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LAN SYSTEM (RHD)

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ABS BRANCH LINE CIRCUIT	534	Diagnosis Procedure	554	G
Diagnosis Procedure	534	STRG BRANCH LINE CIRCUIT	555	
4WD BRANCH LINE CIRCUIT	535	Diagnosis Procedure	555	H
Diagnosis Procedure	535	IPDM-E BRANCH LINE CIRCUIT	556	
BCM BRANCH LINE CIRCUIT	536	Diagnosis Procedure	556	I
Diagnosis Procedure	536	CAN COMMUNICATION CIRCUIT	557	
M&A BRANCH LINE CIRCUIT	537	Diagnosis Procedure	557	J
Diagnosis Procedure	537	CAN SYSTEM (TYPE 39)		
DLC BRANCH LINE CIRCUIT	538	COMPONENT DIAGNOSIS	559	K
Diagnosis Procedure	538	MAIN LINE BETWEEN ABS AND DLC CIR- CUIT	559	
EPS BRANCH LINE CIRCUIT	539	Diagnosis Procedure	559	L
Diagnosis Procedure	539	MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	560	
STRG BRANCH LINE CIRCUIT	540	Diagnosis Procedure	560	
Diagnosis Procedure	540	ECM BRANCH LINE CIRCUIT	561	
IPDM-E BRANCH LINE CIRCUIT	541	Diagnosis Procedure	561	
Diagnosis Procedure	541	ABS BRANCH LINE CIRCUIT	563	LNR
CAN COMMUNICATION CIRCUIT	542	Diagnosis Procedure	563	
Diagnosis Procedure	542	4WD BRANCH LINE CIRCUIT	564	
CAN SYSTEM (TYPE 38)		Diagnosis Procedure	564	N
COMPONENT DIAGNOSIS	544	BCM BRANCH LINE CIRCUIT	565	
MAIN LINE BETWEEN ABS AND DLC CIR- CUIT	544	Diagnosis Procedure	565	O
Diagnosis Procedure	544	M&A BRANCH LINE CIRCUIT	566	
MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	545	Diagnosis Procedure	566	P
Diagnosis Procedure	545	DLC BRANCH LINE CIRCUIT	567	
ECM BRANCH LINE CIRCUIT	546	Diagnosis Procedure	567	
Diagnosis Procedure	546	EPS BRANCH LINE CIRCUIT	568	
ABS BRANCH LINE CIRCUIT	546	Diagnosis Procedure	568	
Diagnosis Procedure	546	I-KEY BRANCH LINE CIRCUIT	569	

Diagnosis Procedure	569	Diagnosis Procedure	590
STRG BRANCH LINE CIRCUIT	570	MAIN LINE BETWEEN TCM AND DLC CIR-	591
Diagnosis Procedure	570	CUIT	591
IPDM-E BRANCH LINE CIRCUIT	571	Diagnosis Procedure	591
Diagnosis Procedure	571	MAIN LINE BETWEEN DLC AND BCM CIR-	592
CAN COMMUNICATION CIRCUIT	572	CUIT	592
Diagnosis Procedure	572	Diagnosis Procedure	592
CAN SYSTEM (TYPE 40)			
COMPONENT DIAGNOSIS	574	ECM BRANCH LINE CIRCUIT	593
MAIN LINE BETWEEN ABS AND DLC CIR-	574	Diagnosis Procedure	593
CUIT	574	ABS BRANCH LINE CIRCUIT	595
Diagnosis Procedure	574	Diagnosis Procedure	595
MAIN LINE BETWEEN DLC AND BCM CIR-	575	TCM BRANCH LINE CIRCUIT	596
CUIT	575	Diagnosis Procedure	596
Diagnosis Procedure	575	4WD BRANCH LINE CIRCUIT	597
ECM BRANCH LINE CIRCUIT	576	Diagnosis Procedure	597
Diagnosis Procedure	576	BCM BRANCH LINE CIRCUIT	598
ABS BRANCH LINE CIRCUIT	578	Diagnosis Procedure	598
Diagnosis Procedure	578	M&A BRANCH LINE CIRCUIT	599
4WD BRANCH LINE CIRCUIT	579	Diagnosis Procedure	599
Diagnosis Procedure	579	DLC BRANCH LINE CIRCUIT	600
BCM BRANCH LINE CIRCUIT	580	Diagnosis Procedure	600
Diagnosis Procedure	580	EPS BRANCH LINE CIRCUIT	601
M&A BRANCH LINE CIRCUIT	581	Diagnosis Procedure	601
Diagnosis Procedure	581	IPDM-E BRANCH LINE CIRCUIT	602
AV BRANCH LINE CIRCUIT	582	Diagnosis Procedure	602
Diagnosis Procedure	582	CAN COMMUNICATION CIRCUIT	603
DLC BRANCH LINE CIRCUIT	583	Diagnosis Procedure	603
Diagnosis Procedure	583	CAN SYSTEM (TYPE 42)	
EPS BRANCH LINE CIRCUIT	584	COMPONENT DIAGNOSIS	605
Diagnosis Procedure	584	MAIN LINE BETWEEN ABS AND TCM CIR-	605
I-KEY BRANCH LINE CIRCUIT	585	CUIT	605
Diagnosis Procedure	585	Diagnosis Procedure	605
STRG BRANCH LINE CIRCUIT	586	MAIN LINE BETWEEN TCM AND DLC CIR-	606
Diagnosis Procedure	586	CUIT	606
IPDM-E BRANCH LINE CIRCUIT	587	Diagnosis Procedure	606
Diagnosis Procedure	587	MAIN LINE BETWEEN DLC AND BCM CIR-	607
CAN COMMUNICATION CIRCUIT	588	CUIT	607
Diagnosis Procedure	588	Diagnosis Procedure	607
CAN SYSTEM (TYPE 41)			
COMPONENT DIAGNOSIS	590	ECM BRANCH LINE CIRCUIT	608
MAIN LINE BETWEEN ABS AND TCM CIR-	590	Diagnosis Procedure	608
CUIT	590	ABS BRANCH LINE CIRCUIT	610
MAIN LINE BETWEEN ABS AND TCM CIR-	590	Diagnosis Procedure	610
CUIT	590	TCM BRANCH LINE CIRCUIT	611
MAIN LINE BETWEEN ABS AND TCM CIR-	590	Diagnosis Procedure	611
CUIT	590		

4WD BRANCH LINE CIRCUIT	612	I-KEY BRANCH LINE CIRCUIT	633	A
Diagnosis Procedure	612	Diagnosis Procedure	633	
BCM BRANCH LINE CIRCUIT	613	IPDM-E BRANCH LINE CIRCUIT	634	B
Diagnosis Procedure	613	Diagnosis Procedure	634	
M&A BRANCH LINE CIRCUIT	614	CAN COMMUNICATION CIRCUIT	635	C
Diagnosis Procedure	614	Diagnosis Procedure	635	
AV BRANCH LINE CIRCUIT	615	CAN SYSTEM (TYPE 44)		
Diagnosis Procedure	615	COMPONENT DIAGNOSIS	637	D
DLC BRANCH LINE CIRCUIT	616	MAIN LINE BETWEEN ABS AND TCM CIR-		E
Diagnosis Procedure	616	CUIT	637	
EPS BRANCH LINE CIRCUIT	617	Diagnosis Procedure	637	F
Diagnosis Procedure	617	MAIN LINE BETWEEN TCM AND DLC CIR-		G
IPDM-E BRANCH LINE CIRCUIT	618	CUIT	638	
Diagnosis Procedure	618	Diagnosis Procedure	638	H
CAN COMMUNICATION CIRCUIT	619	MAIN LINE BETWEEN DLC AND BCM CIR-		I
Diagnosis Procedure	619	CUIT	639	
CAN SYSTEM (TYPE 43)		Diagnosis Procedure	639	J
COMPONENT DIAGNOSIS	621	ECM BRANCH LINE CIRCUIT	640	
MAIN LINE BETWEEN ABS AND TCM CIR-		Diagnosis Procedure	640	K
CUIT	621	ABS BRANCH LINE CIRCUIT	642	
Diagnosis Procedure	621	Diagnosis Procedure	642	L
MAIN LINE BETWEEN TCM AND DLC CIR-		TCM BRANCH LINE CIRCUIT	643	
CUIT	622	Diagnosis Procedure	643	
Diagnosis Procedure	622	4WD BRANCH LINE CIRCUIT	644	
MAIN LINE BETWEEN DLC AND BCM CIR-		Diagnosis Procedure	644	
CUIT	623	BCM BRANCH LINE CIRCUIT	645	
Diagnosis Procedure	623	Diagnosis Procedure	645	
ECM BRANCH LINE CIRCUIT	624	M&A BRANCH LINE CIRCUIT	646	
Diagnosis Procedure	624	Diagnosis Procedure	646	
ABS BRANCH LINE CIRCUIT	626	AV BRANCH LINE CIRCUIT	647	
Diagnosis Procedure	626	Diagnosis Procedure	647	
TCM BRANCH LINE CIRCUIT	627	DLC BRANCH LINE CIRCUIT	648	
Diagnosis Procedure	627	Diagnosis Procedure	648	
4WD BRANCH LINE CIRCUIT	628	EPS BRANCH LINE CIRCUIT	649	
Diagnosis Procedure	628	Diagnosis Procedure	649	
BCM BRANCH LINE CIRCUIT	629	I-KEY BRANCH LINE CIRCUIT	650	
Diagnosis Procedure	629	Diagnosis Procedure	650	
M&A BRANCH LINE CIRCUIT	630	IPDM-E BRANCH LINE CIRCUIT	651	
Diagnosis Procedure	630	Diagnosis Procedure	651	
DLC BRANCH LINE CIRCUIT	631	CAN COMMUNICATION CIRCUIT	652	
Diagnosis Procedure	631	Diagnosis Procedure	652	
EPS BRANCH LINE CIRCUIT	632	CAN SYSTEM (TYPE 45)		
Diagnosis Procedure	632	COMPONENT DIAGNOSIS	654	

MAIN LINE BETWEEN ABS AND TCM CIRCUIT	654	ABS BRANCH LINE CIRCUIT	675
Diagnosis Procedure	654	Diagnosis Procedure	675
MAIN LINE BETWEEN TCM AND DLC CIRCUIT	655	TCM BRANCH LINE CIRCUIT	676
Diagnosis Procedure	655	Diagnosis Procedure	676
MAIN LINE BETWEEN DLC AND BCM CIRCUIT	656	4WD BRANCH LINE CIRCUIT	677
Diagnosis Procedure	656	Diagnosis Procedure	677
ECM BRANCH LINE CIRCUIT	657	BCM BRANCH LINE CIRCUIT	678
Diagnosis Procedure	657	Diagnosis Procedure	678
ABS BRANCH LINE CIRCUIT	659	M&A BRANCH LINE CIRCUIT	679
Diagnosis Procedure	659	Diagnosis Procedure	679
TCM BRANCH LINE CIRCUIT	660	AV BRANCH LINE CIRCUIT	680
Diagnosis Procedure	660	Diagnosis Procedure	680
4WD BRANCH LINE CIRCUIT	661	DLC BRANCH LINE CIRCUIT	681
Diagnosis Procedure	661	Diagnosis Procedure	681
BCM BRANCH LINE CIRCUIT	662	EPS BRANCH LINE CIRCUIT	682
Diagnosis Procedure	662	Diagnosis Procedure	682
M&A BRANCH LINE CIRCUIT	663	STRG BRANCH LINE CIRCUIT	683
Diagnosis Procedure	663	Diagnosis Procedure	683
DLC BRANCH LINE CIRCUIT	664	IPDM-E BRANCH LINE CIRCUIT	684
Diagnosis Procedure	664	Diagnosis Procedure	684
EPS BRANCH LINE CIRCUIT	665	CAN COMMUNICATION CIRCUIT	685
Diagnosis Procedure	665	Diagnosis Procedure	685
STRG BRANCH LINE CIRCUIT	666	CAN SYSTEM (TYPE 47)	
Diagnosis Procedure	666	COMPONENT DIAGNOSIS	687
IPDM-E BRANCH LINE CIRCUIT	667	MAIN LINE BETWEEN ABS AND TCM CIRCUIT	687
Diagnosis Procedure	667	Diagnosis Procedure	687
CAN COMMUNICATION CIRCUIT	668	MAIN LINE BETWEEN TCM AND DLC CIRCUIT	688
Diagnosis Procedure	668	Diagnosis Procedure	688
CAN SYSTEM (TYPE 46)		MAIN LINE BETWEEN DLC AND BCM CIRCUIT	689
COMPONENT DIAGNOSIS	670	Diagnosis Procedure	689
MAIN LINE BETWEEN ABS AND TCM CIRCUIT	670	ECM BRANCH LINE CIRCUIT	690
Diagnosis Procedure	670	Diagnosis Procedure	690
MAIN LINE BETWEEN TCM AND DLC CIRCUIT	671	ABS BRANCH LINE CIRCUIT	692
Diagnosis Procedure	671	Diagnosis Procedure	692
MAIN LINE BETWEEN DLC AND BCM CIRCUIT	672	TCM BRANCH LINE CIRCUIT	693
Diagnosis Procedure	672	Diagnosis Procedure	693
ECM BRANCH LINE CIRCUIT	673	4WD BRANCH LINE CIRCUIT	694
Diagnosis Procedure	673	Diagnosis Procedure	694
		BCM BRANCH LINE CIRCUIT	695
		Diagnosis Procedure	695

M&A BRANCH LINE CIRCUIT	696	I-KEY BRANCH LINE CIRCUIT	717
Diagnosis Procedure	696	Diagnosis Procedure	717
DLC BRANCH LINE CIRCUIT	697	STRG BRANCH LINE CIRCUIT	718
Diagnosis Procedure	697	Diagnosis Procedure	718
EPS BRANCH LINE CIRCUIT	698	IPDM-E BRANCH LINE CIRCUIT	719
Diagnosis Procedure	698	Diagnosis Procedure	719
I-KEY BRANCH LINE CIRCUIT	699	CAN COMMUNICATION CIRCUIT	720
Diagnosis Procedure	699	Diagnosis Procedure	720
STRG BRANCH LINE CIRCUIT	700	CAN SYSTEM (TYPE 97)	
Diagnosis Procedure	700	COMPONENT DIAGNOSIS	722
IPDM-E BRANCH LINE CIRCUIT	701	MAIN LINE BETWEEN ABS AND DLC CIR-	
Diagnosis Procedure	701	CUIT	722
CAN COMMUNICATION CIRCUIT	702	Diagnosis Procedure	722
Diagnosis Procedure	702	MAIN LINE BETWEEN DLC AND BCM CIR-	
CAN SYSTEM (TYPE 48)		CUIT	723
COMPONENT DIAGNOSIS	704	Diagnosis Procedure	723
MAIN LINE BETWEEN ABS AND TCM CIR-		ECM BRANCH LINE CIRCUIT	724
CUIT	704	Diagnosis Procedure	724
Diagnosis Procedure	704	ABS BRANCH LINE CIRCUIT	726
MAIN LINE BETWEEN TCM AND DLC CIR-		Diagnosis Procedure	726
CUIT	705	BCM BRANCH LINE CIRCUIT	727
Diagnosis Procedure	705	Diagnosis Procedure	727
MAIN LINE BETWEEN DLC AND BCM CIR-		M&A BRANCH LINE CIRCUIT	728
CUIT	706	Diagnosis Procedure	728
Diagnosis Procedure	706	DLC BRANCH LINE CIRCUIT	729
ECM BRANCH LINE CIRCUIT	707	Diagnosis Procedure	729
Diagnosis Procedure	707	EPS BRANCH LINE CIRCUIT	730
ABS BRANCH LINE CIRCUIT	709	Diagnosis Procedure	730
Diagnosis Procedure	709	IPDM-E BRANCH LINE CIRCUIT	731
TCM BRANCH LINE CIRCUIT	710	Diagnosis Procedure	731
Diagnosis Procedure	710	CAN COMMUNICATION CIRCUIT	732
4WD BRANCH LINE CIRCUIT	711	Diagnosis Procedure	732
Diagnosis Procedure	711	CAN SYSTEM (TYPE 98)	
BCM BRANCH LINE CIRCUIT	712	COMPONENT DIAGNOSIS	734
Diagnosis Procedure	712	MAIN LINE BETWEEN ABS AND DLC CIR-	
M&A BRANCH LINE CIRCUIT	713	CUIT	734
Diagnosis Procedure	713	Diagnosis Procedure	734
AV BRANCH LINE CIRCUIT	714	MAIN LINE BETWEEN DLC AND BCM CIR-	
Diagnosis Procedure	714	CUIT	735
DLC BRANCH LINE CIRCUIT	715	Diagnosis Procedure	735
Diagnosis Procedure	715	ECM BRANCH LINE CIRCUIT	736
EPS BRANCH LINE CIRCUIT	716	Diagnosis Procedure	736
Diagnosis Procedure	716	ABS BRANCH LINE CIRCUIT	738
		Diagnosis Procedure	738

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BCM BRANCH LINE CIRCUIT	739	MAIN LINE BETWEEN ABS AND DLC CIR-	
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M&A BRANCH LINE CIRCUIT	740	Diagnosis Procedure	760
Diagnosis Procedure	740	MAIN LINE BETWEEN DLC AND BCM CIR-	
AV BRANCH LINE CIRCUIT	741	CUIT	761
Diagnosis Procedure	741	Diagnosis Procedure	761
DLC BRANCH LINE CIRCUIT	742	ECM BRANCH LINE CIRCUIT	762
Diagnosis Procedure	742	Diagnosis Procedure	762
EPS BRANCH LINE CIRCUIT	743	ABS BRANCH LINE CIRCUIT	764
Diagnosis Procedure	743	Diagnosis Procedure	764
IPDM-E BRANCH LINE CIRCUIT	744	BCM BRANCH LINE CIRCUIT	765
Diagnosis Procedure	744	Diagnosis Procedure	765
CAN COMMUNICATION CIRCUIT	745	M&A BRANCH LINE CIRCUIT	766
Diagnosis Procedure	745	Diagnosis Procedure	766
CAN SYSTEM (TYPE 99)			
COMPONENT DIAGNOSIS	747	AV BRANCH LINE CIRCUIT	767
MAIN LINE BETWEEN ABS AND DLC CIR-		Diagnosis Procedure	767
CUIT	747	DLC BRANCH LINE CIRCUIT	768
Diagnosis Procedure	747	Diagnosis Procedure	768
MAIN LINE BETWEEN DLC AND BCM CIR-		EPS BRANCH LINE CIRCUIT	769
CUIT	748	Diagnosis Procedure	769
Diagnosis Procedure	748	I-KEY BRANCH LINE CIRCUIT	770
ECM BRANCH LINE CIRCUIT	749	Diagnosis Procedure	770
Diagnosis Procedure	749	IPDM-E BRANCH LINE CIRCUIT	771
ABS BRANCH LINE CIRCUIT	751	Diagnosis Procedure	771
Diagnosis Procedure	751	CAN COMMUNICATION CIRCUIT	772
BCM BRANCH LINE CIRCUIT	752	Diagnosis Procedure	772
Diagnosis Procedure	752	CAN SYSTEM (TYPE 101)	
M&A BRANCH LINE CIRCUIT	753	COMPONENT DIAGNOSIS	774
Diagnosis Procedure	753	MAIN LINE BETWEEN ABS AND DLC CIR-	
DLC BRANCH LINE CIRCUIT	754	CUIT	774
Diagnosis Procedure	754	Diagnosis Procedure	774
EPS BRANCH LINE CIRCUIT	755	MAIN LINE BETWEEN DLC AND BCM CIR-	
Diagnosis Procedure	755	CUIT	775
I-KEY BRANCH LINE CIRCUIT	756	Diagnosis Procedure	775
Diagnosis Procedure	756	ECM BRANCH LINE CIRCUIT	776
IPDM-E BRANCH LINE CIRCUIT	757	Diagnosis Procedure	776
Diagnosis Procedure	757	ABS BRANCH LINE CIRCUIT	778
CAN COMMUNICATION CIRCUIT	758	Diagnosis Procedure	778
Diagnosis Procedure	758	BCM BRANCH LINE CIRCUIT	779
CAN SYSTEM (TYPE 100)			
COMPONENT DIAGNOSIS	760	Diagnosis Procedure	779
		M&A BRANCH LINE CIRCUIT	780
		Diagnosis Procedure	780
		DLC BRANCH LINE CIRCUIT	781
		Diagnosis Procedure	781

EPS BRANCH LINE CIRCUIT	782	ECM BRANCH LINE CIRCUIT	803	
Diagnosis Procedure	782	Diagnosis Procedure	803	A
STRG BRANCH LINE CIRCUIT	783	ABS BRANCH LINE CIRCUIT	805	
Diagnosis Procedure	783	Diagnosis Procedure	805	B
IPDM-E BRANCH LINE CIRCUIT	784	BCM BRANCH LINE CIRCUIT	806	
Diagnosis Procedure	784	Diagnosis Procedure	806	C
CAN COMMUNICATION CIRCUIT	785	M&A BRANCH LINE CIRCUIT	807	
Diagnosis Procedure	785	Diagnosis Procedure	807	
CAN SYSTEM (TYPE 102)		DLC BRANCH LINE CIRCUIT	808	D
COMPONENT DIAGNOSIS	787	Diagnosis Procedure	808	
MAIN LINE BETWEEN ABS AND DLC CIR-		EPS BRANCH LINE CIRCUIT	809	
CUIT	787	Diagnosis Procedure	809	E
Diagnosis Procedure	787	I-KEY BRANCH LINE CIRCUIT	810	
MAIN LINE BETWEEN DLC AND BCM CIR-		Diagnosis Procedure	810	F
CUIT	788	STRG BRANCH LINE CIRCUIT	811	
Diagnosis Procedure	788	Diagnosis Procedure	811	G
ECM BRANCH LINE CIRCUIT	789	IPDM-E BRANCH LINE CIRCUIT	812	
Diagnosis Procedure	789	Diagnosis Procedure	812	H
ABS BRANCH LINE CIRCUIT	791	CAN COMMUNICATION CIRCUIT	813	
Diagnosis Procedure	791	Diagnosis Procedure	813	I
BCM BRANCH LINE CIRCUIT	792	CAN SYSTEM (TYPE 104)		
Diagnosis Procedure	792	COMPONENT DIAGNOSIS	815	
M&A BRANCH LINE CIRCUIT	793	MAIN LINE BETWEEN ABS AND DLC CIR-		
Diagnosis Procedure	793	CUIT	815	J
AV BRANCH LINE CIRCUIT	794	Diagnosis Procedure	815	
Diagnosis Procedure	794	MAIN LINE BETWEEN DLC AND BCM CIR-		
DLC BRANCH LINE CIRCUIT	795	CUIT	816	K
Diagnosis Procedure	795	Diagnosis Procedure	816	
EPS BRANCH LINE CIRCUIT	796	ECM BRANCH LINE CIRCUIT	817	
Diagnosis Procedure	796	Diagnosis Procedure	817	L
STRG BRANCH LINE CIRCUIT	797	ABS BRANCH LINE CIRCUIT	819	
Diagnosis Procedure	797	Diagnosis Procedure	819	LNR
IPDM-E BRANCH LINE CIRCUIT	798	BCM BRANCH LINE CIRCUIT	820	
Diagnosis Procedure	798	Diagnosis Procedure	820	N
CAN COMMUNICATION CIRCUIT	799	M&A BRANCH LINE CIRCUIT	821	
Diagnosis Procedure	799	Diagnosis Procedure	821	O
CAN SYSTEM (TYPE 103)		AV BRANCH LINE CIRCUIT	822	
COMPONENT DIAGNOSIS	801	Diagnosis Procedure	822	P
MAIN LINE BETWEEN ABS AND DLC CIR-		DLC BRANCH LINE CIRCUIT	823	
CUIT	801	Diagnosis Procedure	823	
Diagnosis Procedure	801	EPS BRANCH LINE CIRCUIT	824	
MAIN LINE BETWEEN DLC AND BCM CIR-		Diagnosis Procedure	824	
CUIT	802	I-KEY BRANCH LINE CIRCUIT	825	
Diagnosis Procedure	802			

Diagnosis Procedure	825	ABS BRANCH LINE CIRCUIT	847
STRG BRANCH LINE CIRCUIT	826	Diagnosis Procedure	847
Diagnosis Procedure	826	4WD BRANCH LINE CIRCUIT	848
IPDM-E BRANCH LINE CIRCUIT	827	Diagnosis Procedure	848
Diagnosis Procedure	827	BCM BRANCH LINE CIRCUIT	849
CAN COMMUNICATION CIRCUIT	828	Diagnosis Procedure	849
Diagnosis Procedure	828	M&A BRANCH LINE CIRCUIT	850
CAN SYSTEM (TYPE 105)		Diagnosis Procedure	850
COMPONENT DIAGNOSIS	830	AV BRANCH LINE CIRCUIT	851
MAIN LINE BETWEEN ABS AND DLC CIR- CUIT	830	Diagnosis Procedure	851
Diagnosis Procedure	830	DLC BRANCH LINE CIRCUIT	852
MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	831	Diagnosis Procedure	852
Diagnosis Procedure	831	EPS BRANCH LINE CIRCUIT	853
ECM BRANCH LINE CIRCUIT	832	Diagnosis Procedure	853
Diagnosis Procedure	832	IPDM-E BRANCH LINE CIRCUIT	854
ABS BRANCH LINE CIRCUIT	834	Diagnosis Procedure	854
Diagnosis Procedure	834	CAN COMMUNICATION CIRCUIT	855
4WD BRANCH LINE CIRCUIT	835	Diagnosis Procedure	855
Diagnosis Procedure	835	CAN SYSTEM (TYPE 107)	
BCM BRANCH LINE CIRCUIT	836	COMPONENT DIAGNOSIS	857
Diagnosis Procedure	836	MAIN LINE BETWEEN ABS AND DLC CIR- CUIT	857
M&A BRANCH LINE CIRCUIT	837	Diagnosis Procedure	857
Diagnosis Procedure	837	MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	858
DLC BRANCH LINE CIRCUIT	838	Diagnosis Procedure	858
Diagnosis Procedure	838	ECM BRANCH LINE CIRCUIT	859
EPS BRANCH LINE CIRCUIT	839	Diagnosis Procedure	859
Diagnosis Procedure	839	ABS BRANCH LINE CIRCUIT	861
IPDM-E BRANCH LINE CIRCUIT	840	Diagnosis Procedure	861
Diagnosis Procedure	840	4WD BRANCH LINE CIRCUIT	862
CAN COMMUNICATION CIRCUIT	841	Diagnosis Procedure	862
Diagnosis Procedure	841	BCM BRANCH LINE CIRCUIT	863
CAN SYSTEM (TYPE 106)		Diagnosis Procedure	863
COMPONENT DIAGNOSIS	843	M&A BRANCH LINE CIRCUIT	864
MAIN LINE BETWEEN ABS AND DLC CIR- CUIT	843	Diagnosis Procedure	864
Diagnosis Procedure	843	DLC BRANCH LINE CIRCUIT	865
MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	844	Diagnosis Procedure	865
Diagnosis Procedure	844	EPS BRANCH LINE CIRCUIT	866
ECM BRANCH LINE CIRCUIT	845	Diagnosis Procedure	866
Diagnosis Procedure	845	I-KEY BRANCH LINE CIRCUIT	867
		Diagnosis Procedure	867
		IPDM-E BRANCH LINE CIRCUIT	868

Diagnosis Procedure	868	ABS BRANCH LINE CIRCUIT	890	
CAN COMMUNICATION CIRCUIT	869	Diagnosis Procedure	890	A
Diagnosis Procedure	869	4WD BRANCH LINE CIRCUIT	891	
CAN SYSTEM (TYPE 108)		Diagnosis Procedure	891	B
COMPONENT DIAGNOSIS	871	BCM BRANCH LINE CIRCUIT	892	
MAIN LINE BETWEEN ABS AND DLC CIR- CUIT	871	Diagnosis Procedure	892	C
Diagnosis Procedure	871	M&A BRANCH LINE CIRCUIT	893	
MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	872	Diagnosis Procedure	893	
Diagnosis Procedure	872	DLC BRANCH LINE CIRCUIT	894	D
ECM BRANCH LINE CIRCUIT	873	Diagnosis Procedure	894	
Diagnosis Procedure	873	EPS BRANCH LINE CIRCUIT	895	E
ABS BRANCH LINE CIRCUIT	875	Diagnosis Procedure	895	
Diagnosis Procedure	875	STRG BRANCH LINE CIRCUIT	896	F
4WD BRANCH LINE CIRCUIT	876	Diagnosis Procedure	896	
Diagnosis Procedure	876	IPDM-E BRANCH LINE CIRCUIT	897	G
BCM BRANCH LINE CIRCUIT	877	Diagnosis Procedure	897	
Diagnosis Procedure	877	CAN COMMUNICATION CIRCUIT	898	
M&A BRANCH LINE CIRCUIT	878	Diagnosis Procedure	898	H
Diagnosis Procedure	878	CAN SYSTEM (TYPE 110)		
AV BRANCH LINE CIRCUIT	879	COMPONENT DIAGNOSIS	900	
Diagnosis Procedure	879	MAIN LINE BETWEEN ABS AND DLC CIR- CUIT	900	I
DLC BRANCH LINE CIRCUIT	880	Diagnosis Procedure	900	J
Diagnosis Procedure	880	MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	901	
EPS BRANCH LINE CIRCUIT	881	Diagnosis Procedure	901	K
Diagnosis Procedure	881	ECM BRANCH LINE CIRCUIT	902	
I-KEY BRANCH LINE CIRCUIT	882	Diagnosis Procedure	902	L
Diagnosis Procedure	882	ABS BRANCH LINE CIRCUIT	904	
IPDM-E BRANCH LINE CIRCUIT	883	Diagnosis Procedure	904	
Diagnosis Procedure	883	4WD BRANCH LINE CIRCUIT	905	LNR
CAN COMMUNICATION CIRCUIT	884	Diagnosis Procedure	905	
Diagnosis Procedure	884	BCM BRANCH LINE CIRCUIT	906	N
CAN SYSTEM (TYPE 109)		Diagnosis Procedure	906	
COMPONENT DIAGNOSIS	886	M&A BRANCH LINE CIRCUIT	907	
MAIN LINE BETWEEN ABS AND DLC CIR- CUIT	886	Diagnosis Procedure	907	O
Diagnosis Procedure	886	AV BRANCH LINE CIRCUIT	908	
MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	887	Diagnosis Procedure	908	P
Diagnosis Procedure	887	DLC BRANCH LINE CIRCUIT	909	
ECM BRANCH LINE CIRCUIT	888	Diagnosis Procedure	909	
Diagnosis Procedure	888	EPS BRANCH LINE CIRCUIT	910	
ABS BRANCH LINE CIRCUIT	890	Diagnosis Procedure	910	
Diagnosis Procedure	890	STRG BRANCH LINE CIRCUIT	911	
4WD BRANCH LINE CIRCUIT	891			
Diagnosis Procedure	891			
BCM BRANCH LINE CIRCUIT	892			
Diagnosis Procedure	892			
M&A BRANCH LINE CIRCUIT	893			
Diagnosis Procedure	893			
DLC BRANCH LINE CIRCUIT	894			
Diagnosis Procedure	894			
EPS BRANCH LINE CIRCUIT	895			
Diagnosis Procedure	895			
STRG BRANCH LINE CIRCUIT	896			
Diagnosis Procedure	896			
IPDM-E BRANCH LINE CIRCUIT	897			
Diagnosis Procedure	897			
CAN COMMUNICATION CIRCUIT	898			
Diagnosis Procedure	898			
CAN SYSTEM (TYPE 110)				
COMPONENT DIAGNOSIS	900			
MAIN LINE BETWEEN ABS AND DLC CIR- CUIT	900			
Diagnosis Procedure	900			
MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	901			
Diagnosis Procedure	901			
ECM BRANCH LINE CIRCUIT	902			
Diagnosis Procedure	902			
ABS BRANCH LINE CIRCUIT	904			
Diagnosis Procedure	904			
4WD BRANCH LINE CIRCUIT	905			
Diagnosis Procedure	905			
BCM BRANCH LINE CIRCUIT	906			
Diagnosis Procedure	906			
M&A BRANCH LINE CIRCUIT	907			
Diagnosis Procedure	907			
AV BRANCH LINE CIRCUIT	908			
Diagnosis Procedure	908			
DLC BRANCH LINE CIRCUIT	909			
Diagnosis Procedure	909			
EPS BRANCH LINE CIRCUIT	910			
Diagnosis Procedure	910			
STRG BRANCH LINE CIRCUIT	911			

Diagnosis Procedure	911	ECM BRANCH LINE CIRCUIT	932
IPDM-E BRANCH LINE CIRCUIT	912	Diagnosis Procedure	932
Diagnosis Procedure	912	ABS BRANCH LINE CIRCUIT	934
CAN COMMUNICATION CIRCUIT	913	Diagnosis Procedure	934
Diagnosis Procedure	913	4WD BRANCH LINE CIRCUIT	935
CAN SYSTEM (TYPE 111)		Diagnosis Procedure	935
COMPONENT DIAGNOSIS	915	BCM BRANCH LINE CIRCUIT	936
MAIN LINE BETWEEN ABS AND DLC CIR- CUIT	915	Diagnosis Procedure	936
Diagnosis Procedure	915	M&A BRANCH LINE CIRCUIT	937
MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	916	Diagnosis Procedure	937
Diagnosis Procedure	916	AV BRANCH LINE CIRCUIT	938
ECM BRANCH LINE CIRCUIT	917	Diagnosis Procedure	938
Diagnosis Procedure	917	DLC BRANCH LINE CIRCUIT	939
ABS BRANCH LINE CIRCUIT	919	Diagnosis Procedure	939
Diagnosis Procedure	919	EPS BRANCH LINE CIRCUIT	940
4WD BRANCH LINE CIRCUIT	920	Diagnosis Procedure	940
Diagnosis Procedure	920	I-KEY BRANCH LINE CIRCUIT	941
BCM BRANCH LINE CIRCUIT	921	Diagnosis Procedure	941
Diagnosis Procedure	921	STRG BRANCH LINE CIRCUIT	942
M&A BRANCH LINE CIRCUIT	922	Diagnosis Procedure	942
Diagnosis Procedure	922	IPDM-E BRANCH LINE CIRCUIT	943
DLC BRANCH LINE CIRCUIT	923	Diagnosis Procedure	943
Diagnosis Procedure	923	CAN COMMUNICATION CIRCUIT	944
EPS BRANCH LINE CIRCUIT	924	Diagnosis Procedure	944
Diagnosis Procedure	924	CAN SYSTEM (TYPE 113)	
I-KEY BRANCH LINE CIRCUIT	925	COMPONENT DIAGNOSIS	946
Diagnosis Procedure	925	MAIN LINE BETWEEN ABS AND TCM CIR- CUIT	946
STRG BRANCH LINE CIRCUIT	926	Diagnosis Procedure	946
Diagnosis Procedure	926	MAIN LINE BETWEEN TCM AND DLC CIR- CUIT	947
IPDM-E BRANCH LINE CIRCUIT	927	Diagnosis Procedure	947
Diagnosis Procedure	927	MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	948
CAN COMMUNICATION CIRCUIT	928	Diagnosis Procedure	948
Diagnosis Procedure	928	ECM BRANCH LINE CIRCUIT	949
CAN SYSTEM (TYPE 112)		Diagnosis Procedure	949
COMPONENT DIAGNOSIS	930	ABS BRANCH LINE CIRCUIT	951
MAIN LINE BETWEEN ABS AND DLC CIR- CUIT	930	Diagnosis Procedure	951
Diagnosis Procedure	930	TCM BRANCH LINE CIRCUIT	952
MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	931	Diagnosis Procedure	952
Diagnosis Procedure	931	4WD BRANCH LINE CIRCUIT	953
Diagnosis Procedure	931	Diagnosis Procedure	953

BCM BRANCH LINE CIRCUIT	954	CAN COMMUNICATION CIRCUIT	975	
Diagnosis Procedure	954	Diagnosis Procedure	975	A
M&A BRANCH LINE CIRCUIT	955	CAN SYSTEM (TYPE 115)		
Diagnosis Procedure	955	COMPONENT DIAGNOSIS	977	B
DLC BRANCH LINE CIRCUIT	956	MAIN LINE BETWEEN ABS AND TCM CIR-		
Diagnosis Procedure	956	CUIT	977	C
EPS BRANCH LINE CIRCUIT	957	Diagnosis Procedure	977	
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ABS BRANCH LINE CIRCUIT	966	DLC BRANCH LINE CIRCUIT	987	K
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4WD BRANCH LINE CIRCUIT	968	I-KEY BRANCH LINE CIRCUIT	989	
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BCM BRANCH LINE CIRCUIT	969	IPDM-E BRANCH LINE CIRCUIT	990	
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M&A BRANCH LINE CIRCUIT	970	CAN COMMUNICATION CIRCUIT	991	
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AV BRANCH LINE CIRCUIT	971	CAN SYSTEM (TYPE 116)		
Diagnosis Procedure	971	COMPONENT DIAGNOSIS	993	
DLC BRANCH LINE CIRCUIT	972	MAIN LINE BETWEEN ABS AND TCM CIR-		
Diagnosis Procedure	972	CUIT	993	P
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IPDM-E BRANCH LINE CIRCUIT	974	CUIT	994	
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ECM BRANCH LINE CIRCUIT	996	BCM BRANCH LINE CIRCUIT	1018
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ABS BRANCH LINE CIRCUIT	998	M&A BRANCH LINE CIRCUIT	1019
Diagnosis Procedure	998	Diagnosis Procedure	1019
TCM BRANCH LINE CIRCUIT	999	DLC BRANCH LINE CIRCUIT	1020
Diagnosis Procedure	999	Diagnosis Procedure	1020
4WD BRANCH LINE CIRCUIT	1000	EPS BRANCH LINE CIRCUIT	1021
Diagnosis Procedure	1000	Diagnosis Procedure	1021
BCM BRANCH LINE CIRCUIT	1001	STRG BRANCH LINE CIRCUIT	1022
Diagnosis Procedure	1001	Diagnosis Procedure	1022
M&A BRANCH LINE CIRCUIT	1002	IPDM-E BRANCH LINE CIRCUIT	1023
Diagnosis Procedure	1002	Diagnosis Procedure	1023
AV BRANCH LINE CIRCUIT	1003	CAN COMMUNICATION CIRCUIT	1024
Diagnosis Procedure	1003	Diagnosis Procedure	1024
DLC BRANCH LINE CIRCUIT	1004	CAN SYSTEM (TYPE 118)	
Diagnosis Procedure	1004	COMPONENT DIAGNOSIS	1026
EPS BRANCH LINE CIRCUIT	1005	MAIN LINE BETWEEN ABS AND TCM CIRCUIT	1026
Diagnosis Procedure	1005	Diagnosis Procedure	1026
I-KEY BRANCH LINE CIRCUIT	1006	MAIN LINE BETWEEN TCM AND DLC CIRCUIT	1027
Diagnosis Procedure	1006	Diagnosis Procedure	1027
IPDM-E BRANCH LINE CIRCUIT	1007	MAIN LINE BETWEEN DLC AND BCM CIRCUIT	1028
Diagnosis Procedure	1007	Diagnosis Procedure	1028
CAN COMMUNICATION CIRCUIT	1008	ECM BRANCH LINE CIRCUIT	1029
Diagnosis Procedure	1008	Diagnosis Procedure	1029
CAN SYSTEM (TYPE 117)		ABS BRANCH LINE CIRCUIT	1031
COMPONENT DIAGNOSIS	1010	Diagnosis Procedure	1031
MAIN LINE BETWEEN ABS AND TCM CIRCUIT	1010	TCM BRANCH LINE CIRCUIT	1032
Diagnosis Procedure	1010	Diagnosis Procedure	1032
MAIN LINE BETWEEN TCM AND DLC CIRCUIT	1011	4WD BRANCH LINE CIRCUIT	1033
Diagnosis Procedure	1011	Diagnosis Procedure	1033
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Diagnosis Procedure	1012	Diagnosis Procedure	1034
ECM BRANCH LINE CIRCUIT	1013	M&A BRANCH LINE CIRCUIT	1035
Diagnosis Procedure	1013	Diagnosis Procedure	1035
ABS BRANCH LINE CIRCUIT	1015	AV BRANCH LINE CIRCUIT	1036
Diagnosis Procedure	1015	Diagnosis Procedure	1036
TCM BRANCH LINE CIRCUIT	1016	DLC BRANCH LINE CIRCUIT	1037
Diagnosis Procedure	1016	Diagnosis Procedure	1037

EPS BRANCH LINE CIRCUIT	1038	Diagnosis Procedure	1038
STRG BRANCH LINE CIRCUIT	1039	Diagnosis Procedure	1039
IPDM-E BRANCH LINE CIRCUIT	1040	Diagnosis Procedure	1040
CAN COMMUNICATION CIRCUIT	1041	Diagnosis Procedure	1041
CAN SYSTEM (TYPE 119)			
COMPONENT DIAGNOSIS	1043		
MAIN LINE BETWEEN ABS AND TCM CIR- CUIT	1043	Diagnosis Procedure	1043
MAIN LINE BETWEEN TCM AND DLC CIR- CUIT	1044	Diagnosis Procedure	1044
MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	1045	Diagnosis Procedure	1045
ECM BRANCH LINE CIRCUIT	1046	Diagnosis Procedure	1046
ABS BRANCH LINE CIRCUIT	1048	Diagnosis Procedure	1048
TCM BRANCH LINE CIRCUIT	1049	Diagnosis Procedure	1049
4WD BRANCH LINE CIRCUIT	1050	Diagnosis Procedure	1050
BCM BRANCH LINE CIRCUIT	1051	Diagnosis Procedure	1051
M&A BRANCH LINE CIRCUIT	1052	Diagnosis Procedure	1052
DLC BRANCH LINE CIRCUIT	1053	Diagnosis Procedure	1053
EPS BRANCH LINE CIRCUIT	1054	Diagnosis Procedure	1054
I-KEY BRANCH LINE CIRCUIT	1055	Diagnosis Procedure	1055
STRG BRANCH LINE CIRCUIT	1056	Diagnosis Procedure	1056
IPDM-E BRANCH LINE CIRCUIT	1057	Diagnosis Procedure	1057
CAN COMMUNICATION CIRCUIT	1058	Diagnosis Procedure	1058
CAN SYSTEM (TYPE 120)			
COMPONENT DIAGNOSIS	1060		
MAIN LINE BETWEEN ABS AND TCM CIR- CUIT	1060	Diagnosis Procedure	1060
MAIN LINE BETWEEN TCM AND DLC CIR- CUIT	1061	Diagnosis Procedure	1061
MAIN LINE BETWEEN DLC AND BCM CIR- CUIT	1062	Diagnosis Procedure	1062
ECM BRANCH LINE CIRCUIT	1063	Diagnosis Procedure	1063
ABS BRANCH LINE CIRCUIT	1065	Diagnosis Procedure	1065
TCM BRANCH LINE CIRCUIT	1066	Diagnosis Procedure	1066
4WD BRANCH LINE CIRCUIT	1067	Diagnosis Procedure	1067
BCM BRANCH LINE CIRCUIT	1068	Diagnosis Procedure	1068
M&A BRANCH LINE CIRCUIT	1069	Diagnosis Procedure	1069
AV BRANCH LINE CIRCUIT	1070	Diagnosis Procedure	1070
DLC BRANCH LINE CIRCUIT	1071	Diagnosis Procedure	1071
EPS BRANCH LINE CIRCUIT	1072	Diagnosis Procedure	1072
I-KEY BRANCH LINE CIRCUIT	1073	Diagnosis Procedure	1073
STRG BRANCH LINE CIRCUIT	1074	Diagnosis Procedure	1074
IPDM-E BRANCH LINE CIRCUIT	1075	Diagnosis Procedure	1075
CAN COMMUNICATION CIRCUIT	1076	Diagnosis Procedure	1076

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001189962

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001189963

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189964

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189965

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189966

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189967

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189968

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189969

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189970

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001189971

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

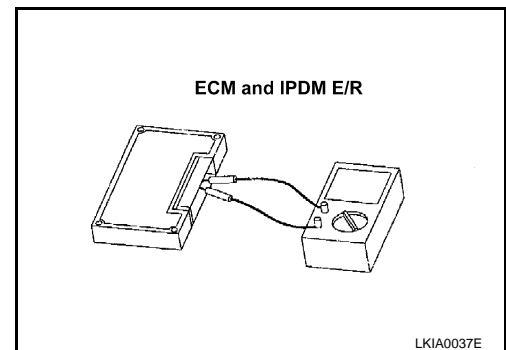
1. Remove the ECM and the IPDM E/R.
 2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001189972

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001189973

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189974

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189975

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189976

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189977

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189978

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189979

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189980

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189981

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001189982

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

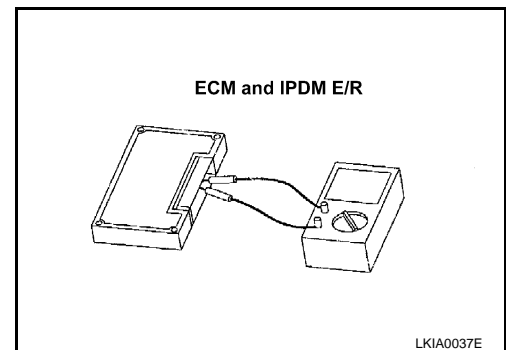
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001189983

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001189984

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189985

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189986

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189987

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189988

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189989

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189990

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189991

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189992

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001189993

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

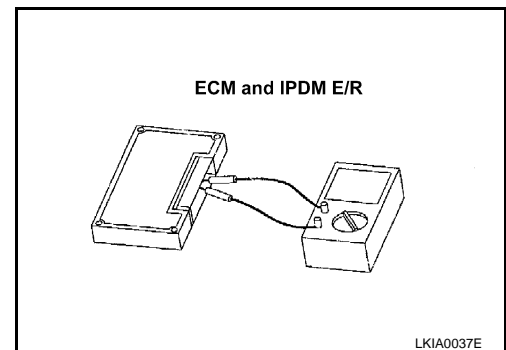
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001189994

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001189995

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189996

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189997

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189998

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001189999

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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:000000001190000

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190001

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190002

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190003

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190004

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190005

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

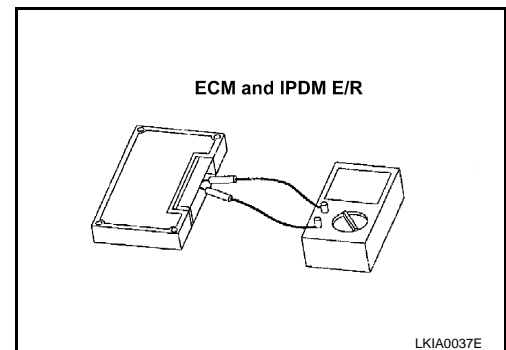
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190006

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190007

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190008

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190009

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190010

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190011

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190012

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190013

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190014

INSPECTION PROCEDURE

1. CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190015

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190016

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

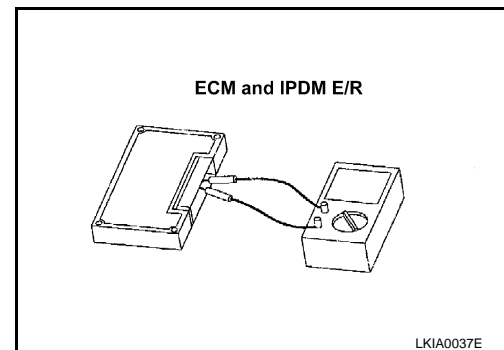
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190017

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190018

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190019

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190020

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190021

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190022

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190023

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190024

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190025

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190026

INSPECTION PROCEDURE

1. CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190027

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190028

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

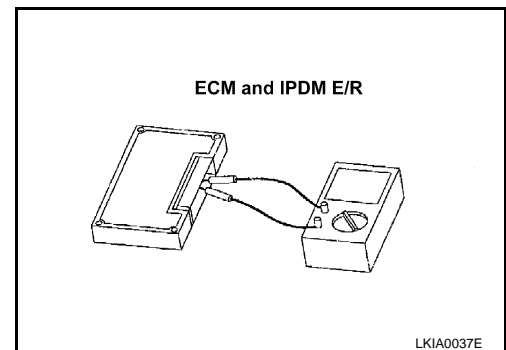
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

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[CAN SYSTEM (TYPE 6)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190029

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190030

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190031

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190032

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190033

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190034

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190035

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190036

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190037

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190038

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190039

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190040

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

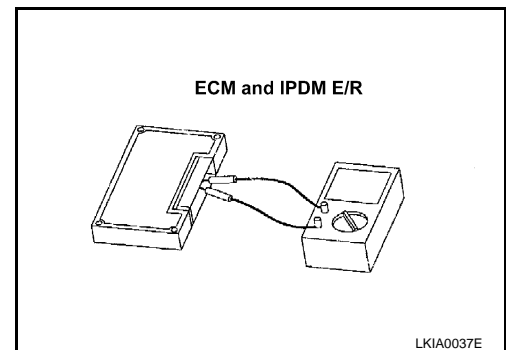
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 7)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190041

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190042

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190043

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190044

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190045

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190046

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190047

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190048

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190049

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190050

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190051

INSPECTION PROCEDURE

1. CHECK 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.	
M30	4	Approx. 54 – 66
	8	

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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190052

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190053

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

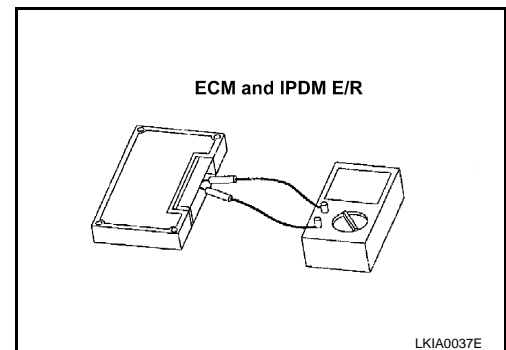
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



LKIA0037E

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 8)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 9)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190054

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 9)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190055

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 9)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190056

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 9)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 9)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190057

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 9)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190058

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190059

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 9)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190060

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190061

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 9)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190062

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 9)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190063

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

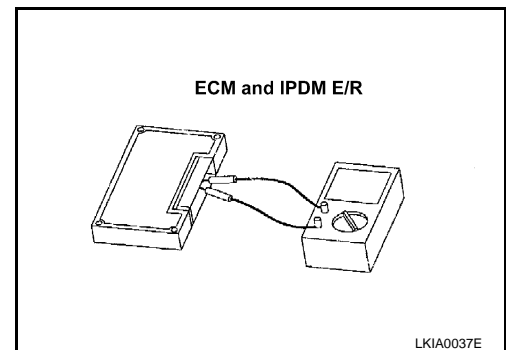
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 9)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 10)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190064

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 10)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190065

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 10)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190066

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 10)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 10)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190067

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 10)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190068

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190069

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 10)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190070

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190071

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190072

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 10)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190073

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 10)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190074

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

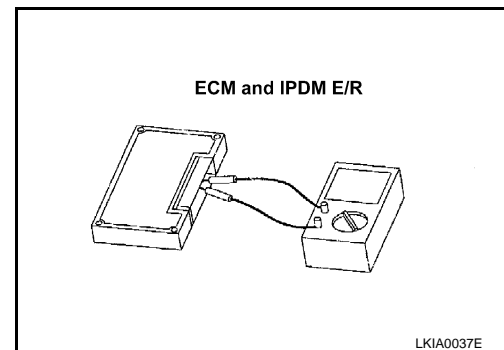
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 10)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 11)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190075

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 11)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190076

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 11)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190077

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 11)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 11)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190078

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 11)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190079

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 11)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190080

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 11)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190081

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190082

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 11)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190083

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 11)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190084

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 11)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190085

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

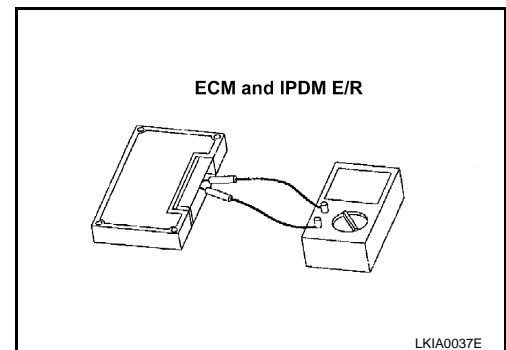
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



LKIA0037E

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 11)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190086

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190087

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190088

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190089

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190090

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190091

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190092

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190093

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190094

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190095

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190096

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190097

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

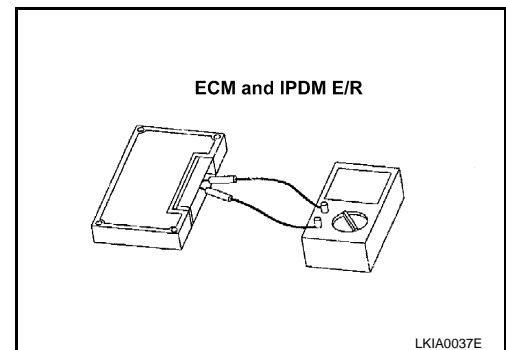
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 12)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 13)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190098

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 13)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190099

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 13)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190100

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 13)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 13)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190101

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 13)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190102

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190103

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 13)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190104

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190105

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 13)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190106

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 13)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190107

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 13)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190108

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

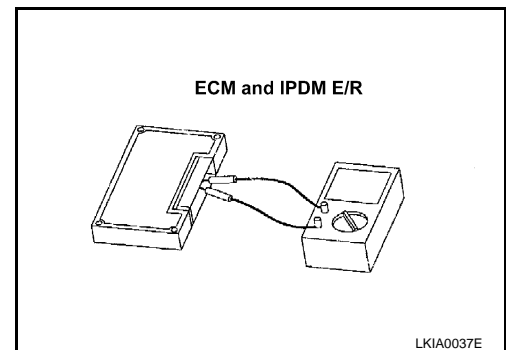
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 13)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 14)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190109

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 14)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190110

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 14)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190111

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 14)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 14)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190112

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 14)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190113

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190114

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190115

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 14)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190116

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190117

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 14)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190118

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 14)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190119

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 14)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190120

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

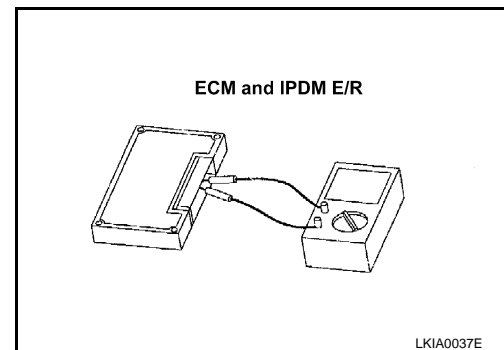
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 14)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190121

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190122

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190123

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190124

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190125

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190126

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190127

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190128

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190129

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190130

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190131

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190132

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

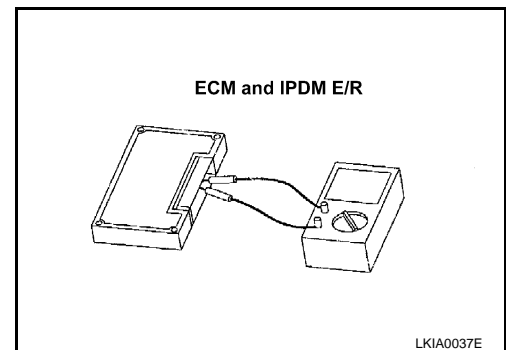
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 15)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190133

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190134

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190135

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190136

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190137

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190138

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190139

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190140

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190141

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190142

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190143

INSPECTION PROCEDURE

1. CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190144

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190145

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

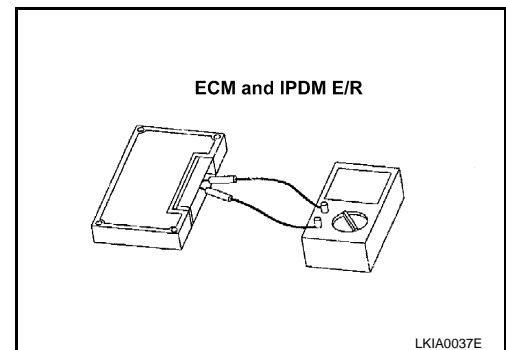
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 16)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 17)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190146

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 17)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190147

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 17)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190148

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 17)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 17)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190149

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 17)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190150

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190151

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 17)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190152

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190153

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 17)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190154

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 17)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190155

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

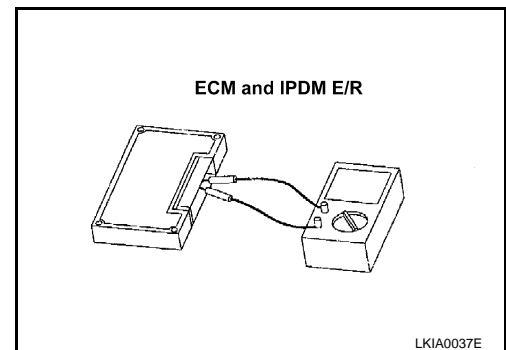
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 17)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 18)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190156

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 18)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190157

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 18)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190158

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 18)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 18)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190159

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 18)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190160

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190161

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 18)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190162

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 18)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190163

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190164

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 18)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190165

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 18)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190166

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

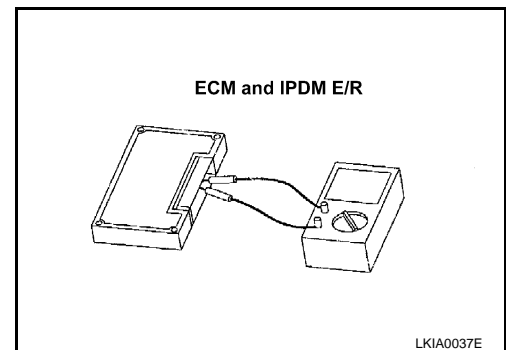
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 18)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 19)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190167

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 19)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190168

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 19)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190169

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 19)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 19)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190170

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 19)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190171

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190172

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 19)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190173

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190174

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 19)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190175

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 19)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190176

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 19)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190177

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

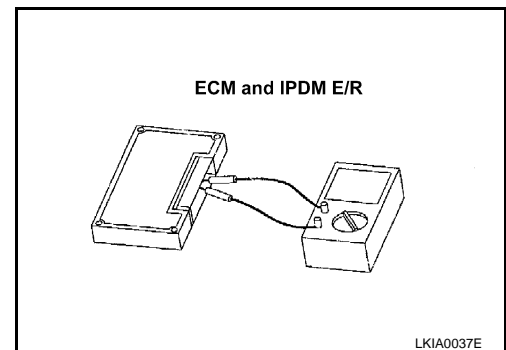
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 19)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190178

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190179

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190180

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190181

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190182

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190183

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190184

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190185

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190186

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190187

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190188

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190189

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

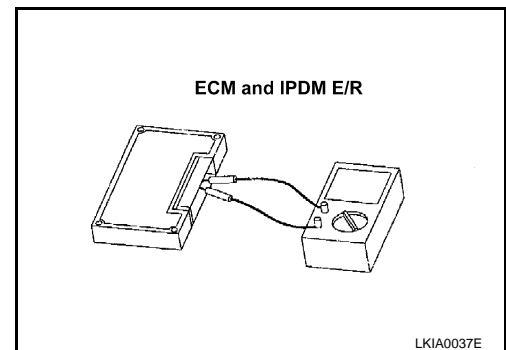
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 20)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 21)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190190

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 21)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190191

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 21)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190192

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 21)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 21)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190193

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 21)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190194

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190195

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 21)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190196

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190197

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 21)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190198

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 21)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190199

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 21)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190200

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

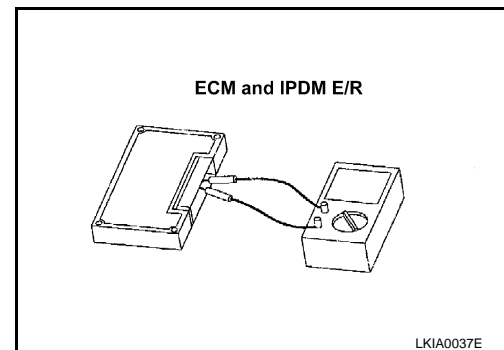
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 21)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 22)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190201

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 22)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190202

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 22)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190203

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 22)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 22)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190204

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 22)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190205

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 22)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190206

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190207

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 22)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190208

INSPECTION PROCEDURE

1.CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190209

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 22)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190210

INSPECTION PROCEDURE

1. CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 22)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190211

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 22)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190212

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

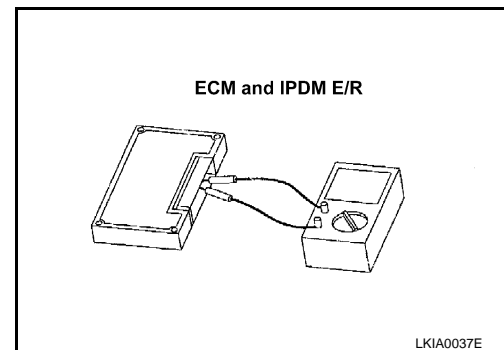
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 22)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190213

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190214

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190215

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

- MR20DE (Without EURO-OBD): ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190216

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190217

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190218

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190219

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190220

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190221

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190222

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190223

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190224

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

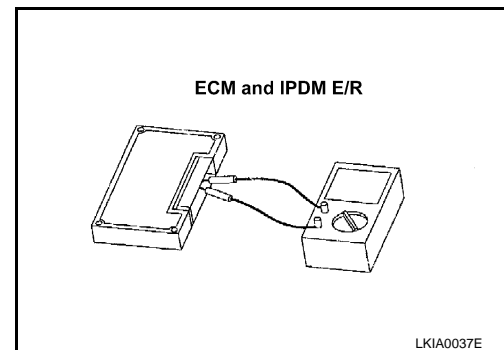
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 23)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190225

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190226

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190227

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190228

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190229

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190230

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190231

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190232

INSPECTION PROCEDURE

1.CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190233

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190234

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190235

INSPECTION PROCEDURE

1.CHECK 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.	
M30	4	Approx. 54 – 66
	8	

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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190236

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190237

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

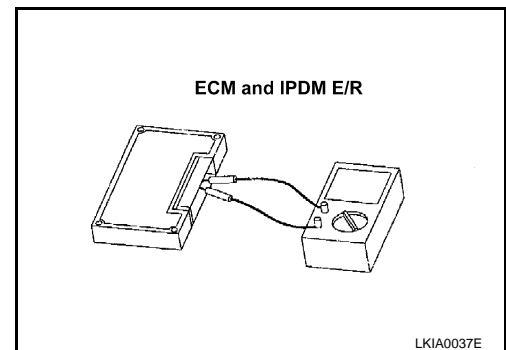
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 24)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190238

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190239

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190240

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190241

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190242

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190243

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)
- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190244

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190245

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190246

INSPECTION PROCEDURE

1.CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190247

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190248

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190249

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

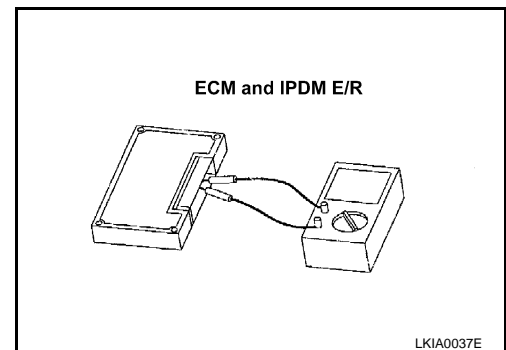
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 25)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190250

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190251

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190252

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190253

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190254

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190255

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)
- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190256

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190257

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190258

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
B96	71	Approx. 54 – 66
	72	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190259

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190260

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190261

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190262

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

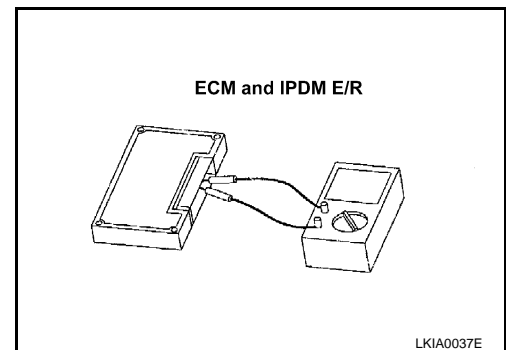
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 26)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190263

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.
- NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

LNR

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190264

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190265

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190266

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190267

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190268

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

- YES >> GO TO 2.
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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to the following.
- A/T models: [TM-382, "Exploded View"](#)
 - CVT models: [TM-540, "Exploded View"](#)

- YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190269

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190270

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190271

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190272

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190273

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190274

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190275

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

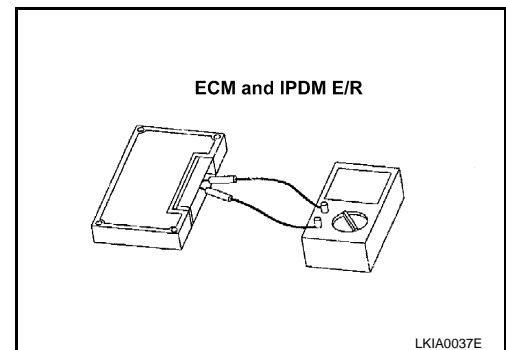
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 27)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190276

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190277

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190278

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190279

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190280

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190281

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)
- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190282

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190283

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190284

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190285

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190286

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190287

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190288

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190289

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

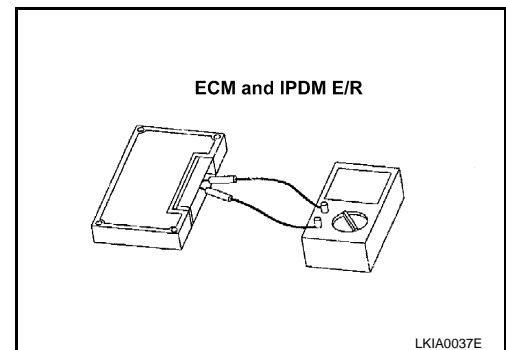
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 28)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190290

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190291

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190292

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190293

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190294

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190295

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)

- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190296

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190297

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190298

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190299

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190300

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190301

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190302

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

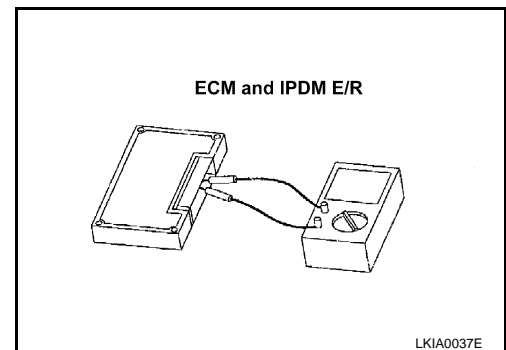
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 29)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190303

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.
- NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

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MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190304

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190305

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190306

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190307

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190308

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

- YES >> GO TO 2.
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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to the following.
- A/T models: [TM-382, "Exploded View"](#)
 - CVT models: [TM-540, "Exploded View"](#)

- YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190309

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190310

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190311

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190312

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190313

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190314

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190315

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190316

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

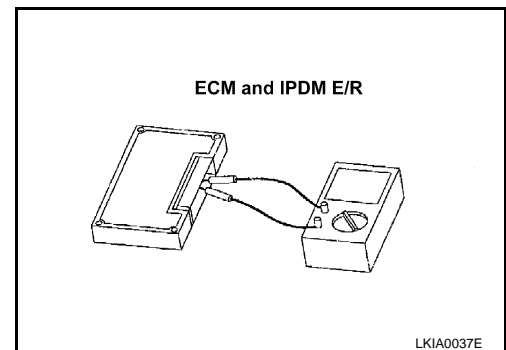
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 30)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190317

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.
- NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

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MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190318

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190319

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190320

1.CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190321

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190322

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

- YES >> GO TO 2.
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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to the following.
- A/T models: [TM-382, "Exploded View"](#)
 - CVT models: [TM-540, "Exploded View"](#)

- YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190323

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190324

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190325

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190326

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190327

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190328

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190329

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190330

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

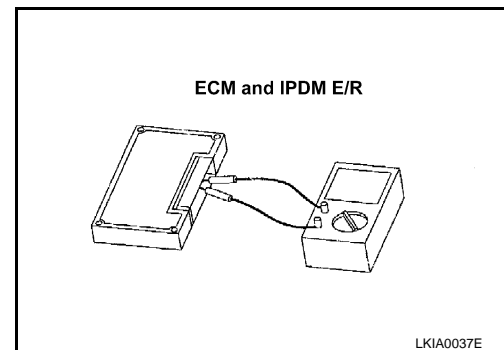
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 31)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190331

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

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MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190332

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190333

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190334

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

- MR20DE (Without EURO-OBD): ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190335

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190336

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)

- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190337

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190338

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190339

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190340

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190341

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190342

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190343

INSPECTION PROCEDURE

1. CHECK 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.	
M30	4 8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190344

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190345

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

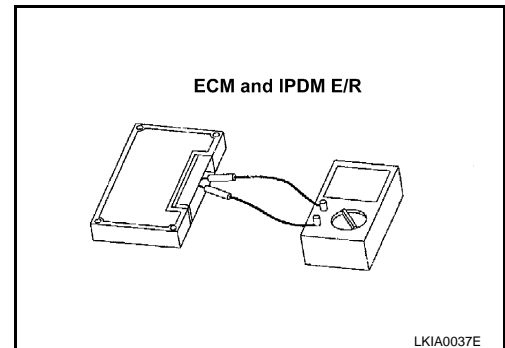
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 32)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190346

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190347

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190348

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190349

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190350

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190351

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190352

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190353

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190354

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190355

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190356

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

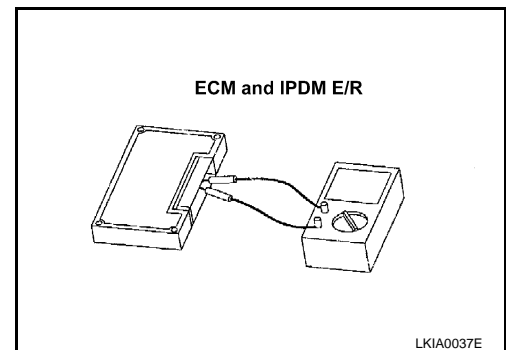
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 33)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190357

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190358

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190359

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190360

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190361

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190362

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190363

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190364

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190365

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190366

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190367

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190368

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

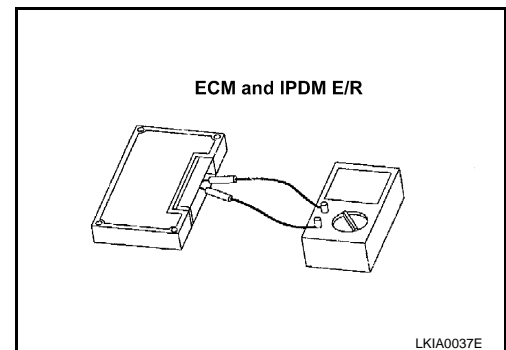
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 34)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190369

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190370

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190371

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190372

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

- 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.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190373

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190374

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190375

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190376

INSPECTION PROCEDURE

1.CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190377

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190378

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190379

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190380

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

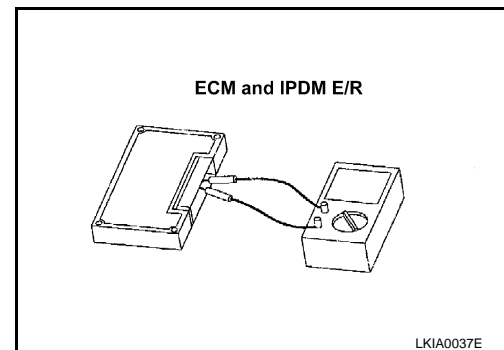
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 35)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190381

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190382

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190383

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190384

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190385

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190386

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190387

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190388

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190389

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190390

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190391

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190392

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190393

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

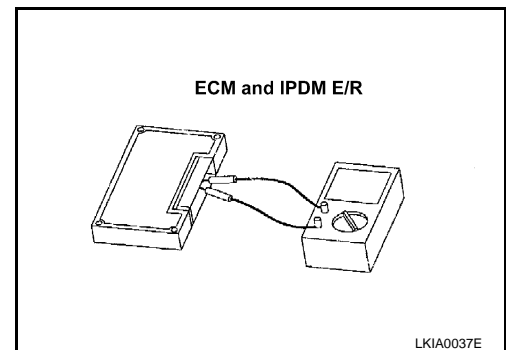
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 36)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190394

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190395

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190396

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

- MR20DE (Without EURO-OBD): ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190397

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190398

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190399

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190400

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190401

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190402

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190403

INSPECTION PROCEDURE

1.CHECK 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.	
M30	4 8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190404

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190405

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

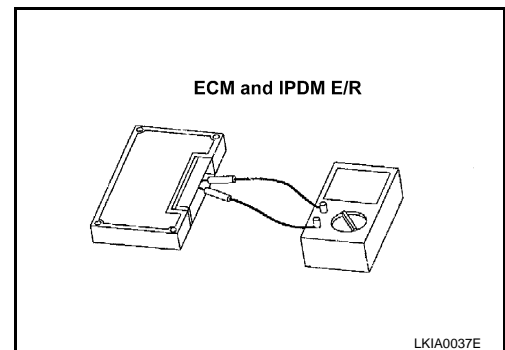
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 37)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190406

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190407

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190408

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190409

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190410

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the 4WD control unit. Refer to the following.

- RHD models: [DLN-58, "RHD : Exploded View"](#)
- LHD models: [DLN-57, "LHD : Exploded View"](#)

YES (Past error)>>Error was detected in the 4WD control unit branch line.

NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190411

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190412

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190413

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190414

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190415

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190416

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190417

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190418

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

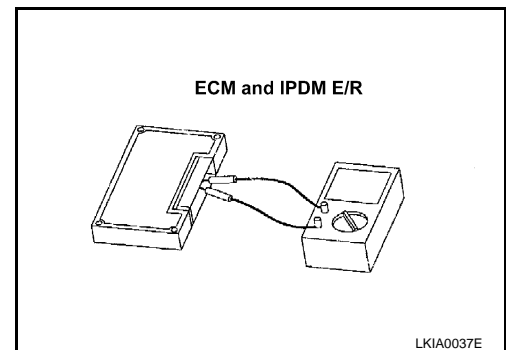
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 38)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190419

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190420

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190421

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190422

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190423

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the 4WD control unit. Refer to the following.

- RHD models: [DLN-58, "RHD : Exploded View"](#)
- LHD models: [DLN-57, "LHD : Exploded View"](#)

YES (Past error)>>Error was detected in the 4WD control unit branch line.

NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190424

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190425

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190426

INSPECTION PROCEDURE

1.CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190427

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190428

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190429

INSPECTION PROCEDURE

1.CHECK 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.	
M30	4 8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190430

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190431

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

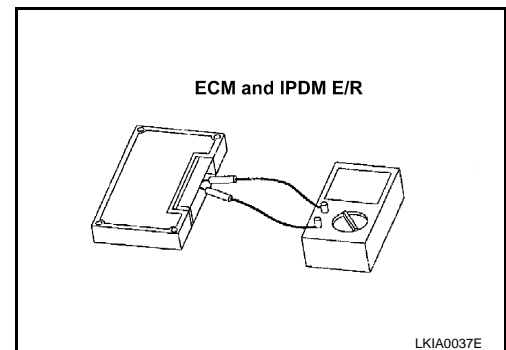
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 39)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190432

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190433

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190434

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190435

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190436

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the 4WD control unit. Refer to the following.

- RHD models: [DLN-58, "RHD : Exploded View"](#)
- LHD models: [DLN-57, "LHD : Exploded View"](#)

YES (Past error)>>Error was detected in the 4WD control unit branch line.

NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190437

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190438

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190439

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190440

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190441

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190442

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190443

INSPECTION PROCEDURE

1. CHECK 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.	
M30	4	Approx. 54 – 66
	8	

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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190444

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190445

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

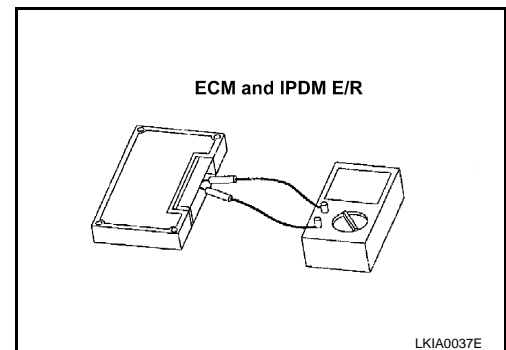
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 40)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190446

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190447

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190448

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190449

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190450

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190451

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)

- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190452

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190453

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190454

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190455

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190456

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190457

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190458

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

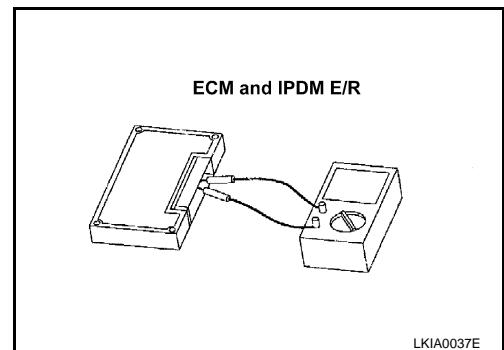
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 41)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190459

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

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MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190460

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190461

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190462

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190463

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190464

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

- YES >> GO TO 2.
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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to the following.
- A/T models: [TM-382, "Exploded View"](#)
 - CVT models: [TM-540, "Exploded View"](#)

- YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190465

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190466

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190467

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190468

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
B96	71	Approx. 54 – 66
	72	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190469

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190470

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190471

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190472

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

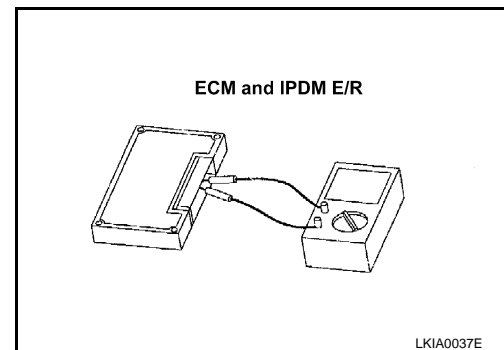
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 42)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190473

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.
- NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

LNR

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190474

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190475

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190476

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190477

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190478

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

- YES >> GO TO 2.
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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to the following.
- A/T models: [TM-382, "Exploded View"](#)
 - CVT models: [TM-540, "Exploded View"](#)

- YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190479

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190480

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190481

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190482

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190483

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190484

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190485

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190486

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

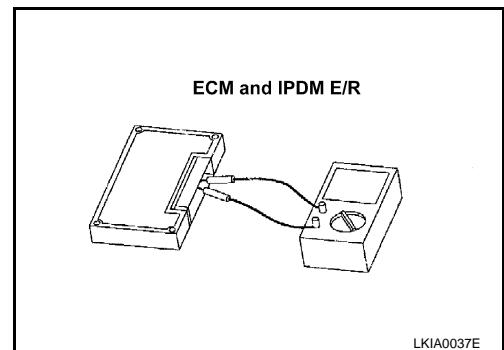
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 43)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190487

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.
- NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

LNR

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190488

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190489

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190490

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190491

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190492

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

- YES >> GO TO 2.
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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to the following.
- A/T models: [TM-382, "Exploded View"](#)
 - CVT models: [TM-540, "Exploded View"](#)

- YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190493

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190494

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190495

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190496

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190497

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190498

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190499

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190500

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190501

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

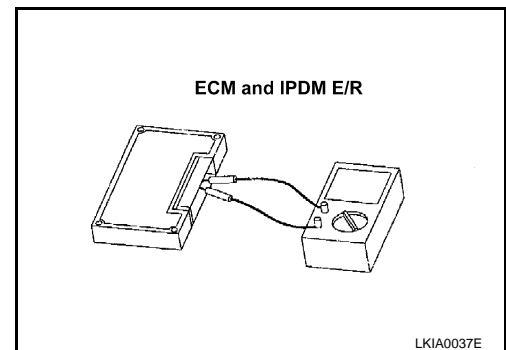
1. Remove the ECM and the IPDM E/R.
 2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 44)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190502

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190503

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190504

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190505

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190506

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190507

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)
- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190508

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190509

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190510

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190511

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190512

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190513

INSPECTION PROCEDURE

1. CHECK 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.	
M30	4 8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190514

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190515

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

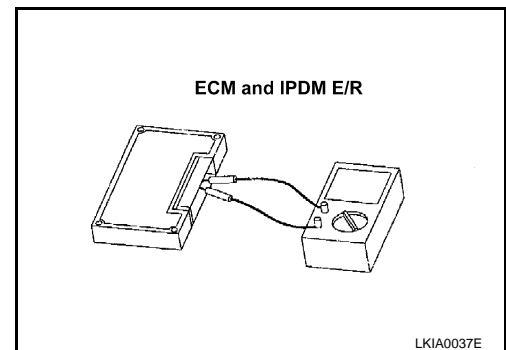
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 45)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190516

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190517

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190518

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190519

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190520

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190521

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)
- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190522

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190523

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190524

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21 22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190525

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190526

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190527

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190528

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190529

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190530

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

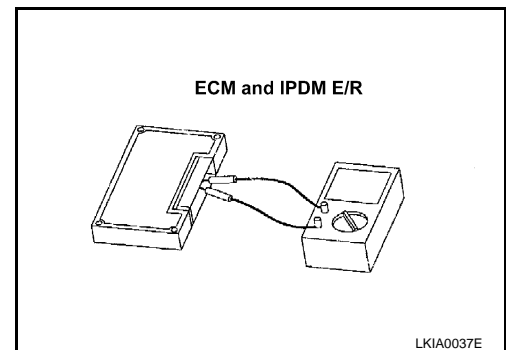
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 46)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190531

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.
- NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

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MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190532

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190533

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190534

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

- MR20DE (Without EURO-OBD): ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190535

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190536

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

- YES >> GO TO 2.
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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to the following.
- A/T models: [TM-382, "Exploded View"](#)
 - CVT models: [TM-540, "Exploded View"](#)

- YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

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LNR

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190537

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190538

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190539

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190540

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190541

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190542

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190543

INSPECTION PROCEDURE

1. CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190544

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190545

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

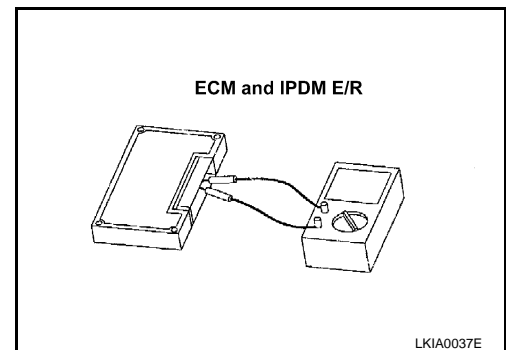
1. Remove the ECM and the IPDM E/R.
 2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 47)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190546

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001190547

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001190548

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190549

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190550

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190551

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)
- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190552

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the 4WD control unit. Refer to the following.

- RHD models: [DLN-58, "RHD : Exploded View"](#)
- LHD models: [DLN-57, "LHD : Exploded View"](#)

YES (Past error)>>Error was detected in the 4WD control unit branch line.

NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190553

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190554

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190555

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190556

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190557

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8 6	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190558

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190559

INSPECTION PROCEDURE

1. CHECK 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.	
M30	4 8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001190560

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001190561

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

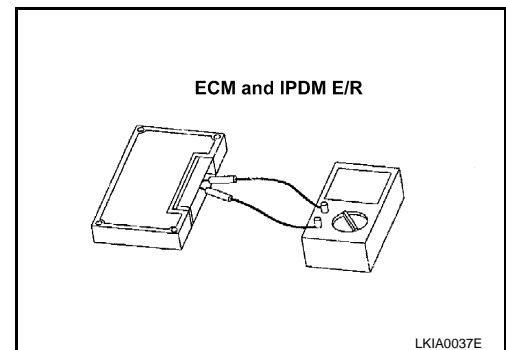
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 48)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 97)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001366864

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 97)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001366865

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 97)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366866

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 97)]

- MR20DE (Without EURO-OBD): ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 97)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366867

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 97)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366868

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366869

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 97)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366870

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 97)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366871

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 97)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366872

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 97)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001366873

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

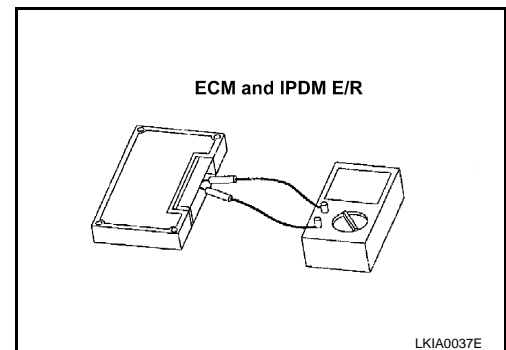
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



LKIA0037E

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 97)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 98)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001366874

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 98)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001366875

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 98)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366876

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 98)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 98)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366877

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 98)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366878

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366879

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).
 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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 98)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366880

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
YES (Past error)>>Error was detected in the NAVI control unit branch line.
NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 98)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366881

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 98)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366882

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 98)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366883

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 98)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001366884

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

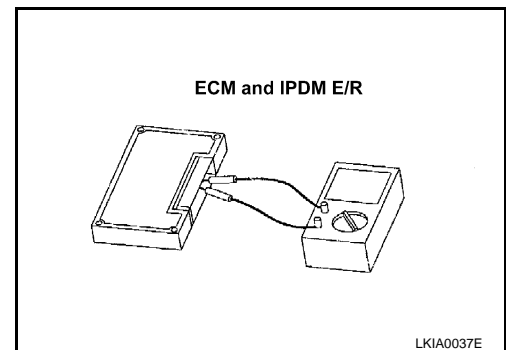
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 98)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001366885

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001366886

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366887

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366888

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366889

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366890

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366891

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366892

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366893

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366894

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001366895

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

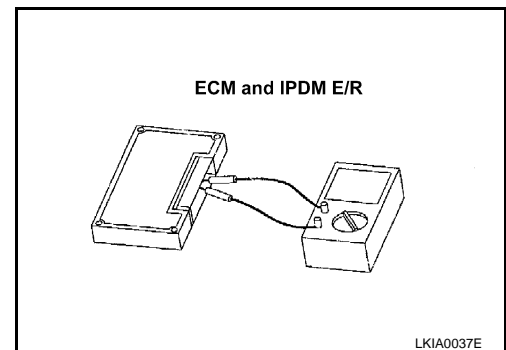
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 99)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001366896

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001366897

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366898

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366899

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366900

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366901

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366902

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
B96	71	Approx. 54 – 66
	72	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366903

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366904

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366905

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366906

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001366907

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

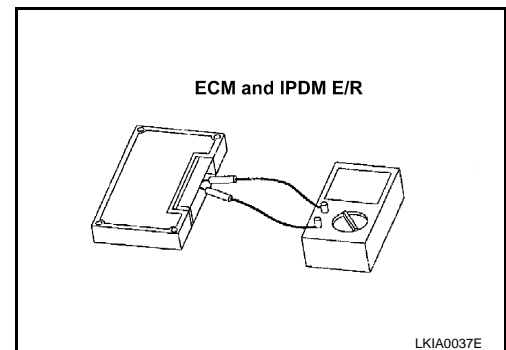
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 100)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001366908

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001366909

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366910

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366911

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366912

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366913

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366914

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366915

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366916

INSPECTION PROCEDURE

1. CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366917

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001366918

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

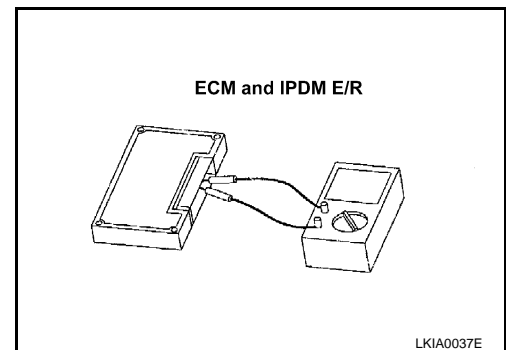
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 101)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001366919

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001366920

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366921

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366922

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366923

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366924

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366925

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366926

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366927

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366928

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366929

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001366930

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

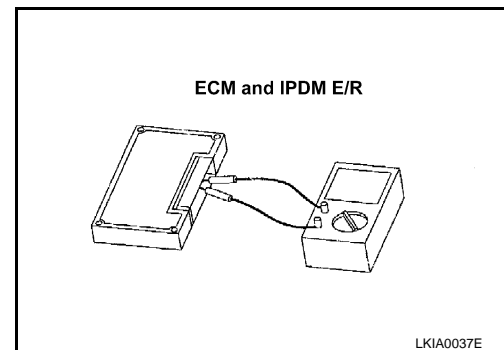
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 102)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001366931

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001366932

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366933

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366934

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

- 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.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366935

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366936

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366937

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366938

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366939

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366940

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366941

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001366942

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

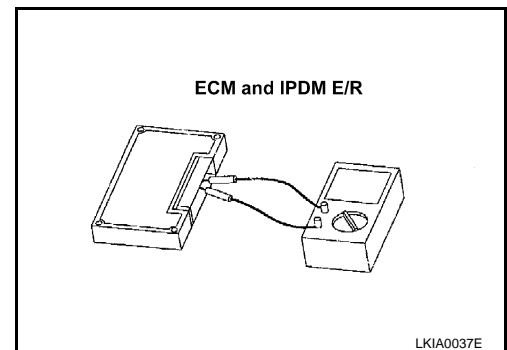
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 103)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001366943

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001366944

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366945

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366946

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

- 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.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366947

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366948

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366949

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366950

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366951

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366952

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366953

INSPECTION PROCEDURE

1. CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366954

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001366955

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

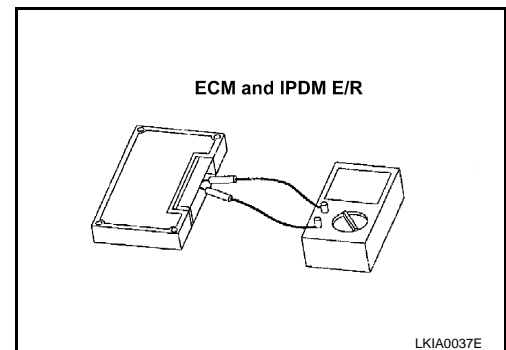
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 104)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001366958

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001366959

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366960

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366961

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366962

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the 4WD control unit. Refer to the following.

- RHD models: [DLN-58, "RHD : Exploded View"](#)
- LHD models: [DLN-57, "LHD : Exploded View"](#)

YES (Past error)>>Error was detected in the 4WD control unit branch line.

NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366963

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366964

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366965

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366966

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366967

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001366968

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

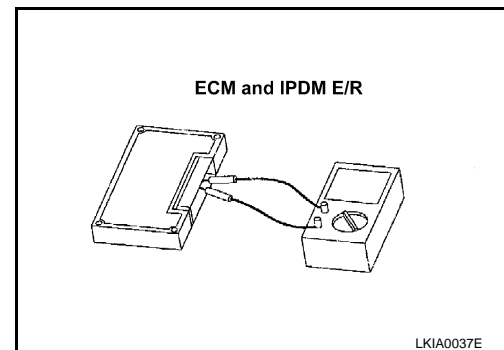
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 105)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001366969

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001366970

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366971

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366972

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366973

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the 4WD control unit. Refer to the following.

- RHD models: [DLN-58, "RHD : Exploded View"](#)
- LHD models: [DLN-57, "LHD : Exploded View"](#)

YES (Past error)>>Error was detected in the 4WD control unit branch line.

NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366974

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366975

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366976

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
B96	71	Approx. 54 – 66
	72	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366977

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366978

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366979

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001366980

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

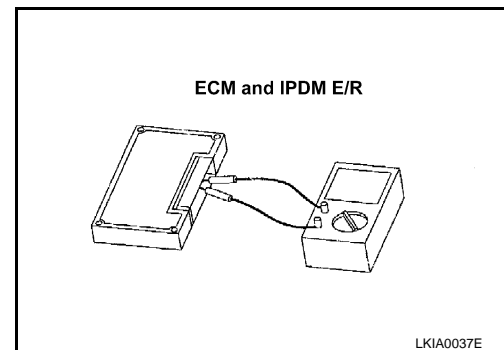
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 106)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001366981

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001366982

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366983

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366984

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366985

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366986

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366987

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366988

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366989

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366990

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366991

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001366992

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

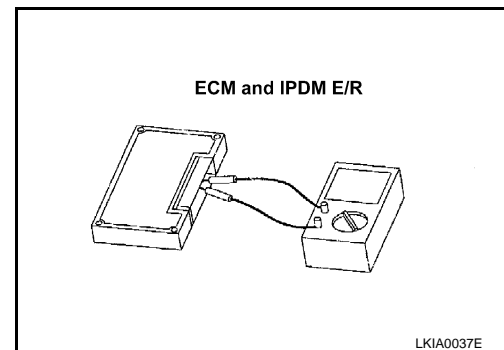
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 107)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001366993

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001366994

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366995

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366996

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366997

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366998

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001366999

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367000

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367001

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367002

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367003

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367004

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367005

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

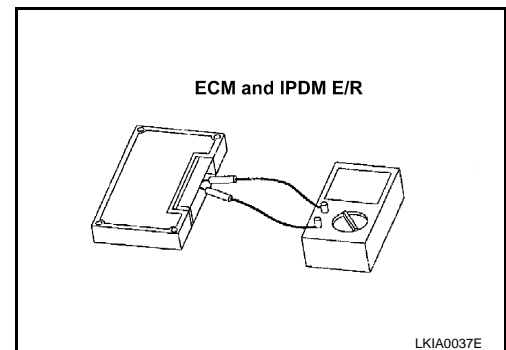
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 108)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001367006

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367007

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367008

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

- MR20DE (Without EURO-OBD): ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367009

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367010

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the 4WD control unit. Refer to the following.

- RHD models: [DLN-58, "RHD : Exploded View"](#)
- LHD models: [DLN-57, "LHD : Exploded View"](#)

YES (Past error)>>Error was detected in the 4WD control unit branch line.

NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367011

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367012

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367013

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367014

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367015

INSPECTION PROCEDURE

1.CHECK 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.	
M30	4 8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367016

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367017

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

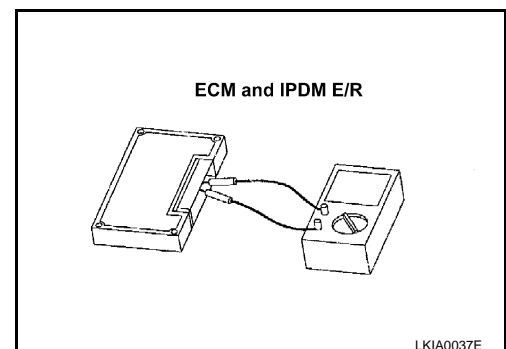
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 109)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001367018

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367019

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367020

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

- MR20DE (Without EURO-OBD): ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367021

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367022

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367023

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367024

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367025

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367026

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367027

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367028

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367029

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367030

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

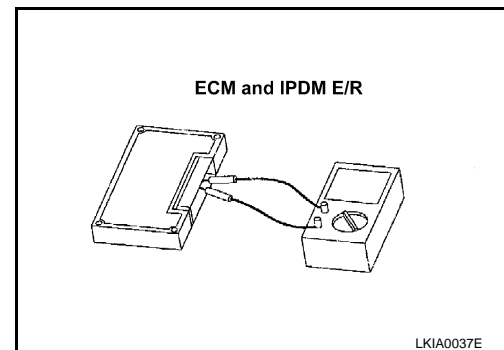
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 110)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001367031

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367032

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367033

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367034

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367035

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the 4WD control unit. Refer to the following.

- RHD models: [DLN-58, "RHD : Exploded View"](#)
- LHD models: [DLN-57, "LHD : Exploded View"](#)

YES (Past error)>>Error was detected in the 4WD control unit branch line.

NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367036

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367037

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367038

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367039

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367040

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367041

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367042

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 111)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367043

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

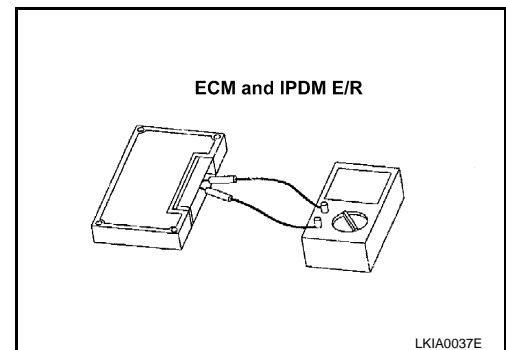
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

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[CAN SYSTEM (TYPE 111)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001367044

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors E105 and M77
2. Check the continuity between the harness connectors.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E105	52	Existed
	15		51	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E105	52	Existed
	15		51	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 E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367045

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367046

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

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- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367047

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367048

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the 4WD control unit. Refer to the following.

- RHD models: [DLN-58, "RHD : Exploded View"](#)
- LHD models: [DLN-57, "LHD : Exploded View"](#)

YES (Past error)>>Error was detected in the 4WD control unit branch line.

NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367049

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367050

INSPECTION PROCEDURE

1.CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367051

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367052

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367053

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367054

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367055

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367056

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367057

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

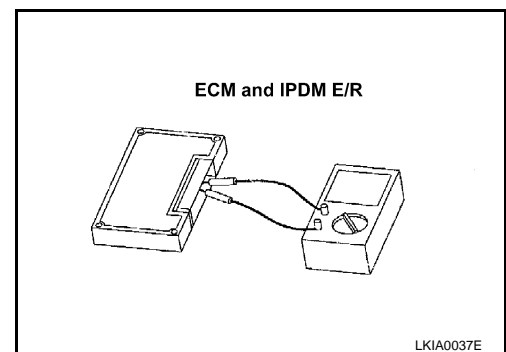
1. Remove the ECM and the IPDM E/R.
 2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 112)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367058

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001367059

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367060

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367061

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367062

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367063

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)
- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367064

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the 4WD control unit. Refer to the following.

- RHD models: [DLN-58, "RHD : Exploded View"](#)
- LHD models: [DLN-57, "LHD : Exploded View"](#)

YES (Past error)>>Error was detected in the 4WD control unit branch line.

NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367065

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367066

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367067

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367068

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367069

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367070

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

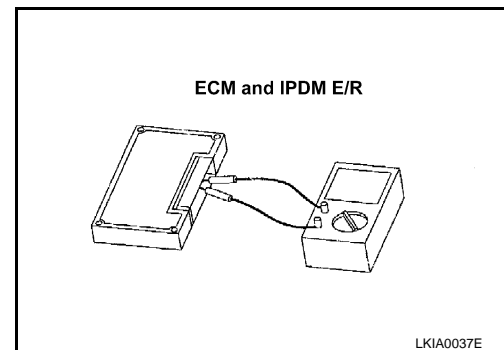
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 113)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367071

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

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MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001367072

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367073

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367074

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367075

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367076

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

- YES >> GO TO 2.
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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to the following.
- A/T models: [TM-382, "Exploded View"](#)
 - CVT models: [TM-540, "Exploded View"](#)

- YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367077

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367078

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367079

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367080

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367081

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367082

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367083

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367084

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

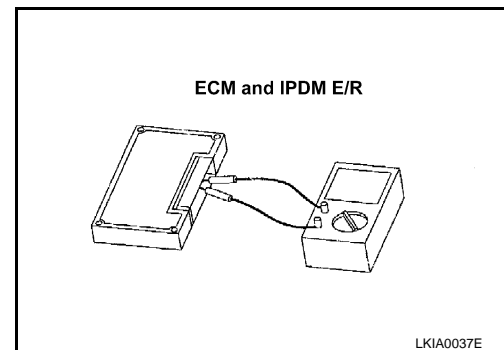
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 114)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367085

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.
- NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

LNR

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001367086

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367087

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367088

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367089

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367090

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

- YES >> GO TO 2.
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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to the following.
 - A/T models: [TM-382, "Exploded View"](#)
 - CVT models: [TM-540, "Exploded View"](#)

- YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367091

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367092

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367093

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367094

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367095

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367096

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367097

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367098

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

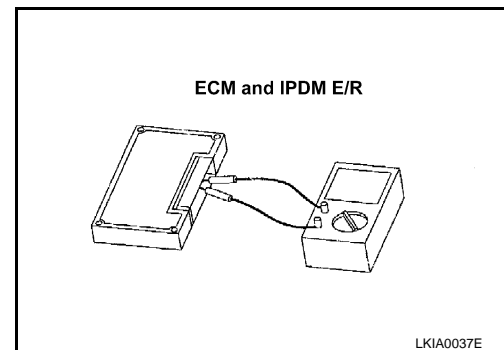
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 115)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367099

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

LNR

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001367100

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367101

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367102

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367103

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367104

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

- YES >> GO TO 2.
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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to the following.
- A/T models: [TM-382, "Exploded View"](#)
 - CVT models: [TM-540, "Exploded View"](#)

- YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367105

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367106

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367107

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	21	22	Approx. 54 – 66

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

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

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367108

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the NAVI control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).

YES (Past error)>>Error was detected in the NAVI control unit branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367109

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367110

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367111

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367112

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367113

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

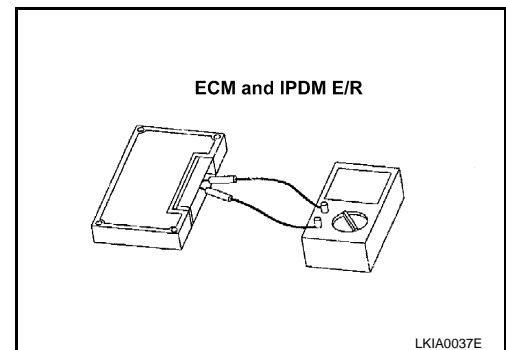
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 116)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367114

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001367115

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3. 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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367116

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367117

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367118

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367119

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)
- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367120

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367121

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367122

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367123

INSPECTION PROCEDURE

1. CHECK 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.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367124

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	8	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367125

INSPECTION PROCEDURE

1. CHECK 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.	
M30	4 8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367126

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367127

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

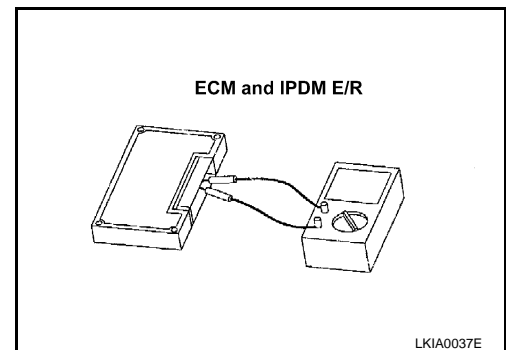
1. Remove the ECM and the IPDM E/R.
 2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 117)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367128

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001367129

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367130

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367131

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367132

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

- 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.

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TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367133

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)

- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367134

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the 4WD control unit. Refer to the following.
- RHD models: [DLN-58, "RHD : Exploded View"](#)
 - LHD models: [DLN-57, "LHD : Exploded View"](#)
- YES (Past error)>>Error was detected in the 4WD control unit branch line.
NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367135

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367136

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367137

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367138

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367139

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367140

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

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IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367141

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367142

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

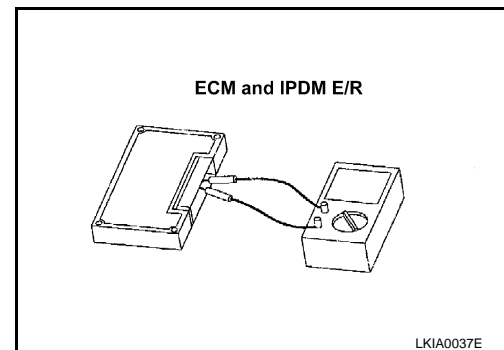
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 118)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367143

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.
- NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

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MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001367144

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367145

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367146

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to the following.
- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
 - MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

- MR20DE (Without EURO-OBD): ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

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ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367147

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367148

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

- YES >> GO TO 2.
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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to the following.
- A/T models: [TM-382, "Exploded View"](#)
 - CVT models: [TM-540, "Exploded View"](#)

- YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

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4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367149

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the 4WD control unit. Refer to the following.

- RHD models: [DLN-58, "RHD : Exploded View"](#)
- LHD models: [DLN-57, "LHD : Exploded View"](#)

YES (Past error)>>Error was detected in the 4WD control unit branch line.

NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367150

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65, "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

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M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367151

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367152

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367153

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367154

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367155

INSPECTION PROCEDURE

1.CHECK 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.		
M30	4	8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367156

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367157

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

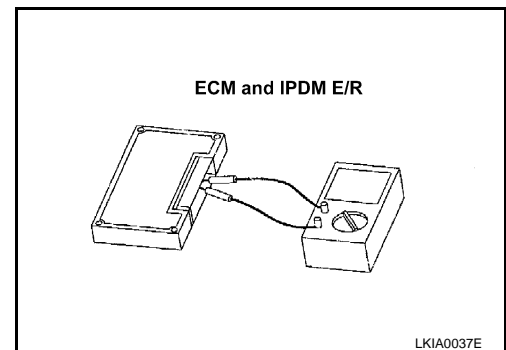
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
 - HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 119)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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MAIN LINE BETWEEN ABS AND TCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

COMPONENT DIAGNOSIS

MAIN LINE BETWEEN ABS AND TCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367158

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (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)
 - Harness connectors E7 and F121
4. Check the continuity between the ABS actuator and electric unit (control unit) harness connector and the harness connector.
 - Models with ABS

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E34	26	E7	2	Existed
	15		1	Existed

- Models with ESP

ABS actuator and electric unit (control unit) harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E36	26	E7	2	Existed
	15		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 ABS actuator and electric unit (control unit) and the harness connector E7.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the TCM.

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

MAIN LINE BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000001367159

INSPECTION PROCEDURE

1.CHECK CONNECTOR

1. Turn the ignition 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 E105
 - Harness connector M77

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 connectors F121 and E7
 - Harness connectors E105 and M77
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E7	2	E105	52	Existed
	1		51	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the harness connector E7 and the harness connector E105.

3.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.	
M77	52	M4	6	Existed
	51		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 M77 and the data link connector.

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MAIN LINE BETWEEN DLC AND BCM CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

MAIN LINE BETWEEN DLC AND BCM CIRCUIT

Diagnosis Procedure

INFOID:000000001367160

INSPECTION PROCEDURE

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - BCM
4. Check the continuity between the data link connector and the BCM harness connector.

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	19	Existed
	14		20	Existed

Is the 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 BCM.

NO >> Repair the main line between the data link connector and the BCM.

ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367161

1. CHECK 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.
- K9K models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E60	100	99	Approx. 108 – 132

- M9R models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E121	100	99	Approx. 108 – 132

- HR16DE/MR20DE models

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	84	83	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.

- K9K: [ECK-65, "Diagnosis Procedure"](#)
- M9R: [ECR-271, "Diagnosis Procedure"](#)
- HR16DE (With EURO-OBD): [ECH-106, "Diagnosis Procedure"](#)
- HR16DE (Without EURO-OBD): [ECH-435, "Diagnosis Procedure"](#)
- MR20DE (With EURO-OBD): [ECM-108, "Diagnosis Procedure"](#)
- MR20DE (Without EURO-OBD): [ECM-440, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to the following.

- K9K: [ECK-21, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- M9R: [ECR-12, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (With EURO-OBD): [ECH-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- HR16DE (Without EURO-OBD): [ECH-356, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)
- MR20DE (With EURO-OBD): [ECM-17, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

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ECM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

- MR20DE (Without EURO-OBD): [ECM-360. "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement"](#)

YES (Past error)>>Error was detected in the ECM branch line.

NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367162

1. CHECK 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.
- Models with ESP

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E36	26	15	Approx. 54 – 66

- Models with ABS

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E34	26	15	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 the following.

- ABS models: [BRC-26, "Diagnosis Procedure"](#)
- ESP models: [BRC-105, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to the following.
- ABS models: [BRC-69, "Exploded View"](#).
 - ESP models: [BRC-174, "Exploded View"](#)

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.

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TCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367163

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - TCM
 - Harness connector F121
 - Harness connector E7

Is the inspection result normal?

YES >> GO TO 2.

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.
 - A/T models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

- CVT models

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F25	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- A/T models: [TM-325, "Diagnosis Procedure"](#)
- CVT models: [TM-480, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.

- A/T models: [TM-382, "Exploded View"](#)
- CVT models: [TM-540, "Exploded View"](#)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367164

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 4WD control unit connector for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of 4WD control unit.
2. Check the resistance between the 4WD control unit harness connector terminals.

4WD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M69	8	16	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the 4WD control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 4WD control unit. Refer to [DLN-26, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the 4WD control unit. Refer to the following.

- RHD models: [DLN-58, "RHD : Exploded View"](#)
- LHD models: [DLN-57, "LHD : Exploded View"](#)

YES (Past error)>>Error was detected in the 4WD control unit branch line.

NO >> Repair the power supply and the ground circuit.

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BCM BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367165

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.		
M65	19	20	Approx. 54 – 66

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-35. "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to [BCS-65. "Exploded View"](#).
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367166

INSPECTION PROCEDURE

1. CHECK 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.

Combination meter harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M34	21	Approx. 54 – 66
	22	

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 [MWI-34, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to [MWI-78, "Exploded View"](#).

YES (Past error)>>Error was detected in the combination meter branch line.

NO >> Repair the power supply and the ground circuit.

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AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367167

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - NAVI control unit
 - Harness connector B2
 - Harness connector M12

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of NAVI control unit.
2. Check the resistance between the NAVI control unit harness connector terminals.

NAVI control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B96	71	72	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the NAVI control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the NAVI control unit. Refer to [AV-103, "NAVI CONTROL UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the NAVI control unit. Refer to [AV-204, "Exploded View"](#).
 YES (Past error)>>Error was detected in the NAVI control unit branch line.
 NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367168

INSPECTION PROCEDURE

1. CHECK 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.	
M4	6 14	Approx. 54 – 66

Is the measurement value within the specification?

YES (Present error)>>Check the 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.

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EPS BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367169

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector		Resistance (Ω)
Connector No.	Terminal No.	
M37	8	Approx. 54 – 66
	6	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to [STC-8, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-10, "Exploded View"](#).

YES (Past error)>>Error was detected in the EPS control unit branch line.

NO >> Repair the power supply and the ground circuit.

I-KEY BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

I-KEY BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367170

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the Intelligent Key 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 Intelligent Key unit.
2. Check the resistance between the Intelligent Key unit harness connector terminals.

Intelligent Key unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M40	2	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the Intelligent Key unit branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Intelligent Key unit. Refer to [SEC-56, "INTELLIGENT KEY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the Intelligent Key unit. Refer to [DLK-548, "Exploded View"](#).

YES (Past error)>>Error was detected in the Intelligent Key unit branch line.

NO >> Repair the power supply and the ground circuit.

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STRG BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367171

INSPECTION PROCEDURE

1. CHECK 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.	
M30	4 8	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-155, "Wiring Diagram - BRAKE CONTROL SYSTEM -"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-178, "Exploded View"](#).

YES (Past error)>>Error was detected in the steering angle sensor branch line.

NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000001367172

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition 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).
 - IPDM E/R connector
 - Harness connector E105
 - Harness connector M77

Is the 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.		
E12	28	29	Approx. 108 – 132

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-19, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to [PCS-33, "Exploded View"](#).
YES (Past error)>>Error was detected in the IPDM E/R branch line.
NO >> Repair the power supply and the ground circuit.

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CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000001367173

INSPECTION PROCEDURE

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 system.
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.	
M4	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.		
M4	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 IPDM E/R TERMINATION CIRCUIT

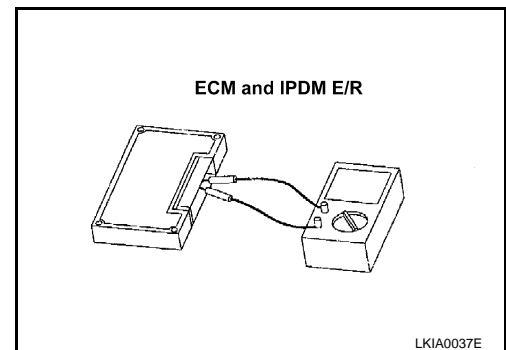
1. Remove the ECM and the IPDM E/R.
2. Check the resistance between the ECM terminals.
- HR16DE/MR20DE models

ECM		Resistance (Ω)
Terminal No.		
84	83	Approx. 108 – 132

- K9K/M9R models

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.



CAN COMMUNICATION CIRCUIT

< COMPONENT DIAGNOSIS >

[CAN SYSTEM (TYPE 120)]

IPDM E/R		Resistance (Ω)
Terminal No.		
28	29	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

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 system.

NOTE:

ECM and IPDM E/R 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.

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