit	LAN-159, "Diagnosis Procedure"
Main line between around view monitor control unit and sonar control unit	LAN-158, "Diagnosis Procedure"
Main line between differential lock control unit and sonar control unit	LAN-160, "Diagnosis Procedure"

Gasoline Engine Models

Malfunction area	Reference
Main line between TCM and transfer control unit	LAN-170, "Diagnosis Procedure"
Main line between TCM and IPDM E/R	LAN-171, "Diagnosis Procedure"
Main line between transfer control unit and IPDM E/R	LAN-172, "Diagnosis Procedure"
Main line between IPDM E/R and ABS actuator and electric unit (control unit)	LAN-173, "Diagnosis Procedure"
Main line between ABS actuator and electric unit (control unit) and driver seat control unit	LAN-174, "Diagnosis Procedure"
Main line between ABS actuator and electric unit (control unit) and data link connector	LAN-175, "Diagnosis Procedure"
Main line between driver seat control unit and data link connector	LAN-140, "Diagnosis Procedure"
Main line between data link connector and steering angle sensor	LAN-141, "Diagnosis Procedure"
Main line between steering angle sensor and air bag diagnosis sensor unit	LAN-142, "Diagnosis Procedure"
Main line between air bag diagnosis sensor unit and combination meter	LAN-147, "Diagnosis Procedure"
Main line between air bag diagnosis sensor unit and ADAS control unit	LAN-144, "Diagnosis Procedure"
Main line between ADAS control unit and combination meter	LAN-146, "Diagnosis Procedure"
Main line between combination meter and AV control unit	LAN-148, "Diagnosis Procedure"
Main line between combination meter and front air control or A/C auto amp.	LAN-177, "Diagnosis Procedure"
Main line between AV control unit and TCU	LAN-149, "Diagnosis Procedure"
Main line between AV control unit and front air control or A/C auto amp.	LAN-179, "Diagnosis Procedure"
Main line between TCU and front air control or A/C auto amp.	LAN-178, "Diagnosis Procedure"
Main line between front air control or A/C auto amp. and low tire pressure warning control unit	LAN-180, "Diagnosis Procedure"

BRANCH LINE

Malfunction area	Reference
ECM branch line circuit	LAN-181, "Diagnosis Procedure"
Transfer control unit branch line circuit	LAN-182, "Diagnosis Procedure"
ABS actuator and electric unit (control unit) branch line circuit	LAN-183, "Diagnosis Procedure"
IPDM E/R branch line circuit	LAN-184, "Diagnosis Procedure"
TCM branch line circuit	LAN-185, "Diagnosis Procedure"
Driver seat control unit branch line circuit	LAN-187, "Diagnosis Procedure"
Data link connector branch line circuit	LAN-188, "Diagnosis Procedure"
Data link connector branch line circuit (CAN communication circuit 1)	LAN-189, "Diagnosis Procedure"
Data link connector branch line circuit (CAN communication circuit 2)	LAN-190, "Diagnosis Procedure"
Data link connector branch line circuit (CAN communication circuit)	LAN-191, "Diagnosis Procedure"
Steering angle sensor branch line circuit	LAN-193, "Diagnosis Procedure"
Air bag diagnosis sensor unit	LAN-194, "Diagnosis Procedure"
CAN gateway branch line circuit (CAN communication circuit 1)	LAN-195, "Diagnosis Procedure"
CAN gateway branch line circuit (CAN communication circuit 2)	LAN-196, "Diagnosis Procedure"
ADAS control unit branch line circuit (CAN communication circuit)	LAN-197, "Diagnosis Procedure"
Combination meter branch line circuit	LAN-199, "Diagnosis Procedure"
AV control unit branch line circuit	LAN-200, "Diagnosis Procedure"

Malfunction area	Reference
TCU branch line circuit	LAN-201, "Diagnosis Procedure"
Low tire pressure warning control unit branch line circuit	LAN-202, "Diagnosis Procedure"
Front air control or A/C auto amp. branch line circuit	LAN-203, "Diagnosis Procedure"
PTC heater control unit branch line circuit	LAN-204, "Diagnosis Procedure"
Around view monitor control unit branch line circuit	LAN-208, "Diagnosis Procedure"
Differential lock control unit branch line circuit	LAN-210, "Diagnosis Procedure"
Sonar control unit branch line circuit	LAN-212, "Diagnosis Procedure"
BCM branch line circuit	LAN-205, "Diagnosis Procedure"

SHORT CIRCUIT

Malfunction area	Reference
CAN communication circuit	LAN-214, "Diagnosis Procedure"
CAN communication circuit 1	LAN-216, "Diagnosis Procedure"
CAN communication circuit 2	LAN-218, "Diagnosis Procedure"

ITS Communication Circuit

INFOID:0000000014387290

MAIN LINE

Malfunction area	Reference
Main line between data link connector and side radar RH	LAN-161, "Diagnosis Procedure"
Main line between side radar RH and side radar LH	LAN-163, "Diagnosis Procedure"
Main line between side radar LH and around view monitor control unit	LAN-164, "Diagnosis Procedure"
Main line between around view monitor control unit and differential lock control unit	LAN-159, "Diagnosis Procedure"
Main line between around view monitor control unit and sonar control unit	LAN-158, "Diagnosis Procedure"
Main line between side radar LH and differential lock control unit	LAN-166, "Diagnosis Procedure"
Main line between side radar LH and sonar control unit	LAN-168, "Diagnosis Procedure"
Main line between differential lock control unit and sonar control unit	LAN-160, "Diagnosis Procedure"

BRANCH LINE

Malfunction area	Reference
Data link connector branch line circuit (ITS communication circuit)	LAN-192, "Diagnosis Procedure"
ADAS control unit branch line circuit (ITS communication circuit)	LAN-198, "Diagnosis Procedure"
Side radar RH branch line circuit	LAN-206, "Diagnosis Procedure"
Side radar LH branch line circuit	LAN-207, "Diagnosis Procedure"
Around view monitor control unit branch line circuit	LAN-208, "Diagnosis Procedure"
Differential lock control unit branch line circuit	LAN-210, "Diagnosis Procedure"
Sonar control unit branch line circuit	LAN-212, "Diagnosis Procedure"

SHORT CIRCUIT OR OPEN CIRCUIT

Malfunction area	Reference
ITS communication circuit	LAN-220, "Diagnosis Procedure"

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014387291

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)

4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014387292

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R

4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014387293

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- TCM
4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014387294

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014387295

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014387296

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014387297

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014387298

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT

Diagnosis Procedure

INFOID:0000000014387299

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- CAN gateway
4. Check the continuity between the steering angle sensor harness connector and the CAN gateway harness connector.

Steering angle sensor harness connector		CAN gateway harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M90	1	Existed
	2		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the CAN gateway.
NO >> Repair the main line between the air bag diagnosis sensor unit and the CAN gateway.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014387300

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- ADAS control unit

4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN CGW AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014387301

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- CAN gateway
- Combination meter
4. Check the continuity between the CAN gateway harness connector and the combination meter harness connector.

CAN gateway harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M90	1	M25	46	Existed
	7		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the CAN gateway and the combination meter.
NO >> Repair the main line between the CAN gateway and the combination meter.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014387302

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN A-BAG AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014387303

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the combination meter.
NO >> Repair the main line between the air bag diagnosis sensor unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014387304

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014387305

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN AV AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014387306

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- Low tire pressure warning control unit

4. Check the continuity between the AV control unit harness connector and the low tire pressure warning control unit harness connector.

- With audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M123	2	Existed
	17		1	Existed

- Without audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M123	2	Existed
	17		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the low tire pressure warning control unit.
NO >> Repair the main line between the AV control unit and the low tire pressure warning control unit.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014387307

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- TCU
- Low tire pressure warning control unit
4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN M&A AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014387308

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- Low tire pressure warning control unit

4. Check the continuity between the combination meter harness connector and the low tire pressure warning control unit harness connector.

Combination meter harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M123	2	Existed
	45		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the low tire pressure warning control unit.
NO >> Repair the main line between the combination meter and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014387309

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN HVAC AND PTC CIRCUIT

Diagnosis Procedure

INFOID:0000000014387310

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control
- PTC heater control unit

4. Check the continuity between the front air control harness connector and the PTC heater control unit harness connector.

Front air control harness connector		PTC heater control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	E131	1	Existed
	17		9	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control and the PTC heater control unit.
NO >> Repair the main line between the front air control and the PTC heater control unit.

MAIN LINE BETWEEN DLC AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000014387311

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

-

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of around view monitor control unit.
2. Check the continuity between the harness connector and the around view monitor control unit harness connector.

Harness connector		Around view monitor control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B69	26J	B83	26	Existed
	16J		24	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the around view monitor control unit.
NO >> Repair the main line between the harness connector B69 and the around view monitor control unit.

MAIN LINE BETWEEN DLC AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014387312

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

-

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of differential lock control unit.
2. Check the continuity between the harness connector and the differential lock control unit harness connector.

Harness connector		Differential lock control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B69	26J	B77	8	Existed
	16J		16	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the differential lock control unit.
NO >> Repair the main line between the harness connector B69 and the differential lock control unit.

MAIN LINE BETWEEN DLC AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014387313

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69
- Sonar control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

-

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector M40 and the sonar control unit.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the sonar control unit.
NO >> Repair the main line between the harness connectors M40 and the sonar control unit.

MAIN LINE BETWEEN AVM AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014387314

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Around view monitor control unit
- Harness connector B69 and M40

2. Check the continuity between the around view monitor control unit harness connector and the harness connector.

-

Around view monitor control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B83	26	B69	42J	Existed
	24		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the around view monitor control unit harness connector and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the around view monitor control unit and the sonar control unit.
NO >> Repair the main line between the harness connectors M40 and the sonar control unit.

MAIN LINE BETWEEN AVM AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014387315

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector M40 and B69.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the around view monitor control unit and the differential lock control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014387316

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Differential lock control unit
- Harness connector B69 and M40

2. Check the continuity between the differential lock control unit harness connector and the harness connector.

Differential lock control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B77	8	B69	42J	Existed
	16		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the differential lock control unit and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the differential lock control unit and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014387317

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014387318

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000014387319

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the around view monitor control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014387320

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the differential lock control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014387321

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair the main line between the harness connector B69.

7.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000014387322

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the transfer control unit harness connector.

Harness connector		Transfer control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E142	13	Existed
	8		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the transfer control unit.
NO >> Repair the main line between the harness connector E28 and the transfer control unit.

MAIN LINE BETWEEN TCM AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014387323

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the IPDM E/R harness connector.

Harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E122	41	Existed
	8		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the IPDM E/R.
NO >> Repair the main line between the harness connector E28 and the IPDM E/R.

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014387324

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Transfer control unit
- IPDM E/R

4. Check the continuity between the transfer control unit harness connector and the IPDM E/R harness connector.

Transfer control unit harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E122	41	Existed
	14		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the IPDM E/R.
NO >> Repair the main line between the transfer control unit and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014387325

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)

4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014387326

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014387327

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN M&A AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014387328

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the combination meter harness connector and the front air control or the A/C auto amp. harness connector.

- With type A

Combination meter harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M132	1	Existed
	45		17	Existed

- With type B

Combination meter harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M163	34	M132	1	Existed
	35		17	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the front air control or the A/C auto amp.
NO >> Repair the main line between the combination meter and the front air control or the A/C auto amp.

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014387329

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the TCU harness connector and the A/C auto amp. harness connector.

TCU harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M137	1	Existed
	7		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the A/C auto amp.
NO >> Repair the main line between the TCU and the A/C auto amp.

MAIN LINE BETWEEN AV AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014387330

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the AV control unit harness connector and the A/C auto amp. harness connector.

- With audio amplifier

AV control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M137	1	Existed
	17		21	Existed

- Without audio amplifier

AV control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M137	1	Existed
	17		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the A/C auto amp.
NO >> Repair the main line between the AV control unit and the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014387331

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387332

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.
- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387333

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387334

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387335

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387336

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387337

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387338

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit.
NO >> Repair the data link connector branch line.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014387339

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 1 side).
NO >> Repair the data link connector branch line (CAN communication circuit 1 side).

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014387340

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 2 side).
NO >> Repair the data link connector branch line (CAN communication circuit 2 side).

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014387341

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014387342

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387343

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387344

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014387345

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of CAN gateway.
2. Check the resistance between the CAN gateway harness connector terminals.

CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 1 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side).
NO >> Repair the power supply and the ground circuit.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014387346

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 2 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 2 side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014387347

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014387348

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387349

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387350

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387351

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387352

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387353

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

PTC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387354

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the PTC heater control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of PTC heater control unit
2. Check the resistance between the PTC heater control unit harness connector terminals.

PTC heater control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M131	1	9	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the PTC heater control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the PTC heater control unit. Refer to HAC-209, "PTC HEATER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the PTC heater control unit.
YES (Past error)>>Error was detected in the PTC heater control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387355

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387356

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387357

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387358

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Around view monitor control unit
- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-357, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-360, "Removal and Installation".
YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387359

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014387360

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014387361

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000014387362

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000014387363

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 2.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK CAN GATEWAY TERMINATION CIRCUIT

1. Remove the CAN gateway.
2. Check the resistance between the CAN gateway terminals.

CAN gateway		Resistance (Ω)
Terminal No.		
4	10	Approx. 108 – 132
6	12	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the CAN gateway.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   CAN gateway has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014387364

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000014694590

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

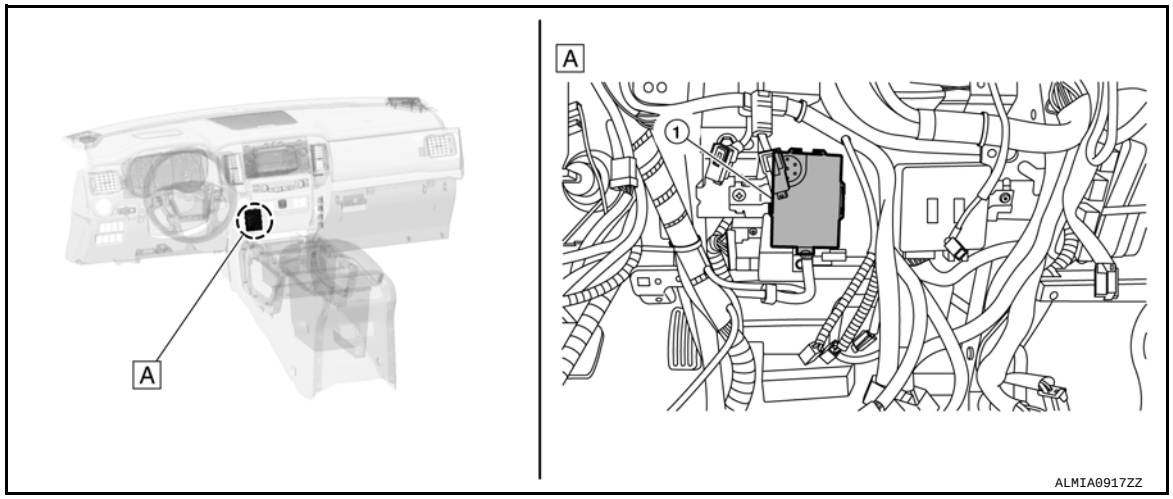
- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, and wait at least three minutes before performing any service.**

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000014387365



A Behind cluster lid C

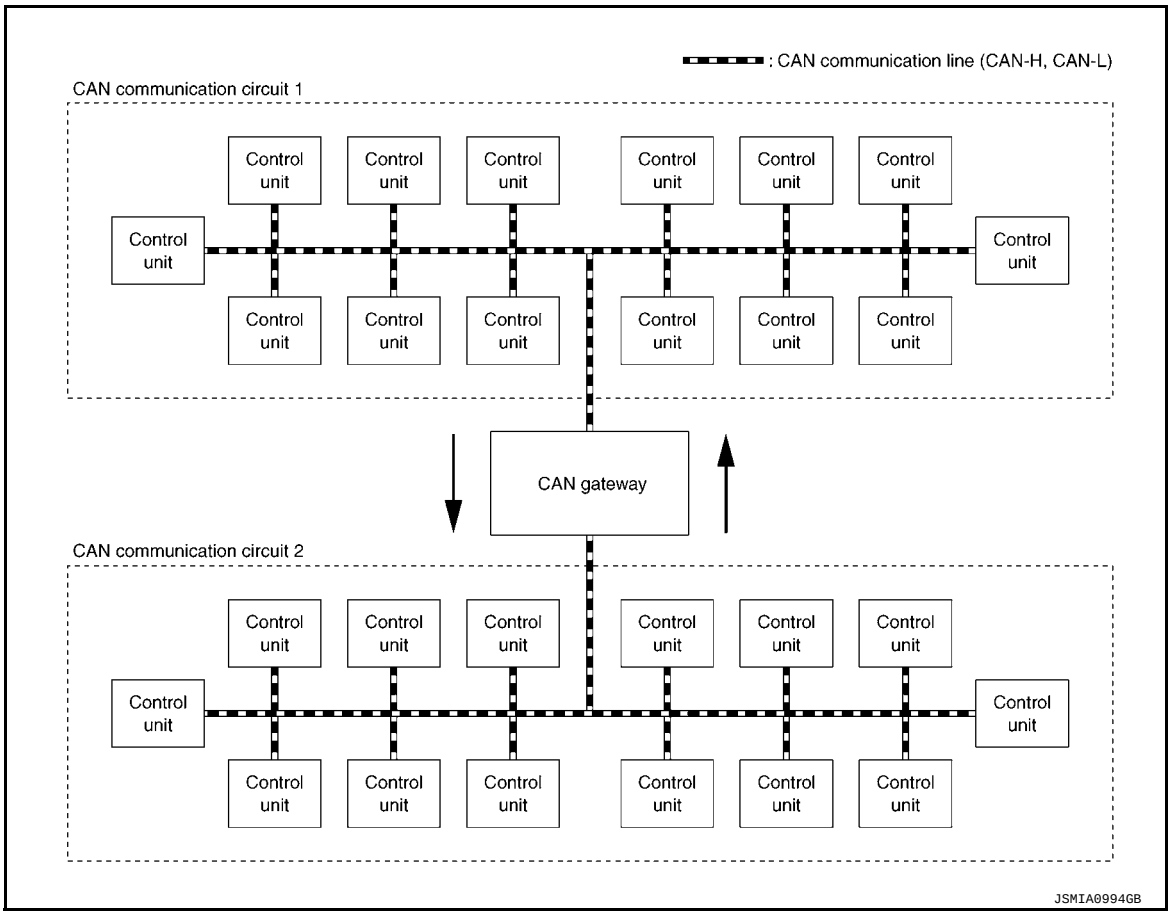
1 CAN gateway

SYSTEM

System Description

INFOID:0000000014387366

SYSTEM DIAGRAM



SYSTEM DESCRIPTION

- The CAN gateway system communicates between two CAN communication circuits.
- This system selects and transmits only necessary information.

DIAGNOSIS SYSTEM (CAN GATEWAY)

CONSULT Function

INFOID:0000000014387367

CAUTION:
After disconnecting the CONSULT vehicle interface (VI) from the data link connector, the ignition must be cycled OFF → ON (for at least 5 seconds) → OFF. If this step is not performed, the BCM may not go to "sleep mode", potentially causing a discharged battery and no-start condition.

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with CAN gateway.

Diagnosis mode	Function Description
Ecu Identification	The CAN gateway part number is displayed.
Self Diagnostic Result	Displays the diagnosis results judged by CAN gateway.
CAN Diag Support Monitor	The results of transmit/receive diagnosis of CAN communication can be read.
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing CAN gateway.

ECU IDENTIFICATION

The CAN gateway part number is displayed.

SELF DIAGNOSTIC RESULT

Refer to LAN-228, "DTC Index".

- When "CRNT" is displayed on self-diagnosis result
- The system is presently malfunctioning.
- When "PAST" is displayed on self-diagnosis result
- System malfunction in the past is detected, but the system is presently normal.

Freeze Frame Data (FFD)

When DTC is detected, a vehicle state shown below is recorded and displayed on CONSULT.

Item name	Display item
IGN counter (0 – 39)	The number of times that ignition switch is turned ON after the DTC is detected is displayed. • When "0" is displayed: It indicates that the system is presently malfunctioning. • When except "0" is displayed: It indicates that system malfunction in the past is detected, but the system is presently normal. **NOTE:** Each time when ignition switch is turned OFF to ON, numerical number increases in 1 → 2 → 3...38 → 39. When the operation number of times exceeds 39, the number do not increase and "39" is displayed until self-diagnosis result is erased.

CAN DIAG SUPPORT MONITOR

The results of transmit/receive diagnosis of CAN communication can be read.

CONFIGURATION

Function		Description
Read / Write Configuration	Before Replace ECU	• Reads the vehicle configuration of current CAN gateway. • Saves the read vehicle configuration.
	After Replace ECU	Writes the vehicle configuration with saved data.
Manual Configuration		Writes the vehicle configuration with manual selection.

CAUTION:
Follow the instructions listed below. Failure to do this may cause malfunctions to the CAN gateway.:

- **When replacing CAN gateway, you must perform "Read / Write Configuration" or "Manual Configuration" with CONSULT.**
- **Complete the procedure of "Read / Write Configuration" or "Manual Configuration" in order.**
- **If you set incorrect "Read / Write Configuration" or "Manual Configuration", incidents might occur.**
- **Configuration is different for each vehicle model. Confirm configuration of each vehicle model.**

- **Never perform “Read / Write Configuration” or “Manual Configuration” except for new CAN gateway.**

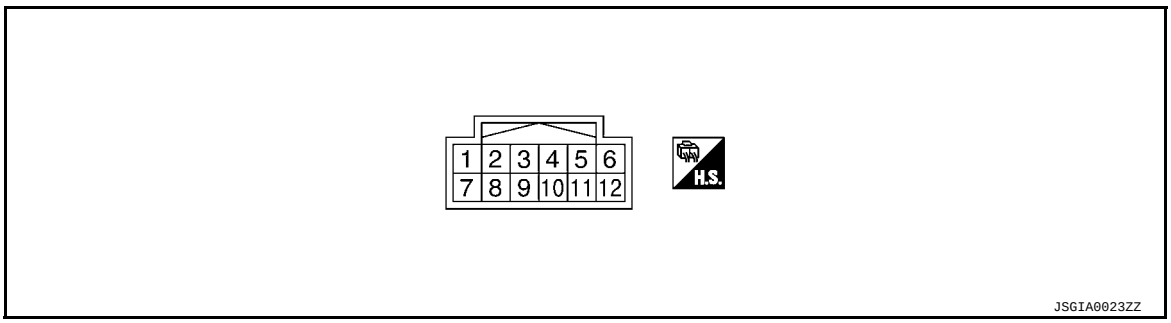
ECU DIAGNOSIS INFORMATION

CAN GATEWAY

Reference Value

INFOID:0000000014387368

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Standard value	Reference value (Approx.)
+	–	Signal name	Input/ Output			
1 (L)	—	CAN-H (CAN communication circuit 1)	Input/ Output	—	—	—
3 (BG)	Ground	Battery power supply	Input	Ignition switch OFF	6 - 16 V	Battery voltage
4 (L)	—	CAN-H (CAN communication circuit 2)	Input/ Output	—	—	—
5 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
6 (L)	—	CAN-H (CAN communication circuit 3)	Input/ Output	—	—	—
7 (P)	—	CAN-L (CAN communication circuit 1)	Input/ Output	—	—	—
9 (G)	Ground	Ignition power supply	Input	Ignition switch ON	4.5 V - 16 V	Battery voltage
10 (R)	—	CAN-L (CAN communication circuit 2)	Input/ Output	—	—	—
11 (B)	Ground	Ground	—	Ignition switch ON	—	0 V
12 (R)	—	CAN-L (CAN communication circuit 3)	Input/ Output	—	—	—

DTC Inspection Priority Chart

INFOID:0000000014387369

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	DTC
1	• B2600: CONFIG ERROR • U1010: CONTROL UNIT(CAN)
2	U1000: CAN COMM CIRCUIT

DTC Index

INFOID:0000000014387370

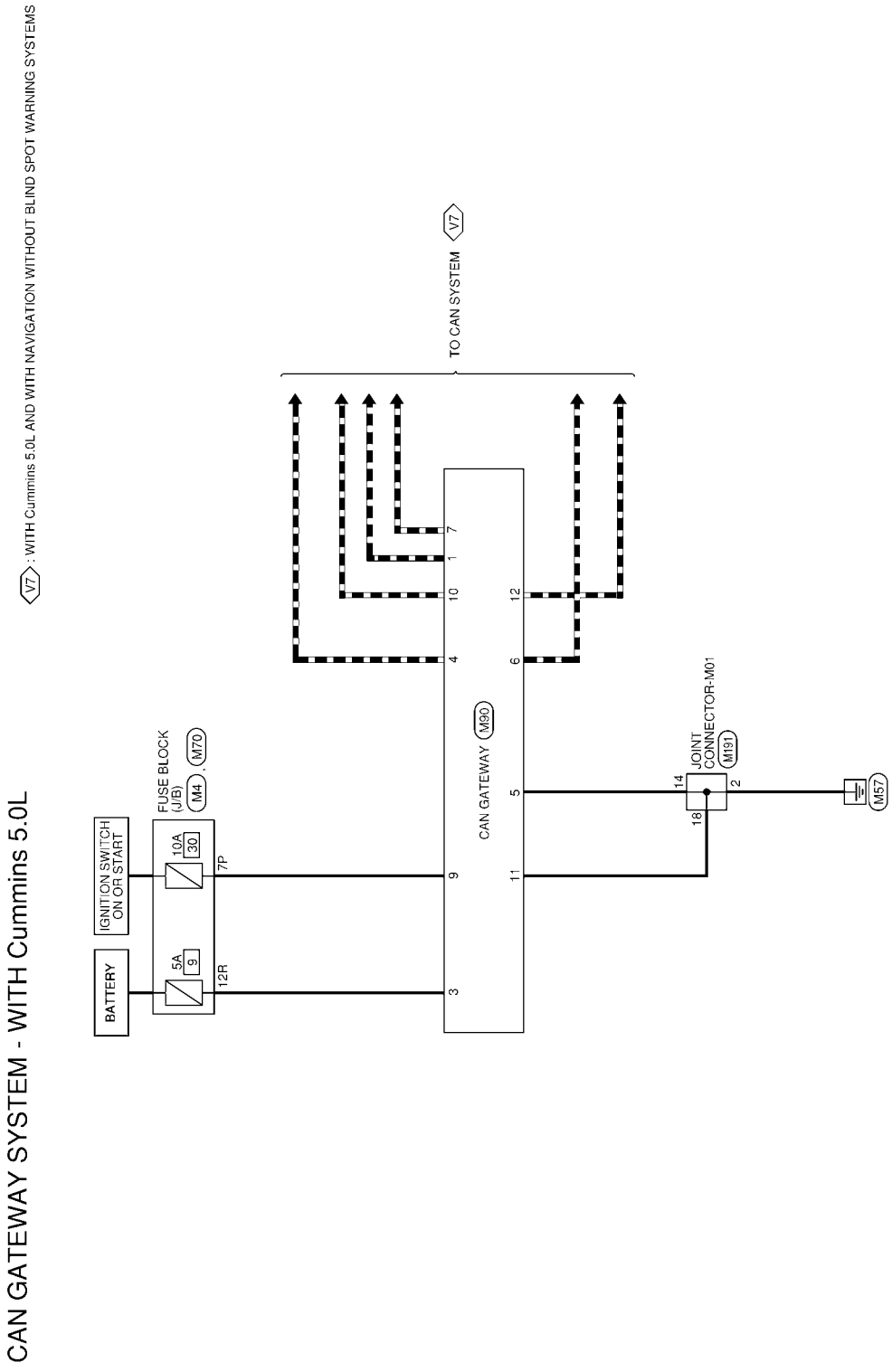
DTC		Reference
No DTC is detected. Further testing may be required.		—
U1000: CAN COMM CIRCUIT		LAN-233
U1010: CONTROL UNIT(CAN)		LAN-234
B2600: CONFIG ERROR	WRONG DATA	LAN-235
	NOT CONFIGURED	

WIRING DIAGRAM

CAN GATEWAY SYSTEM

Wiring Diagram

INFOID:0000000014387371



AAMWA2164GB

CAN GATEWAY SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

7P	6P	5P	4P		3P	2P	1P
16P	15P	14P	13P	12P	11P	10P	9P	8P

Terminal No.	Color of Wire	Signal Name
1P	R	IGNITION
2P	Y	IGNITION
3P	G	IGNITION RELAY OUT
4P	B/W	RR DEF RLY
5P	B/W	RR DEF RLY
6P	O	RR DEF RLY OUT
7P	G	IGNITION
8P	W	IGNITION
9P	L	BATTERY
10P	–	–
11P	–	–
12P	–	–
13P	R	BATTERY
14P	Y	BATTERY
15P	Y/LG	BATTERY
16P	W	BLOWER FAN RELAY OUT

8R	–	–
9R	–	–
10R	W	BATTERY
11R	–	–
12R	BG	BATTERY
13R	B	ACCESSORY
14R	G/Y	BATTERY
15R	Y	BATTERY
16R	G/R	ACCESSORY

Connector No.	M90
Connector Name	CAN GATEWAY
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

1	2	3	4	5	6
7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	L	CAN 1 H
2	–	–
3	BG	BATTERY
4	L	CAN 2 H
5	B	GND
6	L	CAN 3 H
7	P	CAN 1 L
8	–	–
9	G	IGNITION
10	R	CAN 2 L
11	B	GND
12	R	CAN 3 L

Connector No.	M191
Connector Name	JOINT CONNECTOR-M01
Connector Type	NH24FW-J
Connector Color	WHITE

H.S.

4	3	2	1
8	7	6	5
12	11	10	9
16	15	14	13
20	19	18	17
24	23	22	21

Terminal No.	Color of Wire	Signal Name
1	–	–
2	B	GND
3	B	GND
4	B	GROUND
5	–	–
6	B	GND
7	B	GND
8	B	GND
9	–	–
10	B	GND
11	B	GND
12	B	GND
13	B	GND
14	B	GND
15	B	GND
16	–	–
17	B	GND
18	B	GND
19	SHIELD	GROUND
20	B	GND
21	B	GND
22	B	GND
23	B	GROUND
24	B	GROUND

Connector No.	M70
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FBR-CS
Connector Color	BROWN

H.S.

7R	6R	5R	4R		3R	2R	1R
16R	15R	14R	13R	12R	11R	10R	9R	8R

Terminal No.	Color of Wire	Signal Name
1R	L	TAIL LAMP 2
2R	G/R	IGNITION
3R	Y/R	BATTERY
4R	–	–
5R	W	BATTERY
6R	G/W	ACCESSORY
7R	–	–

AAMIA4427GB

BASIC INSPECTION

ADDITIONAL SERVICE WHEN REPLACING CAN GATEWAY

Description

INFOID:0000000014387372

BEFORE REPLACEMENT

When replacing CAN gateway, save or print current vehicle specification with CONSULT configuration before replacement.

NOTE:

If “Before Replace ECU” of “Read / Write Configuration” can not be used, use the “Manual Configuration” after replacing CAN gateway.

AFTER REPLACEMENT

CAUTION:

Follow the instructions listed below. Failure to do this may cause malfunctions to the CAN gateway.:

- **When replacing CAN gateway, you must perform “Read / Write Configuration” or “Manual Configuration” with CONSULT.**
- **Complete the procedure of “Read / Write Configuration” or “Manual Configuration” in order.**
- **If you set incorrect “Read / Write Configuration” or “Manual Configuration”, incidents might occur.**
- **Configuration is different for each vehicle model. Confirm configuration of each vehicle model.**
- **Never perform “Read / Write Configuration” or “Manual Configuration” except for new CAN gateway.**

Work Procedure

INFOID:0000000014387373

1. SAVING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “Before Replace ECU” of “Read / Write Configuration” to save or print current vehicle specification. Refer to LAN-231, "Description".

NOTE:

If “Before Replace ECU” of “Read / Write Configuration” can not be used, use the “Manual Configuration” after replacing CAN gateway.

>> GO TO 2.

2. REPLACE CAN GATEWAY

Replace CAN gateway. Refer to LAN-238, "Removal and Installation".

>> GO TO 3.

3. WRITING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “After Replace ECU” of “Read / Write Configuration” or “Manual Configuration” to write vehicle specification. Refer to LAN-232, "Work Procedure".

>> WORK END

CONFIGURATION (CAN GATEWAY)

Work Procedure

INFOID:0000000014387374

1.WRITING MODE SELECTION

CONSULT Configuration
Select “Re/programming, Configuration” of CAN gateway.

When writing saved data>>GO TO 2.
When writing manually>>GO TO 3.

2.PERFORM “AFTER REPLACE ECU” OF “READ / WRITE CONFIGURATION”

CONSULT Configuration
Perform “After Replace ECU” of “Read / Write Configuration”.

>> GO TO 4.

3.PERFORM “MANUAL CONFIGURATION”

CONSULT Configuration
1. Select “Manual Configuration”.
2. Touch “Next”.
3. Touch “OK”.
4. Check that the configuration has been successfully written and touch “End”.

>> GO TO 4.

4.CHECK ALL ECU SELF-DIAGNOSIS RESULTS

1. Erase all ECU self-diagnosis results using CONSULT.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON and wait for 2 seconds or more.
4. Check that all ECU self-diagnosis results have no DTC (e.g. U1000 and U1001) of CAN communication.

>> WORK END

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

DTC Description

INFOID:0000000014387375

DESCRIPTION

CAN (Controller Area Network) is a serial communication line for real-time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independently). In CAN communication, control units are connected with 2 communication lines (CAN-H, CAN-L) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
CAN Communication Signal Chart. Refer to LAN-74, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis contents)	DTC detection condition	
U1000	CAN COMM CIRCUIT (CAN communication circuit)	Diagnosis condition	Ignition switch ON
		Signal (terminal)	CAN communication signal
		Threshold	CAN gateway is not transmitting or receiving CAN communication signal
		Diagnosis delay time	Continuously for 2 seconds or more

POSSIBLE CAUSE

CAN communication system

FAIL-SAFE

Only the CAN signal transmission of control unit which cannot communicate cannot be transmitted

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 2 seconds or more.
2. Select “Self Diagnostic Result” mode of “CAN GATEWAY” using CONSULT.
3. Check DTC.

Is DTC U1000 detected?

YES >> Proceed to LAN-233, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: GI-47, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000014387376

1.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

1. Turn ignition switch ON.
2. Erase DTC.
3. Perform DTC confirmation procedure again. Refer to LAN-233, "DTC Description".
4. Check DTC.

Is DTC U1000 detected again?

YES >> Perform trouble diagnosis procedure for CAN communication system. Refer to LAN-53, "Trouble Diagnosis Flow Chart".
NO >> INSPECTION END

U1010 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000014387377

DESCRIPTION

CAN (Controller Area Network) is a serial communication line for real-time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independently). In CAN communication, control units are connected with 2 communication lines (CAN-H, CAN-L) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
CAN Communication Signal Chart. Refer to LAN-74, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis contents)	DTC detection condition	
U1010	CONTROL UNIT (CAN) [Control unit (CAN)]	Diagnosis condition	Ignition switch ON
		Signal (terminal)	—
		Threshold	CAN controller initial diagnosis abnormality of CAN gateway
		Diagnosis delay time	Continuously for 2 seconds or more

POSSIBLE CAUSE

CAN gateway

FAIL-SAFE

Transmission and reception of the signal between CAN communication circuit 1 and CAN communication circuit 2 are stopped

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON and wait at least 2 seconds or more.
2. Select “Self Diagnostic Result” mode of “CAN GATEWAY” using CONSULT.
3. Check DTC.

Is DTC U1010 detected?

YES >> Proceed to LAN-234, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: GI-47, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000014387378

1.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

1. Turn ignition switch ON.
2. Erase DTC.
3. Perform DTC confirmation procedure again. Refer to LAN-234, "DTC Description".
4. Check DTC.

Is DTC U1010 detected again?

YES >> Replace CAN gateway. Refer to LAN-238, "Removal and Installation".
NO >> INSPECTION END

B2600 CONFIG ERROR

DTC Description

INFOID:0000000014387379

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis contents)		DTC detection condition	
B2600	CONFIG ERROR (Configuration error)	WRONG DATA (Wrong data)	Diagnosis condition	Ignition switch ON
			Signal (terminal)	—
			Threshold	Configuration data abnormality of CAN gateway
			Diagnosis delay time	Continuously for 2 seconds or more
		NOT CONFIGURED (Not configured)	Diagnosis condition	Ignition switch ON
			Signal (terminal)	—
			Threshold	No data are stored in the CAN gateway
			Diagnosis delay time	Continuously for 2 seconds or more

POSSIBLE CAUSE

- Configuration is incomplete
- CAN gateway

FAIL-SAFE

Transmission and reception of the signal between CAN communication circuit 1 and CAN communication circuit 2 are stopped

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 2 seconds or more.
2. Select “Self Diagnostic Result” mode of “CAN GATEWAY” using CONSULT.
3. Check DTC.

Is DTC B2600 detected?

YES-1 (“CONFIG ERROR WRONG DATA” is detected.)>>Proceed to LAN-235, "WRONG DATA : Diagnosis Procedure".

YES-2 (“CONFIG ERROR NOT CONFIGURED” is detected.)>>Proceed to LAN-235, "NOT CONFIGURED : Diagnosis Procedure".

NO-1 >> To check malfunction symptom before repair: GI-47, "Intermittent Incident".

NO-2 >> Confirmation after repair: INSPECTION END

WRONG DATA

WRONG DATA : Diagnosis Procedure

INFOID:0000000014387380

1.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

1. Turn ignition switch ON.
2. Erase DTC.
3. Perform DTC confirmation procedure again. Refer to LAN-235, "DTC Description".
4. Check DTC.

Is DTC B2600 detected again?

YES >> Replace CAN gateway. Refer to LAN-238, "Removal and Installation".

NO >> INSPECTION END

NOT CONFIGURED

NOT CONFIGURED : Diagnosis Procedure

INFOID:0000000014387381

1.PERFORM CONFIGURATION OF CAN GATEWAY

Perform CAN gateway configuration. Refer to LAN-232, "Work Procedure".

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE AGAIN

1. Turn ignition switch ON.
2. Perform DTC confirmation procedure again. Refer to LAN-235, "DTC Description".
3. Check DTC.

Is DTC B2600 detected again?

YES >> Replace CAN gateway. Refer to LAN-238, "Removal and Installation".
NO >> INSPECTION END

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000014387382

1.CHECK FUSE

Check that the following fuse are not blown.

Signal name	Fuse No.
Battery power supply	9
Ignition power supply	30

Is the fuse fusing?

YES >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.
NO >> GO TO 2.

2.CHECK POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect the connector of CAN gateway.
3. Check voltage between CAN gateway harness connector and ground.

Terminals			Condition	Standard voltage	Reference voltage (Approx.)
(+)		(–)			
CAN gateway		Ground	Ignition switch		
Connector	Terminal				
M90	3		OFF	6 - 16 V	Battery voltage
	9		ON	4.5 - 16 V	Battery voltage

Is the measurement value normal?

YES >> GO TO 3.
NO >> Repair harness or connector.

3.CHECK GROUND CIRCUIT

Check continuity between CAN gateway harness connector and ground.

CAN gateway		Ground	Continuity
Connector	Terminal		
M90	5		Existed
	11		

Does continuity exist?

YES >> INSPECTION END
NO >> Repair harness or connector.

REMOVAL AND INSTALLATION

CAN GATEWAY

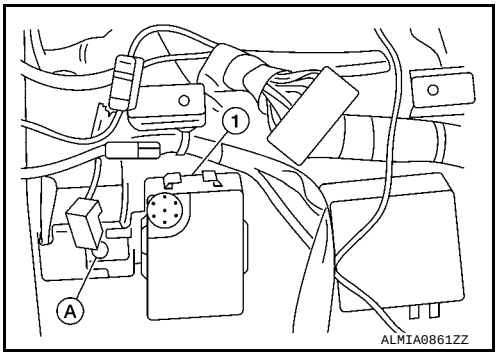
Removal and Installation

INFOID:0000000014387383

CAUTION:
Before replacing CAN gateway, perform “Before Replace ECU” of “Read / Write Configuration” to save or print current vehicle specification. Refer to LAN-231, "Description".

REMOVAL

1. Disconnect the battery or batteries. Refer to PG-185, "Battery Disconnect".
2. Remove the cluster lid C. Refer to IP-20, "Removal and Installation".
3. Remove the CAN gateway screw (A).
4. Disconnect the harness connector from the CAN gateway.
5. Remove the CAN gateway (1).



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:
To prevent malfunction, be sure to perform “After Replace ECU” of “Read / Write Configuration” or “Manual Configuration” when replacing CAN gateway. Refer to LAN-231, "Description".

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014682450

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014682451

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- TCM

4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014682452

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014682453

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014682454

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014682455

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the combination meter.
NO >> Repair the main line between the air bag diagnosis sensor unit and the combination meter.

MAIN LINE BETWEEN M&A AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014682456

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Combination meter
- Low tire pressure warning control unit
4. Check the continuity between the combination meter harness connector and the low tire pressure warning control unit harness connector.

Combination meter harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M123	2	Existed
	45		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the low tire pressure warning control unit.
NO >> Repair the main line between the combination meter and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014682457

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN HVAC AND PTC CIRCUIT

Diagnosis Procedure

INFOID:0000000014682458

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control
- PTC heater control unit

4. Check the continuity between the front air control harness connector and the PTC heater control unit harness connector.

Front air control harness connector		PTC heater control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	E131	1	Existed
	17		9	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control and the PTC heater control unit.
NO >> Repair the main line between the front air control and the PTC heater control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682459

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682464

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682460

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682461

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682467

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit.
NO >> Repair the data link connector branch line.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682468

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682469

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2. CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682472

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682474

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682475

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

PTC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682476

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the PTC heater control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of PTC heater control unit
2. Check the resistance between the PTC heater control unit harness connector terminals.

PTC heater control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M131	1	9	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the PTC heater control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the PTC heater control unit. Refer to HAC-209, "PTC HEATER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the PTC heater control unit.
YES (Past error)>>Error was detected in the PTC heater control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682477

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014682481

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014682488

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014682493

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- TCM

4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014682495

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014682497

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014682498

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT

Diagnosis Procedure

INFOID:0000000014682500

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- CAN gateway
4. Check the continuity between the steering angle sensor harness connector and the CAN gateway harness connector.

Steering angle sensor harness connector		CAN gateway harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M90	1	Existed
	2		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the CAN gateway.
NO >> Repair the main line between the air bag diagnosis sensor unit and the CAN gateway.

MAIN LINE BETWEEN CGW AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014682501

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- CAN gateway
- Combination meter
4. Check the continuity between the CAN gateway harness connector and the combination meter harness connector.

CAN gateway harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M90	1	M25	46	Existed
	7		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the CAN gateway and the combination meter.
NO >> Repair the main line between the CAN gateway and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014682502

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014682503

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- Low tire pressure warning control unit

4. Check the continuity between the AV control unit harness connector and the low tire pressure warning control unit harness connector.

- With audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M123	2	Existed
	17		1	Existed

- Without audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M123	2	Existed
	17		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the low tire pressure warning control unit.
NO >> Repair the main line between the AV control unit and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014682504

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014682505

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69
- Sonar control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

-

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector M40 and the sonar control unit.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the sonar control unit.
NO >> Repair the main line between the harness connectors M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682512

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682514

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682515

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682516

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014682522

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 1 side).
NO >> Repair the data link connector branch line (CAN communication circuit 1 side).

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014682519

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 2 side).
NO >> Repair the data link connector branch line (CAN communication circuit 2 side).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682525

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682526

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014682527

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of CAN gateway.
2. Check the resistance between the CAN gateway harness connector terminals.

CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 1 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side).
NO >> Repair the power supply and the ground circuit.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014682528

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 2 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 2 side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682532

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682533

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682535

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682536

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682557

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014682558

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000014682559

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000014682560

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 2.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK CAN GATEWAY TERMINATION CIRCUIT

1. Remove the CAN gateway.
2. Check the resistance between the CAN gateway terminals.

CAN gateway		Resistance (Ω)
Terminal No.		
4	10	Approx. 108 – 132
6	12	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the CAN gateway.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   CAN gateway has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014682562

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R

4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014682564

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- TCM
4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014682565

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014682566

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014682567

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014682568

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT

Diagnosis Procedure

INFOID:0000000014682569

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- CAN gateway

4. Check the continuity between the steering angle sensor harness connector and the CAN gateway harness connector.

Steering angle sensor harness connector		CAN gateway harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M90	1	Existed
	2		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the CAN gateway.
NO >> Repair the main line between the air bag diagnosis sensor unit and the CAN gateway.

MAIN LINE BETWEEN CGW AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014682570

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- CAN gateway
- Combination meter

4. Check the continuity between the CAN gateway harness connector and the combination meter harness connector.

CAN gateway harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M90	1	M25	46	Existed
	7		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the CAN gateway and the combination meter.
NO >> Repair the main line between the CAN gateway and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014682571

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014682572

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014682573

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- Low tire pressure warning control unit

4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014682574

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014682575

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69
- Sonar control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

-

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector M40 and the sonar control unit.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the sonar control unit.
NO >> Repair the main line between the harness connectors M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683017

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683024

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683025

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683026

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683027

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014683046

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 1 side).
NO >> Repair the data link connector branch line (CAN communication circuit 1 side).

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014683031

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 2 side).
NO >> Repair the data link connector branch line (CAN communication circuit 2 side).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683033

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683034

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014683035

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of CAN gateway.
2. Check the resistance between the CAN gateway harness connector terminals.

CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 1 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side).
NO >> Repair the power supply and the ground circuit.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014683036

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 2 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 2 side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683037

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683038

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683039

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683040

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683041

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683042

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683043

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000014683044

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000014683045

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 2.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK CAN GATEWAY TERMINATION CIRCUIT

1. Remove the CAN gateway.
2. Check the resistance between the CAN gateway terminals.

CAN gateway		Resistance (Ω)
Terminal No.		
4	10	Approx. 108 – 132
6	12	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the CAN gateway.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   CAN gateway has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014683185

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014683199

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- TCM

4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683204

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683205

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683206

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683208

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- ADAS control unit

4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014683209

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ADAS control unit
- Combination meter
4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014683213

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014683215

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- Low tire pressure warning control unit

4. Check the continuity between the AV control unit harness connector and the low tire pressure warning control unit harness connector.

- With audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M123	2	Existed
	17		1	Existed

- Without audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M123	2	Existed
	17		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the low tire pressure warning control unit.
NO >> Repair the main line between the AV control unit and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683217

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014683219

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014683220

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014683221

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair the main line between the harness connector B69.

7. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683246

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683248

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683249

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683250

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014683251

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014683252

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683253

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683254

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014683255

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014683256

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683257

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683258

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683259

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683260

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683261

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683262

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683263

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683264

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014683265

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014683266

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014683267

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R

4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014683268

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- TCM
4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014685967

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014685973

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683270

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683271

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683272

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- ADAS control unit

4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014683273

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ADAS control unit
- Combination meter
4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014683274

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014683300

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014683301

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- Low tire pressure warning control unit

4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683276

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014683277

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014683278

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014683279

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair the main line between the harness connector B69.

7. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683280

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.
- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683281

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683282

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683283

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686136

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014683284

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014683285

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683286

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683287

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014683288

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014683289

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683290

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683291

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683305

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683292

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683293

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683294

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683295

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683296

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683297

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014683298

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014683299

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014683330

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014683331

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- TCM

4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014683332

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683333

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683334

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683335

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT

Diagnosis Procedure

INFOID:0000000014683336

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- CAN gateway
4. Check the continuity between the steering angle sensor harness connector and the CAN gateway harness connector.

Steering angle sensor harness connector		CAN gateway harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M90	1	Existed
	2		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the CAN gateway.
NO >> Repair the main line between the air bag diagnosis sensor unit and the CAN gateway.

MAIN LINE BETWEEN CGW AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014683337

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- CAN gateway
- Combination meter
4. Check the continuity between the CAN gateway harness connector and the combination meter harness connector.

CAN gateway harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M90	1	M25	46	Existed
	7		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the CAN gateway and the combination meter.
NO >> Repair the main line between the CAN gateway and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014683338

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014683339

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014683340

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- TCU
- Low tire pressure warning control unit
4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683341

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000014683383

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

-

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of around view monitor control unit.
2. Check the continuity between the harness connector and the around view monitor control unit harness connector.

Harness connector		Around view monitor control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B69	26J	B83	26	Existed
	16J		24	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the around view monitor control unit.
NO >> Repair the main line between the harness connector B69 and the around view monitor control unit.

MAIN LINE BETWEEN AVM AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014683387

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Around view monitor control unit
- Harness connector B69 and M40

2. Check the continuity between the around view monitor control unit harness connector and the harness connector.

-

Around view monitor control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B83	26	B69	42J	Existed
	24		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the around view monitor control unit harness connector and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the around view monitor control unit and the sonar control unit.
NO >> Repair the main line between the harness connectors M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683343

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683344

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683345

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683346

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683347

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014683348

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 1 side).
NO >> Repair the data link connector branch line (CAN communication circuit 1 side).

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014683349

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 2 side).
NO >> Repair the data link connector branch line (CAN communication circuit 2 side).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683350

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683351

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014683352

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of CAN gateway.
2. Check the resistance between the CAN gateway harness connector terminals.

CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 1 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side).
NO >> Repair the power supply and the ground circuit.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014683353

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 2 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 2 side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683354

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683355

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683356

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683357

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683358

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683359

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683389

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Around view monitor control unit
- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-357, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-360, "Removal and Installation".
YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683360

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000014683361

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000014683362

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 2.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK CAN GATEWAY TERMINATION CIRCUIT

1. Remove the CAN gateway.
2. Check the resistance between the CAN gateway terminals.

CAN gateway		Resistance (Ω)
Terminal No.		
4	10	Approx. 108 – 132
6	12	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the CAN gateway.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   CAN gateway has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014683399

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R

4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014683400

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- TCM

4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014685988

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014685989

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683402

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683403

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683404

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- ADAS control unit
4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014683405

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ADAS control unit
- Combination meter
4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014683406

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014683407

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014683408

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- Low tire pressure warning control unit

4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683409

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014683410

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014683411

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000014683442

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the around view monitor control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN AVM AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014683443

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Around view monitor control unit
- Harness connector B69 and M40

2. Check the continuity between the around view monitor control unit harness connector and the harness connector.

-

Around view monitor control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B83	26	B69	42J	Existed
	24		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the around view monitor control unit harness connector and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the around view monitor control unit and the sonar control unit.
NO >> Repair the main line between the harness connectors M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683413

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683414

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683415

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683416

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014685990

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014683417

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014683418

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683419

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683420

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014683421

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014683422

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683423

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683424

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683425

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683426

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683427

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683428

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683429

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683430

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683444

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Around view monitor control unit
- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-357, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-360, "Removal and Installation".
YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683431

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014683432

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014683433

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014683534

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)
4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014683475

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R

4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014683476

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- TCM

4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683477

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683478

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683479

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014683480

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the combination meter.
NO >> Repair the main line between the air bag diagnosis sensor unit and the combination meter.

MAIN LINE BETWEEN M&A AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014683481

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- Low tire pressure warning control unit

4. Check the continuity between the combination meter harness connector and the low tire pressure warning control unit harness connector.

Combination meter harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M123	2	Existed
	45		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the low tire pressure warning control unit.
NO >> Repair the main line between the combination meter and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683482

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN HVAC AND PTC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683483

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control
- PTC heater control unit

4. Check the continuity between the front air control harness connector and the PTC heater control unit harness connector.

Front air control harness connector		PTC heater control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	E131	1	Existed
	17		9	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control and the PTC heater control unit.
NO >> Repair the main line between the front air control and the PTC heater control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683484

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683535

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683485

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683486

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683487

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683488

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit.
NO >> Repair the data link connector branch line.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683489

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683490

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683491

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683492

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683493

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

PTC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683494

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the PTC heater control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of PTC heater control unit
2. Check the resistance between the PTC heater control unit harness connector terminals.

PTC heater control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M131	1	9	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the PTC heater control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the PTC heater control unit. Refer to HAC-209, "PTC HEATER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the PTC heater control unit.
YES (Past error)>>Error was detected in the PTC heater control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683495

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014683496

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014683590

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)

4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014683561

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014683562

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- TCM
4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683563

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683564

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683565

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT

Diagnosis Procedure

INFOID:0000000014683566

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- CAN gateway
4. Check the continuity between the steering angle sensor harness connector and the CAN gateway harness connector.

Steering angle sensor harness connector		CAN gateway harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M90	1	Existed
	2		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the CAN gateway.
NO >> Repair the main line between the air bag diagnosis sensor unit and the CAN gateway.

MAIN LINE BETWEEN CGW AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014683567

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- CAN gateway
- Combination meter

4. Check the continuity between the CAN gateway harness connector and the combination meter harness connector.

CAN gateway harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M90	1	M25	46	Existed
	7		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the CAN gateway and the combination meter.
NO >> Repair the main line between the CAN gateway and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014683568

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014683569

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- Low tire pressure warning control unit

4. Check the continuity between the AV control unit harness connector and the low tire pressure warning control unit harness connector.

- With audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M123	2	Existed
	17		1	Existed

- Without audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M123	2	Existed
	17		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the low tire pressure warning control unit.
NO >> Repair the main line between the AV control unit and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683570

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014683571

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69
- Sonar control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

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Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector M40 and the sonar control unit.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the sonar control unit.
NO >> Repair the main line between the harness connectors M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683572

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.
- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683591

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683573

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683574

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683575

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014683576

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 1 side).
NO >> Repair the data link connector branch line (CAN communication circuit 1 side).

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014683577

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 2 side).
NO >> Repair the data link connector branch line (CAN communication circuit 2 side).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683578

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683579

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014683580

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of CAN gateway.
2. Check the resistance between the CAN gateway harness connector terminals.

CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 1 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side).
NO >> Repair the power supply and the ground circuit.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014683581

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 2 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 2 side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683582

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683583

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683584

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683585

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683586

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683587

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000014683588

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000014683589

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 2.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK CAN GATEWAY TERMINATION CIRCUIT

1. Remove the CAN gateway.
2. Check the resistance between the CAN gateway terminals.

CAN gateway		Resistance (Ω)
Terminal No.		
4	10	Approx. 108 – 132
6	12	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the CAN gateway.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   CAN gateway has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014683592

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)

4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014683593

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014683594

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- TCM

4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683595

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683596

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683597

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT

Diagnosis Procedure

INFOID:0000000014683598

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- CAN gateway

4. Check the continuity between the steering angle sensor harness connector and the CAN gateway harness connector.

Steering angle sensor harness connector		CAN gateway harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M90	1	Existed
	2		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the CAN gateway.
NO >> Repair the main line between the air bag diagnosis sensor unit and the CAN gateway.

MAIN LINE BETWEEN CGW AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014683599

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- CAN gateway
- Combination meter
4. Check the continuity between the CAN gateway harness connector and the combination meter harness connector.

CAN gateway harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M90	1	M25	46	Existed
	7		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the CAN gateway and the combination meter.
NO >> Repair the main line between the CAN gateway and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014683600

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014683601

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- Low tire pressure warning control unit

4. Check the continuity between the AV control unit harness connector and the low tire pressure warning control unit harness connector.

- With audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M123	2	Existed
	17		1	Existed

- Without audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M123	2	Existed
	17		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the low tire pressure warning control unit.
NO >> Repair the main line between the AV control unit and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683602

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014683623

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

-

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of differential lock control unit.
2. Check the continuity between the harness connector and the differential lock control unit harness connector.

Harness connector		Differential lock control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B69	26J	B77	8	Existed
	16J		16	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the differential lock control unit.
NO >> Repair the main line between the harness connector B69 and the differential lock control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683604

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683605

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683606

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683607

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683608

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014683609

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 1 side).
NO >> Repair the data link connector branch line (CAN communication circuit 1 side).

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014683610

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 2 side).
NO >> Repair the data link connector branch line (CAN communication circuit 2 side).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683611

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683612

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2. CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014683613

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of CAN gateway.
2. Check the resistance between the CAN gateway harness connector terminals.

CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 1 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side).
NO >> Repair the power supply and the ground circuit.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014683614

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 2 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 2 side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683615

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683616

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683617

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683618

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683619

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683624

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000014683621

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000014683622

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 2.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK CAN GATEWAY TERMINATION CIRCUIT

1. Remove the CAN gateway.
2. Check the resistance between the CAN gateway terminals.

CAN gateway		Resistance (Ω)
Terminal No.		
4	10	Approx. 108 – 132
6	12	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the CAN gateway.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   CAN gateway has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014683658

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)

4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014683625

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014683626

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- TCM
4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014683627

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683628

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683629

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014683630

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT

Diagnosis Procedure

INFOID:0000000014683631

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- CAN gateway

4. Check the continuity between the steering angle sensor harness connector and the CAN gateway harness connector.

Steering angle sensor harness connector		CAN gateway harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M90	1	Existed
	2		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the CAN gateway.
NO >> Repair the main line between the air bag diagnosis sensor unit and the CAN gateway.

MAIN LINE BETWEEN CGW AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014683632

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- CAN gateway
- Combination meter
4. Check the continuity between the CAN gateway harness connector and the combination meter harness connector.

CAN gateway harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M90	1	M25	46	Existed
	7		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the CAN gateway and the combination meter.
NO >> Repair the main line between the CAN gateway and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014683633

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014683634

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014683635

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- Low tire pressure warning control unit

4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014683636

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.
- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014683637

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69
- Sonar control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

-

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector M40 and the sonar control unit.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the sonar control unit.
NO >> Repair the main line between the harness connectors M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683638

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683659

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683639

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683640

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683641

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683642

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014683643

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 1 side).
NO >> Repair the data link connector branch line (CAN communication circuit 1 side).

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014683644

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 2 side).
NO >> Repair the data link connector branch line (CAN communication circuit 2 side).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683645

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683646

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014683647

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of CAN gateway.
2. Check the resistance between the CAN gateway harness connector terminals.

CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 1 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side).
NO >> Repair the power supply and the ground circuit.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014683648

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 2 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 2 side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683649

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683650

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683651

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683652

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683653

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683654

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014683655

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000014683656

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000014683657

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 2.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK CAN GATEWAY TERMINATION CIRCUIT

1. Remove the CAN gateway.
2. Check the resistance between the CAN gateway terminals.

CAN gateway		Resistance (Ω)
Terminal No.		
4	10	Approx. 108 – 132
6	12	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the CAN gateway.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   CAN gateway has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014684506

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)

4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014684094

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014684095

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- TCM

4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014684096

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014684097

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014684098

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014684099

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- ADAS control unit

4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014684100

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ADAS control unit
- Combination meter
4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014684101

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014684102

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- Low tire pressure warning control unit

4. Check the continuity between the AV control unit harness connector and the low tire pressure warning control unit harness connector.

- With audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M123	2	Existed
	17		1	Existed

- Without audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M123	2	Existed
	17		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the low tire pressure warning control unit.
NO >> Repair the main line between the AV control unit and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014684103

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014684104

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014684105

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014684106

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair the main line between the harness connector B69.

7. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684107

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684507

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684108

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684109

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684110

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014684111

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014684112

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684113

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684114

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2. CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014684115

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014684116

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684117

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684118

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684119

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684120

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684121

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684122

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684123

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684124

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014684125

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014684126

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014684650

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)
4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014684651

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R

4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014684652

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- TCM
4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014684653

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014684654

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014684655

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT

Diagnosis Procedure

INFOID:0000000014684656

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- CAN gateway
4. Check the continuity between the steering angle sensor harness connector and the CAN gateway harness connector.

Steering angle sensor harness connector		CAN gateway harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M90	1	Existed
	2		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the CAN gateway.
NO >> Repair the main line between the air bag diagnosis sensor unit and the CAN gateway.

MAIN LINE BETWEEN CGW AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014684657

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- CAN gateway
- Combination meter

4. Check the continuity between the CAN gateway harness connector and the combination meter harness connector.

CAN gateway harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M90	1	M25	46	Existed
	7		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the CAN gateway and the combination meter.
NO >> Repair the main line between the CAN gateway and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014684658

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014684659

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- Low tire pressure warning control unit

4. Check the continuity between the AV control unit harness connector and the low tire pressure warning control unit harness connector.

- With audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M123	2	Existed
	17		1	Existed

- Without audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M123	2	Existed
	17		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the low tire pressure warning control unit.
NO >> Repair the main line between the AV control unit and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014684660

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014684661

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

-

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of differential lock control unit.
2. Check the continuity between the harness connector and the differential lock control unit harness connector.

Harness connector		Differential lock control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B69	26J	B77	8	Existed
	16J		16	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the differential lock control unit.
NO >> Repair the main line between the harness connector B69 and the differential lock control unit.

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014684693

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Differential lock control unit
- Harness connector B69 and M40

2. Check the continuity between the differential lock control unit harness connector and the harness connector.

Differential lock control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B77	8	B69	42J	Existed
	16		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the differential lock control unit and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the differential lock control unit and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684662

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684663

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684664

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684665

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684666

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014684667

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 1 side).
NO >> Repair the data link connector branch line (CAN communication circuit 1 side).

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014684668

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 2 side).
NO >> Repair the data link connector branch line (CAN communication circuit 2 side).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684669

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684670

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014684671

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of CAN gateway.
2. Check the resistance between the CAN gateway harness connector terminals.

CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 1 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side).
NO >> Repair the power supply and the ground circuit.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014684672

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 2 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 2 side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684673

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684674

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684675

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684676

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684677

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684678

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684686

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000014684679

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000014684680

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 2.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK CAN GATEWAY TERMINATION CIRCUIT

1. Remove the CAN gateway.
2. Check the resistance between the CAN gateway terminals.

CAN gateway		Resistance (Ω)
Terminal No.		
4	10	Approx. 108 – 132
6	12	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the CAN gateway.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   CAN gateway has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014684833

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)
4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014684834

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R

4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014684835

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- TCM
4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014684866

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014684872

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014684873

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014684885

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- ADAS control unit
4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014684886

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014684890

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014684894

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- Low tire pressure warning control unit

4. Check the continuity between the AV control unit harness connector and the low tire pressure warning control unit harness connector.

- With audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M123	2	Existed
	17		1	Existed

- Without audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M123	2	Existed
	17		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the low tire pressure warning control unit.
NO >> Repair the main line between the AV control unit and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014684895

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.
- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014684902

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014684903

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014684904

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the differential lock control unit.
NO >> Repair the main line between the harness connector B69.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684993

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.
- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684994

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684995

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684996

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014684997

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014685011

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014685012

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014685016

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014685017

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014685018

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014685019

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014685020

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014685021

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014685025

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014685026

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014685030

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014685031

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014685032

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014685036

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014685040

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014685044

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686112

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)

4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014686045

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014686046

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- TCM

4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014686047

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686048

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686049

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686050

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686051

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- ADAS control unit
4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014686052

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014686053

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014686054

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686055

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- Low tire pressure warning control unit

4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686056

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014686057

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014686058

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014686059

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair the main line between the harness connector B69.

7. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686060

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686116

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686061

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686062

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686063

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686126

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686065

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686066

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686067

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686068

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686069

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686070

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686071

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686072

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686073

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686074

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686075

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686076

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686077

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686078

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686079

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014686080

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014686081

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686184

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)
4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014686137

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R

4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014686138

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- TCM
4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014686139

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686140

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686141

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686142

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT

Diagnosis Procedure

INFOID:0000000014686143

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- CAN gateway

4. Check the continuity between the steering angle sensor harness connector and the CAN gateway harness connector.

Steering angle sensor harness connector		CAN gateway harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M90	1	Existed
	2		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the CAN gateway.
NO >> Repair the main line between the air bag diagnosis sensor unit and the CAN gateway.

MAIN LINE BETWEEN CGW AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014686144

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- CAN gateway
- Combination meter
4. Check the continuity between the CAN gateway harness connector and the combination meter harness connector.

CAN gateway harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M90	1	M25	46	Existed
	7		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the CAN gateway and the combination meter.
NO >> Repair the main line between the CAN gateway and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014686145

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014686146

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686147

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- Low tire pressure warning control unit

4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686148

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000014686149

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

-

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of around view monitor control unit.
2. Check the continuity between the harness connector and the around view monitor control unit harness connector.

Harness connector		Around view monitor control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B69	26J	B83	26	Existed
	16J		24	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the around view monitor control unit.
NO >> Repair the main line between the harness connector B69 and the around view monitor control unit.

MAIN LINE BETWEEN AVM AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014686150

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Around view monitor control unit
- Harness connector B69 and M40

2. Check the continuity between the around view monitor control unit harness connector and the harness connector.

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Around view monitor control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B83	26	B69	42J	Existed
	24		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the around view monitor control unit harness connector and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the around view monitor control unit and the sonar control unit.
NO >> Repair the main line between the harness connectors M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686151

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686185

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686152

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686153

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686154

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686155

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014686156

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 1 side).
NO >> Repair the data link connector branch line (CAN communication circuit 1 side).

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014686157

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 2 side).
NO >> Repair the data link connector branch line (CAN communication circuit 2 side).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686158

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686159

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014686160

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of CAN gateway.
2. Check the resistance between the CAN gateway harness connector terminals.

CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 1 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side).
NO >> Repair the power supply and the ground circuit.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014686161

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 2 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 2 side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686162

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686163

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686164

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686165

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686166

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686167

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686168

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Around view monitor control unit
- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-357, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-360, "Removal and Installation".
YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686169

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000014686170

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000014686171

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 2.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK CAN GATEWAY TERMINATION CIRCUIT

1. Remove the CAN gateway.
2. Check the resistance between the CAN gateway terminals.

CAN gateway		Resistance (Ω)
Terminal No.		
4	10	Approx. 108 – 132
6	12	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the CAN gateway.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   CAN gateway has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686186

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)

4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014686187

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014686188

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- TCM

4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686189

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686190

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686191

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686192

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- ADAS control unit
4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014686193

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014686194

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686195

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- Low tire pressure warning control unit

4. Check the continuity between the AV control unit harness connector and the low tire pressure warning control unit harness connector.

- With audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M123	2	Existed
	17		1	Existed

- Without audio amplifier

AV control unit harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M123	2	Existed
	17		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the low tire pressure warning control unit.
NO >> Repair the main line between the AV control unit and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686196

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014686197

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014686198

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014686199

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the differential lock control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014686221

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Differential lock control unit
- Harness connector B69 and M40

2. Check the continuity between the differential lock control unit harness connector and the harness connector.

Differential lock control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B77	8	B69	42J	Existed
	16		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the differential lock control unit and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the differential lock control unit and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686200

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686201

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686202

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686203

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686204

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686205

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686206

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686207

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686208

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2. CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686209

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686210

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686211

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686212

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686213

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686214

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686215

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686216

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686217

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686218

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686223

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014686219

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014686220

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686252

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)
4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014686253

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014686254

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- TCM
4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014686255

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686256

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686257

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686258

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT

Diagnosis Procedure

INFOID:0000000014686259

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- CAN gateway
4. Check the continuity between the steering angle sensor harness connector and the CAN gateway harness connector.

Steering angle sensor harness connector		CAN gateway harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M90	1	Existed
	2		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the CAN gateway.
NO >> Repair the main line between the air bag diagnosis sensor unit and the CAN gateway.

MAIN LINE BETWEEN CGW AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014686260

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- CAN gateway
- Combination meter

4. Check the continuity between the CAN gateway harness connector and the combination meter harness connector.

CAN gateway harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M90	1	M25	46	Existed
	7		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the CAN gateway and the combination meter.
NO >> Repair the main line between the CAN gateway and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014686261

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014686262

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686263

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- Low tire pressure warning control unit

4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686264

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014686420

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

-

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of differential lock control unit.
2. Check the continuity between the harness connector and the differential lock control unit harness connector.

Harness connector		Differential lock control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B69	26J	B77	8	Existed
	16J		16	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the differential lock control unit.
NO >> Repair the main line between the harness connector B69 and the differential lock control unit.

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014686421

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Differential lock control unit
- Harness connector B69 and M40

2. Check the continuity between the differential lock control unit harness connector and the harness connector.

Differential lock control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B77	8	B69	42J	Existed
	16		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the differential lock control unit and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the differential lock control unit and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686266

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686267

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686268

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686269

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686270

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686271

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014686272

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 1 side).
NO >> Repair the data link connector branch line (CAN communication circuit 1 side).

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014686273

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 2 side).
NO >> Repair the data link connector branch line (CAN communication circuit 2 side).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686274

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686275

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014686276

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of CAN gateway.
2. Check the resistance between the CAN gateway harness connector terminals.

CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 1 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side).
NO >> Repair the power supply and the ground circuit.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014686277

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 2 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 2 side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686278

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686279

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686280

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686281

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686282

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686283

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686423

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686284

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000014686285

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000014686286

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 2.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK CAN GATEWAY TERMINATION CIRCUIT

1. Remove the CAN gateway.
2. Check the resistance between the CAN gateway terminals.

CAN gateway		Resistance (Ω)
Terminal No.		
4	10	Approx. 108 – 132
6	12	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the CAN gateway.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   CAN gateway has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686724

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)

4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014686617

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014686618

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- TCM
4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014686619

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686620

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686621

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686622

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686623

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- ADAS control unit

4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014686624

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ADAS control unit
- Combination meter
4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014686625

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014686626

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686627

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- Low tire pressure warning control unit

4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686628

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.
- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014686629

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014686630

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000014686631

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the around view monitor control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN AVM AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014686632

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Around view monitor control unit
- Harness connector B69 and M40

2. Check the continuity between the around view monitor control unit harness connector and the harness connector.

-

Around view monitor control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B83	26	B69	42J	Existed
	24		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the around view monitor control unit harness connector and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the around view monitor control unit and the sonar control unit.
NO >> Repair the main line between the harness connectors M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686633

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686725

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686634

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686635

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686636

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686637

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686638

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686639

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686640

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686641

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686642

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686643

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686644

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686645

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686646

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686647

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686648

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686649

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686650

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686651

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686652

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Around view monitor control unit
- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-357, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-360, "Removal and Installation".
YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686653

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014686654

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014686655

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686798

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)
4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014686799

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014686800

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- TCM
4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014686801

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686802

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686803

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686804

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686805

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- ADAS control unit

4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014686806

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ADAS control unit
- Combination meter
4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014686807

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014686808

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686809

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- Low tire pressure warning control unit

4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686810

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014686811

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014686812

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014686897

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the differential lock control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014686899

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Differential lock control unit
- Harness connector B69 and M40

2. Check the continuity between the differential lock control unit harness connector and the harness connector.

Differential lock control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B77	8	B69	42J	Existed
	16		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the differential lock control unit and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the differential lock control unit and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686814

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686815

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686816

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686817

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686818

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686819

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686820

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686821

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686822

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686823

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686824

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014686825

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686826

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686827

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686828

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686829

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686830

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686831

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686832

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686833

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686901

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686834

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014686835

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014686836

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686902

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)
4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014686903

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014686904

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- TCM
4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014686905

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686906

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686907

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014686908

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND CGW CIRCUIT

Diagnosis Procedure

INFOID:0000000014686909

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- CAN gateway

4. Check the continuity between the steering angle sensor harness connector and the CAN gateway harness connector.

Steering angle sensor harness connector		CAN gateway harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M90	1	Existed
	2		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the CAN gateway.
NO >> Repair the main line between the air bag diagnosis sensor unit and the CAN gateway.

MAIN LINE BETWEEN CGW AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014686910

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- CAN gateway
- Combination meter

4. Check the continuity between the CAN gateway harness connector and the combination meter harness connector.

CAN gateway harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M90	1	M25	46	Existed
	7		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the CAN gateway and the combination meter.
NO >> Repair the main line between the CAN gateway and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014686911

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014686912

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014686913

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- Low tire pressure warning control unit

4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014686914

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000014686939

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the data link connector and the harness connector.

-

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M40	26J	Existed
	12		16J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M40.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of around view monitor control unit.
2. Check the continuity between the harness connector and the around view monitor control unit harness connector.

Harness connector		Around view monitor control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B69	26J	B83	26	Existed
	16J		24	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the around view monitor control unit.
NO >> Repair the main line between the harness connector B69 and the around view monitor control unit.

MAIN LINE BETWEEN AVM AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014686940

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector M40 and B69.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the around view monitor control unit and the differential lock control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014686916

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Differential lock control unit
- Harness connector B69 and M40

2. Check the continuity between the differential lock control unit harness connector and the harness connector.

Differential lock control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B77	8	B69	42J	Existed
	16		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the differential lock control unit and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the differential lock control unit and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686917

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686918

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686919

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686920

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686921

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686922

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014686923

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 1 side).
NO >> Repair the data link connector branch line (CAN communication circuit 1 side).

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014686924

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit 2 side).
NO >> Repair the data link connector branch line (CAN communication circuit 2 side).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686925

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686926

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2. CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000014686927

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of CAN gateway.
2. Check the resistance between the CAN gateway harness connector terminals.

CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 1 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side).
NO >> Repair the power supply and the ground circuit.

CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000014686928

1.CHECK DTC

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.
NO >> GO TO 2.

2.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the CAN gateway for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the terminal and connector.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the CAN gateway branch line (CAN communication circuit 2 side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to LAN-237, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-238, "Removal and Installation".
YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 2 side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686929

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686930

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686931

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686932

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686933

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686934

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686941

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Around view monitor control unit
- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-357, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-360, "Removal and Installation".
YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686935

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014686936

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000014686937

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000014686938

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 2.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK CAN GATEWAY TERMINATION CIRCUIT

1. Remove the CAN gateway.
2. Check the resistance between the CAN gateway terminals.

CAN gateway		Resistance (Ω)
Terminal No.		
4	10	Approx. 108 – 132
6	12	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the CAN gateway.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   CAN gateway has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN 4WD AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688156

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Transfer control unit
- ABS actuator and electric unit (control unit)

4. Check the continuity between the transfer control unit harness connector and the ABS actuator and electric unit (control unit) harness connector.

Transfer control unit harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E125	41	Existed
	14		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the transfer control unit and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014688157

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ABS actuator and electric unit (control unit)
- IPDM E/R
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the IPDM E/R harness connector.

ABS actuator and electric unit (control unit) harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E122	41	Existed
	27		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000014688158

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- TCM

4. Check the continuity between the IPDM E/R harness connector and the TCM harness connector.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E73	63	Existed
	40		64	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the TCM.
NO >> Repair the main line between the IPDM E/R and the TCM.

MAIN LINE BETWEEN TCM AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014688159

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- TCM
- Harness connector E35 and B41

2. Check the continuity between the TCM harness connector and the harness connector.

TCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E73	63	E35	8	Existed
	64		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the TCM and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCM and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688160

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688161

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688162

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688163

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- ADAS control unit
4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014688164

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014688165

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014688166

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688167

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- Low tire pressure warning control unit

4. Check the continuity between the TCU harness connector and the low tire pressure warning control unit harness connector.

TCU harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M123	2	Existed
	7		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the low tire pressure warning control unit.
NO >> Repair the main line between the TCU and the low tire pressure warning control unit.

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688168

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Low tire pressure warning control unit
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the low tire pressure warning control unit harness connector and the front air control harness connector or the A/C auto amp. harness connector.

- With manual air conditioning system

Low tire pressure warning control unit harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M132	1	Existed
	11		17	Existed

- With automatic air conditioning system

Low tire pressure warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M123	2	M197	1	Existed
	11		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the front air control or the A/C auto amp.
NO >> Repair the main line between the low tire pressure warning control unit and the front air control harness connector or the A/C auto amp. harness connector.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014688169

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014688170

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000014688222

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the around view monitor control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN AVM AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014688224

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector M40 and B69.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the around view monitor control unit and the differential lock control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014688172

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Differential lock control unit
- Harness connector B69 and M40

2. Check the continuity between the differential lock control unit harness connector and the harness connector.

Differential lock control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B77	8	B69	42J	Existed
	16		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the differential lock control unit and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the differential lock control unit and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688173

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688174

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688175

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688176

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688177

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688178

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688179

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688180

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688181

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688182

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688183

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688184

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688185

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688186

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688187

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688188

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688189

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688190

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688191

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688192

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688225

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Around view monitor control unit
- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-357, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-360, "Removal and Installation".
YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688193

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688194

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688195

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688196

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TCM AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014688226

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the IPDM E/R harness connector.

Harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E122	41	Existed
	8		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the IPDM E/R.
NO >> Repair the main line between the harness connector E28 and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688310

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)

4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688311

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688312

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688313

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014688314

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the combination meter.
NO >> Repair the main line between the air bag diagnosis sensor unit and the combination meter.

MAIN LINE BETWEEN M&A AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688315

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the combination meter harness connector and the front air control or the A/C auto amp. harness connector.

- With type A

Combination meter harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M132	1	Existed
	45		17	Existed

- With type B

Combination meter harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M163	34	M132	1	Existed
	35		17	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the front air control or the A/C auto amp.
NO >> Repair the main line between the combination meter and the front air control or the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688316

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688318

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688319

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688320

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688321

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688322

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit.
NO >> Repair the data link connector branch line.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688323

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688324

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2. CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688326

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688328

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688329

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688331

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688332

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TCM AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014688338

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the IPDM E/R harness connector.

Harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E122	41	Existed
	8		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the IPDM E/R.
NO >> Repair the main line between the harness connector E28 and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688346

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)
4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688347

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688348

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688349

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688350

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- ADAS control unit

4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014688351

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ADAS control unit
- Combination meter
4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014688352

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688353

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- AV control unit
- A/C auto amp. (with automatic air conditioning system)
4. Check the continuity between the AV control unit harness connector and the A/C auto amp. harness connector.
- With audio amplifier

AV control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M137	1	Existed
	17		21	Existed

- Without audio amplifier

AV control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M137	1	Existed
	17		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the A/C auto amp.
NO >> Repair the main line between the AV control unit and the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688354

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014688355

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014688356

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014688357

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair the main line between the harness connector B69.

7. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688367

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688368

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688369

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688370

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688371

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688372

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688373

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688374

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688375

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688376

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688377

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688378

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688380

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688381

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688382

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688383

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688384

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688385

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688386

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688387

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TCM AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014688392

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the IPDM E/R harness connector.

Harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E122	41	Existed
	8		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the IPDM E/R.
NO >> Repair the main line between the harness connector E28 and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688393

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)
4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014688448

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688449

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688395

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688396

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688397

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- ADAS control unit

4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014688398

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014688399

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014688446

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688447

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- TCU
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the TCU harness connector and the A/C auto amp. harness connector.

TCU harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M137	1	Existed
	7		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the A/C auto amp.
NO >> Repair the main line between the TCU and the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688401

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014688402

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014688403

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014688404

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair the main line between the harness connector B69.

7.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688405

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.
- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688406

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688407

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688408

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688450

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688409

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688410

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688411

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688412

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688413

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688414

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688415

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688416

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688442

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688417

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688418

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688419

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688420

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688421

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688422

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688423

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688424

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000014688471

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the transfer control unit harness connector.

Harness connector		Transfer control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E142	13	Existed
	8		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the transfer control unit.
NO >> Repair the main line between the harness connector E28 and the transfer control unit.

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014688472

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- IPDM E/R
4. Check the continuity between the transfer control unit harness connector and the IPDM E/R harness connector.

Transfer control unit harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E122	41	Existed
	14		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the IPDM E/R.
NO >> Repair the main line between the transfer control unit and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688452

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)

4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688453

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688454

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688455

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014688456

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the combination meter.
NO >> Repair the main line between the air bag diagnosis sensor unit and the combination meter.

MAIN LINE BETWEEN M&A AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688457

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Combination meter
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
4. Check the continuity between the combination meter harness connector and the front air control or the A/C auto amp. harness connector.
- With type A

Combination meter harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M132	1	Existed
	45		17	Existed

- With type B

Combination meter harness connector		Front air control harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M163	34	M132	1	Existed
	35		17	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the front air control or the A/C auto amp.
NO >> Repair the main line between the combination meter and the front air control or the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688458

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688459

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688473

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688460

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688461

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688462

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688463

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit.
NO >> Repair the data link connector branch line.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688464

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688465

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2. CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688466

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688467

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688468

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688469

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688470

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000014688519

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the transfer control unit harness connector.

Harness connector		Transfer control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E142	13	Existed
	8		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the transfer control unit.
NO >> Repair the main line between the harness connector E28 and the transfer control unit.

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014688520

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- IPDM E/R
4. Check the continuity between the transfer control unit harness connector and the IPDM E/R harness connector.

Transfer control unit harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E122	41	Existed
	14		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the IPDM E/R.
NO >> Repair the main line between the transfer control unit and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688487

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)

4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688488

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688489

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688490

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688491

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- ADAS control unit
4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014688492

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014688493

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688494

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the AV control unit harness connector and the A/C auto amp. harness connector.

- With audio amplifier

AV control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M137	1	Existed
	17		21	Existed

- Without audio amplifier

AV control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M137	1	Existed
	17		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the A/C auto amp.
NO >> Repair the main line between the AV control unit and the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688495

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014688496

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014688497

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014688498

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair the main line between the harness connector B69.

7.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688499

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.
- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688521

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688500

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688501

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688502

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688503

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688504

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688505

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688506

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688507

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688508

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688509

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688510

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688511

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688512

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688513

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688514

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688515

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688516

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688517

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688518

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000014688525

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the transfer control unit harness connector.

Harness connector		Transfer control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E142	13	Existed
	8		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the transfer control unit.
NO >> Repair the main line between the harness connector E28 and the transfer control unit.

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014688526

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- IPDM E/R
4. Check the continuity between the transfer control unit harness connector and the IPDM E/R harness connector.

Transfer control unit harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E122	41	Existed
	14		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the IPDM E/R.
NO >> Repair the main line between the transfer control unit and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688527

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)
4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688528

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688529

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688530

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688531

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- ADAS control unit
4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014688532

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014688533

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688534

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the AV control unit harness connector and the A/C auto amp. harness connector.

- With audio amplifier

AV control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M137	1	Existed
	17		21	Existed

- Without audio amplifier

AV control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M137	1	Existed
	17		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the A/C auto amp.
NO >> Repair the main line between the AV control unit and the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688535

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014688536

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014688537

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014688538

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the differential lock control unit.
NO >> Repair the main line between the harness connector B69.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688539

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688540

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688541

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688542

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688543

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688544

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688545

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688546

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688547

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688548

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688549

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688550

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688551

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688552

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688553

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688554

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688555

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688556

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688557

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688558

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688559

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000014688778

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the transfer control unit harness connector.

Harness connector		Transfer control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E142	13	Existed
	8		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the transfer control unit.
NO >> Repair the main line between the harness connector E28 and the transfer control unit.

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014688779

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- IPDM E/R
4. Check the continuity between the transfer control unit harness connector and the IPDM E/R harness connector.

Transfer control unit harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E122	41	Existed
	14		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the IPDM E/R.
NO >> Repair the main line between the transfer control unit and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688742

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)

4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014688743

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688744

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688745

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688746

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688747

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- ADAS control unit
4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014688748

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014688749

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014688750

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688751

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- TCU
- A/C auto amp. (with automatic air conditioning system)
4. Check the continuity between the TCU harness connector and the A/C auto amp. harness connector.

TCU harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M137	1	Existed
	7		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the A/C auto amp.
NO >> Repair the main line between the TCU and the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688752

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014688753

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014688754

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014688755

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair the main line between the harness connector B69.

7. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688756

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688781

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688757

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688758

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688759

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.
- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688760

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688761

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688762

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688763

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688764

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688765

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688766

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688767

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688768

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688769

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688770

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688771

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688772

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688773

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688774

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688775

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688776

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688777

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000014688569

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the transfer control unit harness connector.

Harness connector		Transfer control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E142	13	Existed
	8		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the transfer control unit.
NO >> Repair the main line between the harness connector E28 and the transfer control unit.

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014688570

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Transfer control unit
- IPDM E/R

4. Check the continuity between the transfer control unit harness connector and the IPDM E/R harness connector.

Transfer control unit harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E122	41	Existed
	14		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the IPDM E/R.
NO >> Repair the main line between the transfer control unit and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688571

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)
4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688572

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector B69 and M40.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B69	12J	Existed
	7		22J	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector B41 and B69.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688573

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688574

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- Combination meter
4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.
- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688575

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- ADAS control unit

4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014688576

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- ADAS control unit
- Combination meter
4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014688577

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688578

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- A/C auto amp. (with automatic air conditioning system)

4. Check the continuity between the AV control unit harness connector and the A/C auto amp. harness connector.

- With audio amplifier

AV control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M137	1	Existed
	17		21	Existed

- Without audio amplifier

AV control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M137	1	Existed
	17		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the A/C auto amp.
NO >> Repair the main line between the AV control unit and the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688579

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014688580

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014688581

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014688582

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the differential lock control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014688739

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Differential lock control unit
- Harness connector B69 and M40

2. Check the continuity between the differential lock control unit harness connector and the harness connector.

Differential lock control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B77	8	B69	42J	Existed
	16		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the differential lock control unit and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the differential lock control unit and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688583

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.
- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688584

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688585

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688586

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688587

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688588

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688589

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688590

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688591

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688592

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688593

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688594

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688595

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688596

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688597

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688598

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688599

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688600

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688601

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688740

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688602

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688603

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000014688785

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the transfer control unit harness connector.

Harness connector		Transfer control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E142	13	Existed
	8		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the transfer control unit.
NO >> Repair the main line between the harness connector E28 and the transfer control unit.

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014688786

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- IPDM E/R
4. Check the continuity between the transfer control unit harness connector and the IPDM E/R harness connector.

Transfer control unit harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E122	41	Existed
	14		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the IPDM E/R.
NO >> Repair the main line between the transfer control unit and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688787

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)

4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014688788

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688789

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688790

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688791

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688792

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- ADAS control unit
4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014688793

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014688794

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014688795

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688796

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- TCU
- A/C auto amp. (with automatic air conditioning system)
4. Check the continuity between the TCU harness connector and the A/C auto amp. harness connector.

TCU harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M137	1	Existed
	7		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the A/C auto amp.
NO >> Repair the main line between the TCU and the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688797

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014688798

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014688799

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000014688830

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the around view monitor control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN AVM AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014688831

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Around view monitor control unit
- Harness connector B69 and M40

2. Check the continuity between the around view monitor control unit harness connector and the harness connector.

-

Around view monitor control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B83	26	B69	42J	Existed
	24		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the around view monitor control unit harness connector and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the around view monitor control unit and the sonar control unit.
NO >> Repair the main line between the harness connectors M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688801

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.
- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688802

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688803

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688804

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688805

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688806

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688807

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688808

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688809

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688810

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2. CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688811

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688812

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688813

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688814

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688815

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688816

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688817

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688818

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688819

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688820

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688832

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Around view monitor control unit
- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-357, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-360, "Removal and Installation".
YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688821

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688822

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688823

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000014688853

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the transfer control unit harness connector.

Harness connector		Transfer control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E142	13	Existed
	8		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the transfer control unit.
NO >> Repair the main line between the harness connector E28 and the transfer control unit.

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014688854

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- IPDM E/R
4. Check the continuity between the transfer control unit harness connector and the IPDM E/R harness connector.

Transfer control unit harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E122	41	Existed
	14		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the IPDM E/R.
NO >> Repair the main line between the transfer control unit and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688855

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)

4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014688856

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688857

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688858

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688859

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688860

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- ADAS control unit
4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014688861

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014688862

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014688863

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688864

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- TCU
- A/C auto amp. (with automatic air conditioning system)
4. Check the continuity between the TCU harness connector and the A/C auto amp. harness connector.

TCU harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M137	1	Existed
	7		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the A/C auto amp.
NO >> Repair the main line between the TCU and the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688865

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014688866

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014688867

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014688893

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the differential lock control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014688908

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Differential lock control unit
- Harness connector B69 and M40

2. Check the continuity between the differential lock control unit harness connector and the harness connector.

Differential lock control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B77	8	B69	42J	Existed
	16		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the differential lock control unit and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the differential lock control unit and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688869

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688870

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688871

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688872

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688873

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.
- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688874

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688875

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688876

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688877

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688878

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2. CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688879

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688880

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688881

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688882

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688883

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688884

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688885

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688886

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688887

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688888

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688939

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688889

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688890

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688891

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TCM AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000014688951

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the transfer control unit harness connector.

Harness connector		Transfer control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E142	13	Existed
	8		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the transfer control unit.
NO >> Repair the main line between the harness connector E28 and the transfer control unit.

MAIN LINE BETWEEN 4WD AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014688952

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Transfer control unit
- IPDM E/R
4. Check the continuity between the transfer control unit harness connector and the IPDM E/R harness connector.

Transfer control unit harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E142	13	E122	41	Existed
	14		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the transfer control unit and the IPDM E/R.
NO >> Repair the main line between the transfer control unit and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688953

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)

4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014688954

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688955

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688956

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor

4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014688957

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688958

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- ADAS control unit
4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014688959

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014688960

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014688961

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014688962

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- TCU
- A/C auto amp. (with automatic air conditioning system)
4. Check the continuity between the TCU harness connector and the A/C auto amp. harness connector.

TCU harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M137	1	Existed
	7		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the A/C auto amp.
NO >> Repair the main line between the TCU and the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014688963

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014688964

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014688965

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000014688966

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the around view monitor control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN AVM AND DIFF CIRCUIT

Diagnosis Procedure

INFOID:0000000014689019

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector M40 and B69.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the around view monitor control unit and the differential lock control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN DIFF AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014689020

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Differential lock control unit
- Harness connector B69 and M40

2. Check the continuity between the differential lock control unit harness connector and the harness connector.

Differential lock control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B77	8	B69	42J	Existed
	16		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the differential lock control unit and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit harness connector.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the differential lock control unit and the sonar control unit.
NO >> Repair the main line between the harness connector M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688968

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688969

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of transfer control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of transfer control unit.
2. Check the resistance between the transfer control unit harness connector terminals.

Transfer control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E142	13	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the transfer control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the transfer control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the transfer control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the transfer control unit branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688970

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688971

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688972

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688973

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688974

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688975

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688976

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688977

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688978

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014688979

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688980

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688981

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688982

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688983

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688984

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688985

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688986

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688987

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688988

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Around view monitor control unit
- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-357, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-360, "Removal and Installation".
YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

DIFF BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689016

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Differential lock control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of differential lock control unit.
3. Check the resistance between the differential lock control unit harness connector terminals.

Differential lock control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B77	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the differential lock control unit branch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the differential lock control unit. Refer to DLN-108, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the differential lock control unit. Refer to DLN-120, "Removal and Installation".
YES (Past error)>>Error was detected in the differential lock control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014688989

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688990

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014688991

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TCM AND IPDM-E CIRCUIT

Diagnosis Procedure

INFOID:0000000014689210

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector F19
- Harness connector E28

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- A/T assembly
- Harness connector F19 and E28

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F46	3	F19	4	Existed
	8		8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the A/T assembly and the harness connector F19.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and the IPDM E/R harness connector.

Harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E28	4	E122	41	Existed
	8		40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the A/T assembly and the IPDM E/R.
NO >> Repair the main line between the harness connector E28 and the IPDM E/R.

MAIN LINE BETWEEN IPDM-E AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000014689139

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- IPDM E/R
- ABS actuator and electric unit (control unit)

4. Check the continuity between the IPDM E/R harness connector and the ABS actuator and electric unit (control unit) harness connector.

IPDM E/R harness connector		ABS actuator and electric unit (control unit) harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E122	41	E125	41	Existed
	40		27	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).
NO >> Repair the main line between the IPDM E/R and the ABS actuator and electric unit (control unit).

MAIN LINE BETWEEN ABS AND ADP CIRCUIT

Diagnosis Procedure

INFOID:0000000014689140

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector E35
- Harness connector B41
- Harness connector B54
- Harness connector B201

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- ABS actuator and electric unit (control unit)
- Harness connector E35 and B41

2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E125	41	E35	8	Existed
	27		7	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E35.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B54 and B201.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	8	B54	5	Existed
	7		4	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the driver seat control unit.
NO >> Repair the main line between the harness connector B41 and B54.

MAIN LINE BETWEEN ADP AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000014689141

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B201
- Harness connector B54
- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connector B201 and B54
- Harness connector B69 and M40

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B54	5	B69	12J	Existed
	4		22J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector B54 and B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector and data link connector.

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	12J	M22	6	Existed
	22J		14	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the driver seat control unit and the data link connector.
NO >> Repair the main line between the harness connector M40 and the data link connector.

MAIN LINE BETWEEN DLC AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014689142

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
4. Check the continuity between the data link connector and the steering angle sensor harness connector.

Data link connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M17	5	Existed
	14		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the steering angle sensor.
NO >> Repair the main line between the data link connector and the steering angle sensor.

MAIN LINE BETWEEN STRG AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000014689143

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Steering angle sensor
- Combination meter

4. Check the continuity between the steering angle sensor harness connector and the combination meter harness connector.

- With type A

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M25	46	Existed
	2		45	Existed

- With type B

Steering angle sensor harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M163	34	Existed
	2		35	Existed

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the steering angle sensor and the air bag diagnosis sensor unit.
NO >> Repair the main line between the steering angle sensor and the air bag diagnosis sensor unit.

MAIN LINE BETWEEN A-BAG AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014689144

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Steering angle sensor
- ADAS control unit
4. Check the continuity between the steering angle sensor harness connector and the ADAS control unit harness connector.

Steering angle sensor harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M17	5	M128	9	Existed
	2		10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the ADAS control unit.
NO >> Repair the main line between the air bag diagnosis sensor unit and the ADAS control unit.

MAIN LINE BETWEEN ICC AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014689145

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- ADAS control unit
- Combination meter

4. Check the continuity between the ADAS control unit harness connector and the combination meter harness connector.

ADAS control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M128	9	M25	46	Existed
	10		45	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the ADAS control unit and the combination meter.
NO >> Repair the main line between the ADAS control unit and the combination meter.

MAIN LINE BETWEEN M&A AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000014689146

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- AV control unit

4. Check the continuity between the combination meter harness connector and the AV control unit harness connector.

- With audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M43	8	Existed
	45		17	Existed

- Without audio amplifier

Combination meter harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M25	46	M97	8	Existed
	45		17	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the AV control unit.
NO >> Repair the main line between the combination meter and the AV control unit.

MAIN LINE BETWEEN AV AND TCU CIRCUIT

Diagnosis Procedure

INFOID:0000000014689147

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- AV control unit
- TCU

4. Check the continuity between the AV control unit harness connector and the TCU harness connector.

- With audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	8	M197	6	Existed
	17		7	Existed

- Without audio amplifier

AV control unit harness connector		TCU harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M97	8	M197	6	Existed
	17		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the AV control unit and the TCU.
NO >> Repair the main line between the AV control unit and the TCU.

MAIN LINE BETWEEN TCU AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000014689148

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- TCU
- A/C auto amp. (with automatic air conditioning system)
4. Check the continuity between the TCU harness connector and the A/C auto amp. harness connector.

TCU harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M197	6	M137	1	Existed
	7		21	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the TCU and the A/C auto amp.
NO >> Repair the main line between the TCU and the A/C auto amp.

MAIN LINE BETWEEN HVAC AND TPMS CIRCUIT

Diagnosis Procedure

INFOID:0000000014689149

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)
- Low tire pressure warning control unit

4. Check the continuity between the front air control harness connector or the A/C auto amp. harness connector and the low tire pressure warning control unit harness connector.

- With manual air conditioning system

Front air control harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M132	1	M123	2	Existed
	17		1	Existed

- With automatic air conditioning system

A/C auto amp. harness connector		Low tire pressure warning control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M137	1	M123	2	Existed
	21		1	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.
NO >> Repair the main line between the front air control or the A/C auto amp. and the low tire pressure warning control unit.

MAIN LINE BETWEEN DLC AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014689150

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M31
- Harness connector E152
- Harness connector E51
- Harness connector C20
- Harness connector C23
- Harness connector C108

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M31 and E152.
2. Check the continuity between the data link connector and the harness connector.

Date link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	13	M31	52G	Existed
	12		51G	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the data link connector and the harness connector M31.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector E51 and C20.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E152	52G	E51	6	Existed
	51G		12	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector E152 and E51.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors C23 and C108.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C20	6	C23	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector C20 and C23.

5. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the side radar RH harness connector.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C108	1	C117	6	Existed
	7		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the data link connector and the side radar RH.
NO >> Repair the main line between the harness connector C108 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014689151

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the harness connector C23 and C108.
4. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector C108.

MAIN LINE BETWEEN RDR-L AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000014689152

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector C108
- Harness connector C23
- Harness connector C20
- Harness connector E51
- Harness connector E152
- Harness connector M31
- Harness connector M40
- Harness connector B69

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector C108 and C23.
2. Check the continuity between the harness connectors.

Connector No.	Terminal No.	Terminal No.	Continuity
C108	1	6	Existed
	7	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connector C108.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors C20 and E51.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
C23	6	C20	1	Existed
	12		7	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the main line between the harness connector C23 and C20.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors E152 and M31.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E51	1	E152	81G	Existed
	7		80G	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair the main line between the harness connector E51 and E152.

5.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M40 and B69.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	81G	M40	26J	Existed
	80G		16J	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair the main line between the harness connector M31 and M40.

6.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connectors.

Connector No.	Terminal No.		Continuity
B69	26J	42J	Existed
	16J	32J	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the around view monitor control unit.
NO >> Repair the main line between the harness connector B69.

MAIN LINE BETWEEN AVM AND SONAR CIRCUIT

Diagnosis Procedure

INFOID:0000000014689153

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector B69
- Harness connector M40

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Around view monitor control unit
- Harness connector B69 and M40

2. Check the continuity between the around view monitor control unit harness connector and the harness connector.

-

Around view monitor control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B83	26	B69	42J	Existed
	24		32J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the around view monitor control unit harness connector and the harness connector B69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of sonar control unit.
2. Check the continuity between the harness connector and the sonar control unit.

Harness connector		Sonar control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M40	42J	M114	5	Existed
	32J		6	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the around view monitor control unit and the sonar control unit.
NO >> Repair the main line between the harness connectors M40 and the sonar control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689154

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.
2. Check the resistance between the ECM harness connector terminals.

- Diesel engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E93	33	16	Approx. 108 – 132

- Gasoline engine models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to the following.

- CUMMINS 5.0L: EC-855, "Wiring Diagram"
- VK56VD: EC-227, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.
- CUMMINS 5.0L: EC-1993, "Removal and Installation"
- VK56VD: EC-726, "Removal and Installation"

YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689156

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control unit) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ABS actuator and electric unit (control unit).
2. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E125	41	27	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to BRC-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-165, "Removal and Installation".
YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689157

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.
2. Check the resistance between the IPDM E/R harness connector terminals.

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E122	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the IPDM E/R branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to PCS-42, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-43, "Removal and Installation of IPDM E/R".
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689158

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the TCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES-1 >> Diesel engine models: GO TO 2.
YES-2 >> Gasoline engine models: GO TO 3.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E73	63	64	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the TCM branch line.

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.
2. Check the resistance between the A/T assembly harness connector terminals.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F46	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCM branch line.

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Remove the joint connector. Refer to TM-464, "Removal and Installation".
2. Check the continuity between the A/T assembly harness connector side and the TCM harness connector side of the joint connector.

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
8	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace the joint connector.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- 6AT RE6R01A: TM-209, "Diagnosis Procedure"
- 7AT RE7R01B: TM-437, "Diagnosis Procedure"

Is the inspection result normal?

YES (Past error)>>Replace the TCM. Refer to the following.

- 6AT RE6R01A: TM-223, "Removal and Installation"
- 7AT RE7R01B: TM-464, "Removal and Installation"

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689159

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Driver seat control unit
- Harness connector B201
- Harness connector B54

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B222	16	32	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the driver seat control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-77, "AUTOMATIC DRIVE POSITIONER CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-141, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014689160

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (CAN communication circuit side).
NO >> Repair the data link connector branch line (CAN communication circuit side).

DLC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014689161

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M22	13	12	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the data link connector branch line circuit (ITS communication circuit).
NO >> Repair the data link connector branch line (ITS communication circuit).

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689162

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M17	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-56, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-168, "Removal and Installation".
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689163

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)**
- **Never use unspecified tester or other measuring device.**

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-51, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

ICC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014689164

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M128	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014689165

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-48, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-49, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS communication circuit side).
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689166

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of combination meter.
2. Check the resistance between the combination meter harness connector terminals.

- With type A

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M25	46	45	Approx. 54 – 66

- With type B

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M163	34	35	Approx. 54 – 66

NOTE:
Check the combination meter type to confirm the service information. Refer to MWI-5, "Information".

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to the following.

- TYPE A: MWI-87, "COMBINATION METER : Diagnosis Procedure"
- TYPE B: MWI-168, "COMBINATION METER : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to the following.
- TYPE A: MWI-108, "Removal and Installation"
- TYPE B: MWI-187, "Removal and Installation"

YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689167

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AV control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of AV control unit.
2. Check the resistance between the AV control unit harness connector terminals.

- With audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	8	17	Approx. 54 – 66

- Without audio amplifier

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M97	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AV control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Navigation without amplifier: AV-131, "Diagnosis Procedure"
- Navigation with amplifier: AV-234, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.
- Navigation without amplifier: AV-157, "Removal and Installation"
- Navigation with amplifier: AV-277, "Removal and Installation"

YES (Past error)>>Error was detected in the AV control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689168

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the TCU for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCU.
2. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M197	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCU branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to AV-435, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-439, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689169

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the low tire pressure warning control unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of low tire pressure warning control unit.
2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M123	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the low tire pressure warning control unit.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to WT-53, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-75, "Removal and Installation".
YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689170

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the following harness connectors.

- Front air control (with manual air conditioning system)
- A/C auto amp. (with automatic air conditioning system)

2. Check the resistance between the front air control harness connector or the A/C auto amp. harness connector terminals.

- With manual air conditioning system

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M132	1	17	Approx. 54 – 66

- With automatic air conditioning system

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M137	1	21	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the front air control or the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the front air control or the A/C auto amp. Refer to the following.

- Automatic air conditioner: HAC-94, "A/C AUTO AMP. : Diagnosis Procedure"
- Manual air conditioner: HAC-205, "FRONT A/C CONTROL : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the front air control or the A/C auto amp. Refer to the following.
- Automatic air conditioner: HAC-122, "Removal and Installation"
- Manual air conditioner: HAC-230, "Removal and Installation"

YES (Past error)>>Error was detected in the front air control or the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689171

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of BCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M19	60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to BCS-72, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-79, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689172

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar RH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to DAS-108, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the root cause.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

4.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar RH.
3. Check the resistance between the side radar RH harness connector terminals.

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C117	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the side radar RH branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-106, "SIDE RADAR RH : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689173

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Side radar LH
- ADAS control unit

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of side radar LH.
3. Check the resistance between the side radar LH harness connector terminals.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
C116	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the side radar LH branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-106, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-120, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689174

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- Around view monitor control unit
- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of around view monitor control unit.
3. Check the resistance between the around view monitor control unit harness connector terminals.

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B83	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the around view monitor control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-357, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-360, "Removal and Installation".
YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

SONAR BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014689175

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- CAN gateway (Models without blind spot warning system)
- ADAS control unit (Models with blind spot warning system)
- Sonar control unit

Is the inspection result normal?

YES-1 >> Models with blind spot warning system: GO TO 2.
YES-2 >> Models without blind spot warning system: GO TO 4.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of ADAS control unit.
2. Check the continuity between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
M128	2	18	Existed
	5	6	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (ITS communication circuit side).

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of ADAS control unit.
2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

4.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.
2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M90	4	6	Existed
	10	12	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side).

5.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of CAN gateway.

2. Disconnect the connector of sonar control unit.
3. Check the resistance between the sonar control unit harness connector terminals.

Sonar control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M114	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Repair the sonar control unit blanch line.

6. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sonar control unit. Refer to SN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sonar control unit. Refer to SN-66, "Removal and Installation".
YES (Past error)>>Error was detected in the sonar control unit branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014689176

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the ECM terminals.

- Diesel engine models

ECM		Resistance (Ω)
Terminal No.		
33	16	Approx. 108 – 132

- Gasoline engine models

ECM		Resistance (Ω)
Terminal No.		
124	123	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	59	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014689177

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on ITS communication circuit.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M22	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M22	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair the root cause.

4.CHECK ADAS CONTROL UNIT TERMINATION CIRCUIT

1. Remove the ADAS control unit.
2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		Resistance (Ω)
Terminal No.		
2	18	Approx. 108 – 132
5	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ADAS control unit.

5.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.

Inspection result

Reproduced>>GO TO 6.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

6.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS communication circuit.
   NOTE:
   ADAS control unit has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.
Non-reproduced>>Replace the unit whose connector was disconnected.