

SECTION **BRC**

BRAKE CONTROL SYSTEM

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PRECAUTIONS

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Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

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The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

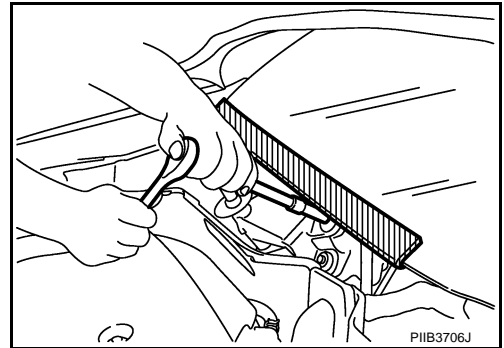
WARNING:

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

Precautions for Procedures without Cowl Top Cover

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When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



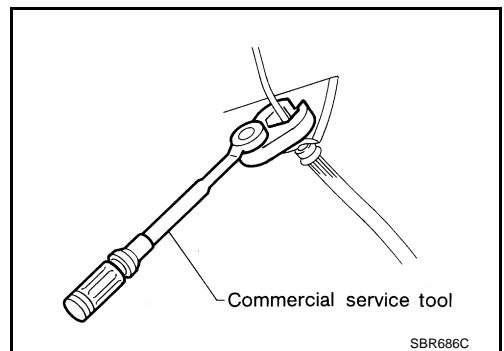
Precautions for Brake System

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- Recommended fluid is brake fluid “DOT 3”.
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted surface of body. If brake fluid is splashed on painted surfaces of body immediately wipe off then with cloth and then wash it away with water.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use a flare nut wrench when removing flare nuts, and use a flare nut torque wrench when tighten brake tube flare nuts.
- When installing brake tubes, be sure to check torque.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Before working, turn ignition switch OFF and disconnect connectors of ABS actuator and electric unit (control unit) or the battery cable from the negative terminal.

WARNING:

Clean brake pads and shoes with a waste cloth, then wipe with a dust collector.



Precautions for Brake Control

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- Just after starting vehicle after ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is normal condition.
- When an error is indicated by ABS or another warning lamp, collect all necessary information from customer (what symptoms are present under what conditions) and check for simple causes before starting diagnostic servicing. Besides electrical system inspection, check brake booster operation, brake fluid level, and oil leaks.
- If tire size and type are used in an improper combination, or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- ABS might be out of order or malfunctions by putting a radio (wiring inclusive), an antenna and a lead-in wire near the control unit.
- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits, and improper wiring.
- VDC system may not operate normally or a VDC OFF indicator lamp or SLIP indicator lamp may light.
 - When replacing the following parts with parts other than genuine parts or making modifications: Suspension-related parts (shock absorber, spring, bushing, etc.), tires, wheels (other than specified sizes), brake-related parts (pad, rotor, caliper, etc.), engine-related parts (muffler, ECM, etc.) and body reinforcement-related parts (roll bar, tower bar, etc.).
 - When driving with worn or deteriorated suspension, tires and brake-related parts.

PREPARATION

[VDC/TCS/ABS]

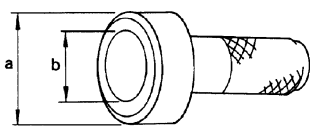
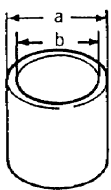
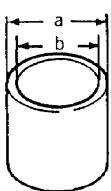
PREPARATION

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Special Service Tools

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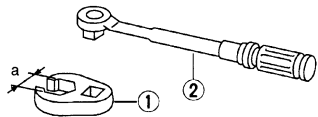
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST30720000 (J-25405) Drift a: 77 mm (3.03 in) dia. b: 55 mm (2.17 in) dia.	 <p style="text-align: right;">ZZA0701D</p>
ST27863000 (—) Drift a: 75 mm (2.95 in) dia. b: 62 mm (2.44 in) dia.	 <p style="text-align: right;">ZZA0832D</p>
kV40104710 (—) a: 76 mm (2.99 in) dia. b: 68.5 mm (2.697 in) dia.	 <p style="text-align: right;">ZZA0832D</p>

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Commercial Service Tools

NFS000Q3

Tool name	Description
1. Flare nut crowfoot a: 10 mm (0.39 in) /12mm (0.47 in) 2. Torque wrench	 <p style="text-align: right;">S-NT360</p>

ON-VEHICLE SERVICE

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Adjustment of Steering Angle Sensor Neutral Position

NFS000Q4

In case of doing work that applies to the list below, make sure to adjust neutral position of steering angle sensor before running vehicle.

Situation	Adjustment of Steering Angle Sensor Neutral Position
Removing/Installing ABS actuator and electric unit (control unit)	–
Replacing ABS actuator and electric unit (control unit)	×
Removing/Installing steering angle sensor	×
Removing/Installing steering components	×
Removing/Installing suspension components	×
Change tires to new ones	–
Tire rotation	–
Adjusting wheel alignment	×

×: Required

–: Not required

CAUTION:

To adjust neutral position of steering angle sensor, make sure to use CONSULT-II. (Adjustment cannot be done without CONSULT-II.)

1. Stop vehicle with front wheels in straight-ahead position.
2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector on vehicle.

CAUTION:

If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

3. Turn ignition switch ON and touch the CONSULT-II screen in the order of “ABS”, “WORK SUPPORT” and “ST ANG SEN ADJUSTMENT”.
4. Touch “START”.

CAUTION:

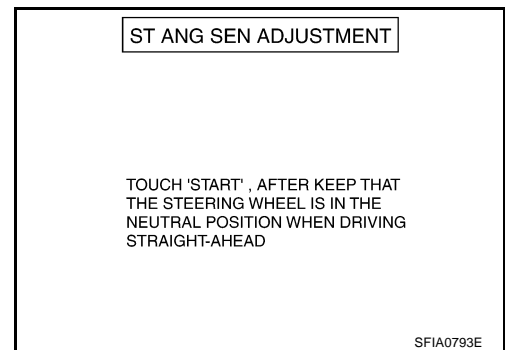
Do not touch steering wheel while adjusting steering angle sensor.

5. After approximately 10 seconds, touch “END”. (After approximately 60 seconds, it ends automatically.)
6. Turn ignition switch OFF, then turn it ON again.

CAUTION:

Be sure to perform above operation.

7. Run vehicle with front wheels in straight-ahead position, then stop.
8. Select “DATA MONITOR”, “ECU INPUT SIGNALS”, and “STR ANGLE SIG” on CONSULT-II screen. Then make sure “STR ANGLE SIG” is within $0 \pm 2.5^\circ$. If value is more than specification, repeat steps 1 to 7.
9. Erase memory of ABS actuator and electric unit (control unit) and ECM. ABS actuator and electric unit (control unit): Refer to [BRC-23, "ERASE MEMORY"](#) . ECM: Refer to [EC-100, "TROUBLE DIAGNOSIS"](#) (VQ35DE), [EC-811, "TROUBLE DIAGNOSIS"](#) (VK45DE).
10. Turn ignition switch OFF.

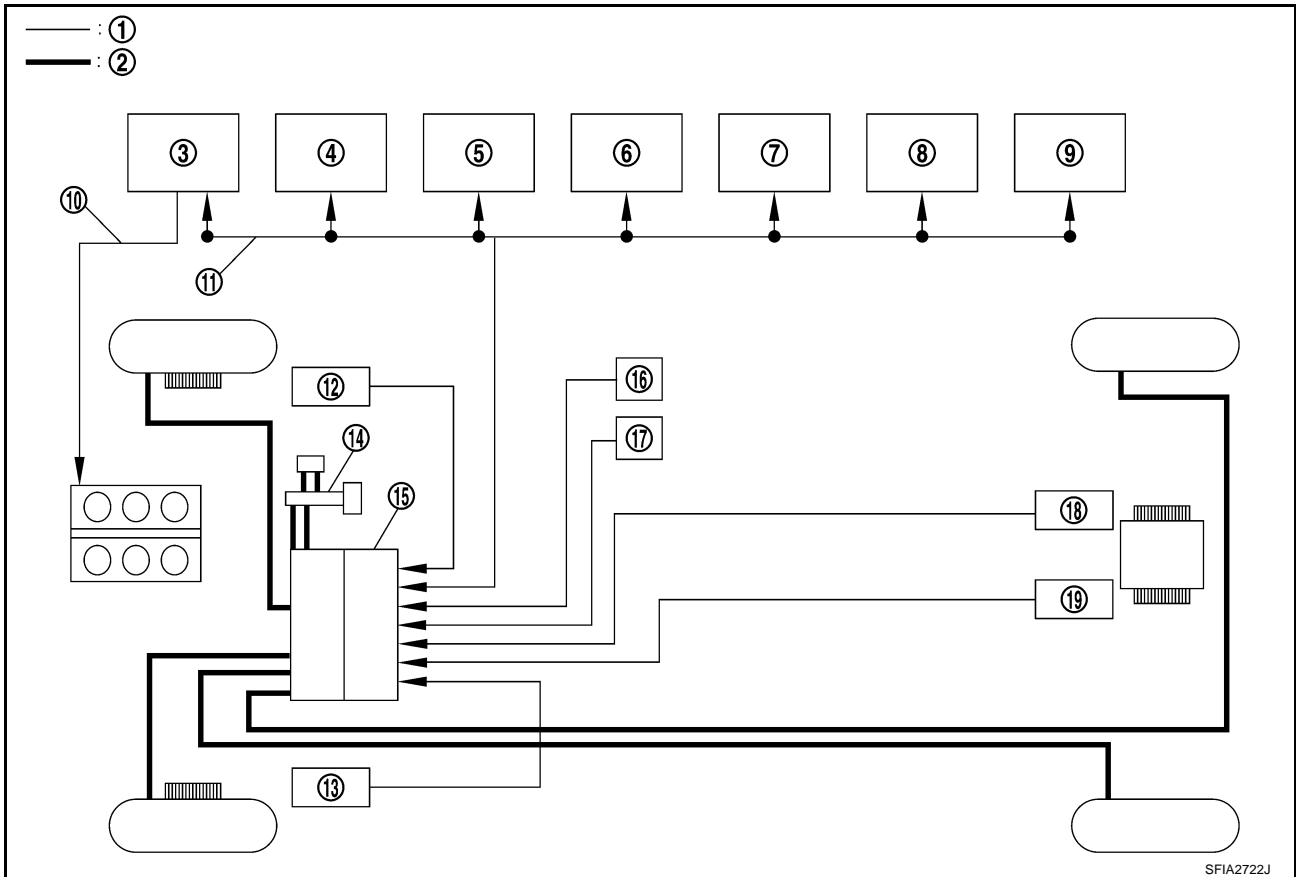


SYSTEM DESCRIPTION

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System Diagram

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|---------------------------------|--|---|
| 1. Electric line | 2. Brake hydraulic line | 3. ECM |
| 4. TCM | 5. Steering angle sensor | 6. Warning lamp, indicator lamp (combination meter) |
| 7. AWD control unit (AWD model) | 8. ICC sensor integrated unit (with ICC) | 9. RAS control unit (with RAS) |
| 10. Injector operation signal | 11. CAN communication | 12. Front RH wheel sensor |
| 13. Front LH wheel sensor | 14. Master cylinder | 15. ABS actuator and electric unit (control unit) |
| 16. VDC OFF switch | 17. Yaw rate/side G sensor | 18. Rear RH wheel sensor |
| 19. Rear LH wheel sensor | | |

Function ABS

NFS00006

- Anti-Lock Brake System is a function that detects wheel revolution while braking, electronically controls braking force, and prevents wheel locking during sudden braking. It improves handling stability and maneuverability for avoiding obstacles.
- Electrical system diagnosis by CONSULT-II is available.

EBD

- Electronic Brake force Distribution is a following function. ABS actuator and electric unit (control unit) detects subtle slippages between the front and rear wheels during braking. Then it electronically controls the rear braking force (brake fluid pressure) to reducing and reduces rear wheel slippage. Accordingly it improves vehicle stability.
- Electrical system diagnosis by CONSULT-II is available.

TCS

- Traction Control System is a function that electronically controls engine torque, brake fluid pressure and A/T gear position to ensure the optimum slippage ratio at drive wheels by computing wheel speed signals

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from 4 wheel sensors. When ABS actuator and electric unit (control unit) detects a spin at drive wheels (rear wheels), it compares wheel speed signals from all 4 wheels. At this time, LH and RH rear brake fluid pressure are controlled, while fuel being cut to engine and throttle valve being closed to reduce engine torque by the control unit. Further more, throttle position is continuously controlled to ensure the optimum engine torque at all times.

- During TCS operation, it informs driver of system operation by flashing SLIP indicator lamp.
- Electrical system diagnosis by CONSULT-II is available.

VDC

- Vehicle Dynamics Control system detects driver's steering operation amount and brake pedal travel from steering angle sensor and pressure sensor. Using information from yaw rate/side G sensor and wheel sensor, VDC judges driving condition (conditions of under steer and over steer) to improve vehicle driving stability by controlling brake application to 4 wheels and engine output.
- During VDC operation, it informs driver of system operation by flashing SLIP indicator lamp.
- Electrical system diagnosis by CONSULT-II is available.

ECD

Receives deceleration degree commandment value signal from ICC sensor integrated unit, and controls brake fluid pressure with the motor (built-in ABS actuator and electric unit (control unit)).

Operation That Is Not "System Error"

NFS00007

ABS

- When starting engine or just after starting vehicle, brake pedal may vibrate or the motor operating sound may be heard from engine room. This is a normal states of the operation check.
- During ABS operation, brake pedal lightly vibrates and a mechanical sound may be heard. This is normal.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.

TCS

- Depending on road circumstances, driver may have a sluggish feel. This is normal, because optimum traction has highest priority under TCS operation.
- When vehicle is passing through a road where surface friction varies, downshifting or depressing accelerator pedal fully may activate TCS temporarily.

VDC

- During VDC operation, body and brake pedal lightly vibrate and mechanical sounds may be heard. This is normal.
- If vehicle is rotated on turn table, or rolled and rocked on ship, ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp may turn on. In this case, start engine on normal road again. If ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp turn off after restart, it is normal.
- When starting TCS or VDC under rapid acceleration or hard turn, operating sound by brake pedal is generated. However, this is not malfunction. This is because TCS and VDC are functioning normally.
- VDC may not operate normally or ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp may turn on when driving special roads with extremely steep slant (banks on circuit road and so on.) However, it is not malfunction when returning to a normal state after restarting the engine. In that case, be sure to erase the memory of self-diagnosis. Refer to [BRC-23, "ERASE MEMORY"](#) .
- Yaw rate /side G sensor malfunction may occur under hard turn like spin turn, rapid acceleration turn, drift run, etc., when VDC function is OFF (VDC OFF switch is turned on). It is not malfunction if it is possible to return to a normal position after restarting engine. Then erase the memory of self-diagnosis. Refer to [BRC-23, "ERASE MEMORY"](#) .
- VDC OFF indicator lamp and SLIP indicator lamp may simultaneously turn on when low tire pressure warning lamp turns on. This is not a VDC system error but results from characteristic change of tires.

Fail-Safe Function

ABS, EBD SYSTEM

NFS00008

In the event there is a malfunction with the electrical system, the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp will turn on when it is the ABS that is malfunctioning, and the brake warning lamp, ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp will turn on when it is the EBD that is

malfunctioning. At the same time, the VDC/TCS/ABS will be put in one of the following states by the fail-safe function.

- When the ABS malfunctions, only the EBD operates. The condition is the same as that of models without VDC/TCS/ABS.

NOTE:

In step 1 shown above, self-diagnosis is performed when ignition switch is turned ON and when vehicle initially starts. ABS self-diagnosis sound may be heard as usual.

- When the EBD malfunctions, the EBD and ABS will not operate. The condition is the same as that of models without VDC/TCS/ABS and EBD.

VDC / TCS

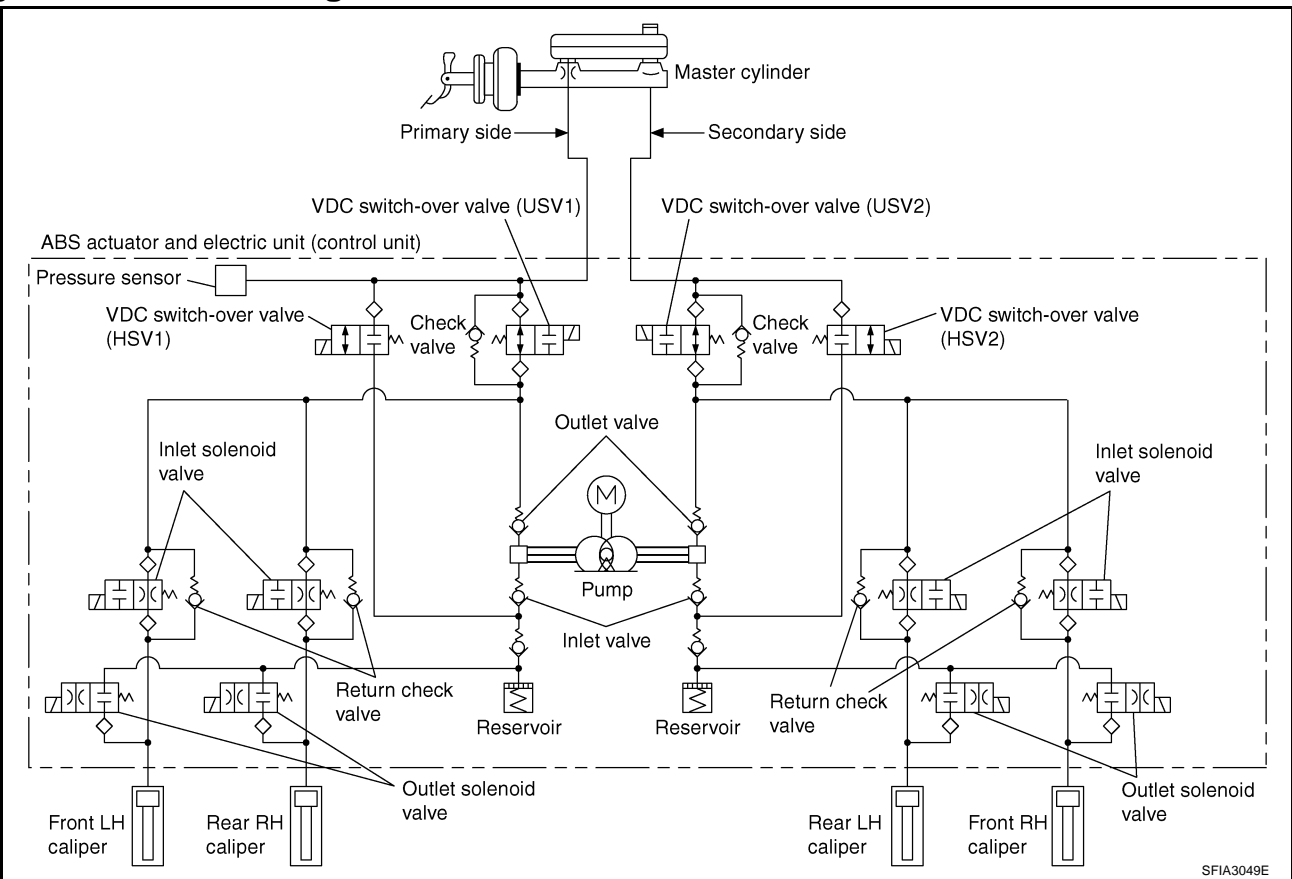
In case of VDC/TCS system malfunction, the VDC OFF indicator lamp and SLIP indicator lamp or only VDC OFF indicator lamp are turned on, and the condition of the vehicle is the same as the condition of vehicles without VDC/TCS equipment. In case of electrical malfunction with the VDC/TCS system, the ABS control continues to operate normally even though VDC/TCS does not operate.

CAUTION:

If the Fail-Safe function is activated, then perform self-diagnosis for VDC/TCS/ABS control system.

Hydraulic Circuit Diagram

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CAN COMMUNICATION

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System Description

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CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. Refer to [LAN-34, "CAN Communication Unit"](#).

TROUBLE DIAGNOSIS

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How to Perform Trouble Diagnoses

BASIC CONCEPT

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- The most important point to perform trouble diagnosis is to understand systems (control and mechanism) in vehicle thoroughly.

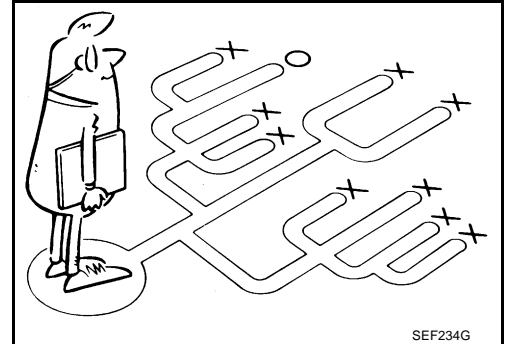
- It is also important to clarify customer complaints before inspection.

First of all, reproduce symptom, and understand it fully.

Ask customer about his/her complaints carefully. In some cases, they will be necessary to check symptom by driving vehicle with customer.

CAUTION:

Customers are not professionals. Do not assume “maybe customer means...” or “maybe customer mentioned this symptom”.

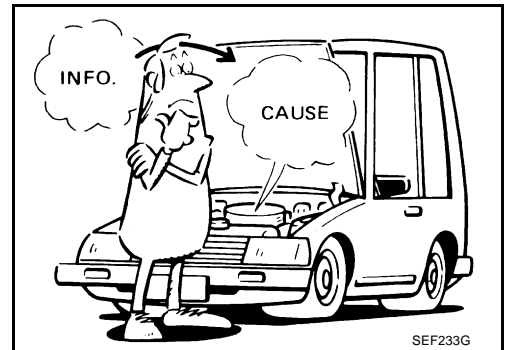


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- It is essential to check symptoms right from beginning in order to repair a malfunction completely.

For an intermittent malfunction, it is important to reproduce symptom based on interview with customer and past examples. Do not perform inspection on ad hoc basis. Most intermittent malfunctions are caused by poor contacts. In this case, it will be effective to shake suspected harness or connector by hand. When repairs are performed without any symptom check, no one can judge if malfunction has actually been eliminated.

- After diagnostic, make sure to perform “ERASE MEMORY”. Refer to [BRC-23, "ERASE MEMORY"](#).
- Always read “GI General Information” to confirm general precautions. Refer to [GI-4, "General Precautions"](#).



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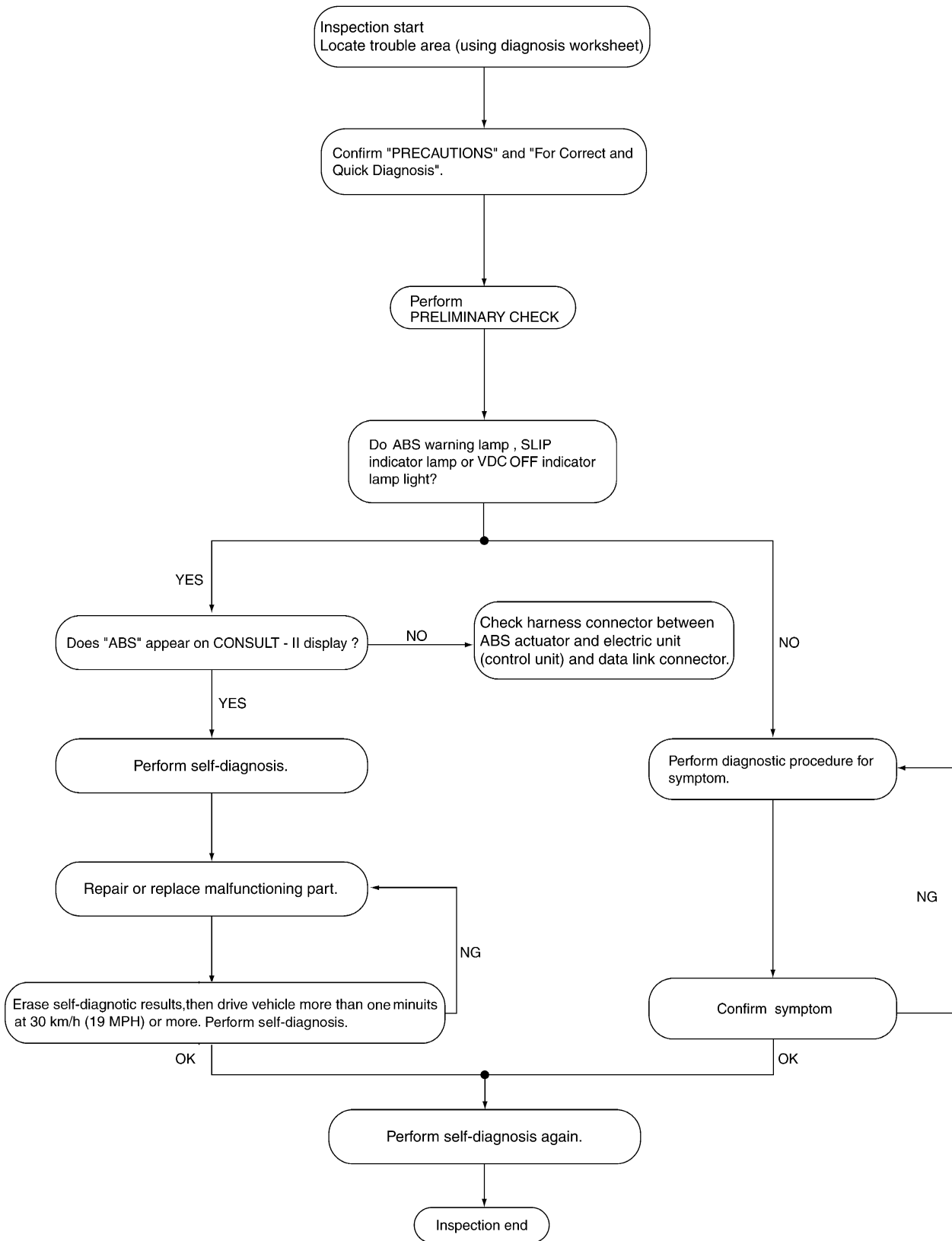
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TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

DIAGNOSIS FLOW CHART



SFIA3072E

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

ASKING COMPLAINTS

- Complaints against malfunction vary depending on each person. It is important to clarify customer complaints.
- Ask customer about what symptoms are present and under what conditions. Use information to reproduce symptom while driving.
- It is also important to use diagnostic sheet so as not to miss information.

KEY POINTS	
WHAT	Vehicle model
WHEN	Date, Frequencies
WHERE	Road conditions
HOW	Operating conditions, Weather conditions, Symptoms

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EXAMPLE OF DIAGNOSIS WORKSHEET

Customer name MR/MS	Model & Year		VIN
Engine #	Trans.		Mileage
Incident Date	Manuf. Date		In Service Date
Symptoms	<input type="checkbox"/> Noise and vibration (from engine compartment) <input type="checkbox"/> Noise and vibration (from axle)	<input type="checkbox"/> Warning / Indicator activate	<input type="checkbox"/> Firm pedal operation Large stroke pedal operation
	<input type="checkbox"/> TCS does not work (Rear wheels slip when accelerating)	<input type="checkbox"/> ABS does not work. (wheels slip when braking)	<input type="checkbox"/> Lack of sense of acceleration
Engine conditions	<input type="checkbox"/> When starting <input type="checkbox"/> After starting		
Road conditions	<input type="checkbox"/> Low friction road (<input type="checkbox"/> Snow <input type="checkbox"/> Gravel <input type="checkbox"/> Other) <input type="checkbox"/> Bumps / potholes		
Driving conditions	<input type="checkbox"/> Full-acceleration <input type="checkbox"/> High speed cornering <input type="checkbox"/> Vehicle speed: Greater than 10 km/h (6 MPH) <input type="checkbox"/> Vehicle speed: 10 km/h (6 MPH) or less <input type="checkbox"/> Vehicle is stopped		
Applying brake conditions	<input type="checkbox"/> Suddenly <input type="checkbox"/> Gradually		
Other conditions	<input type="checkbox"/> Operation of electrical equipment <input type="checkbox"/> Shift change <input type="checkbox"/> Other descriptions		

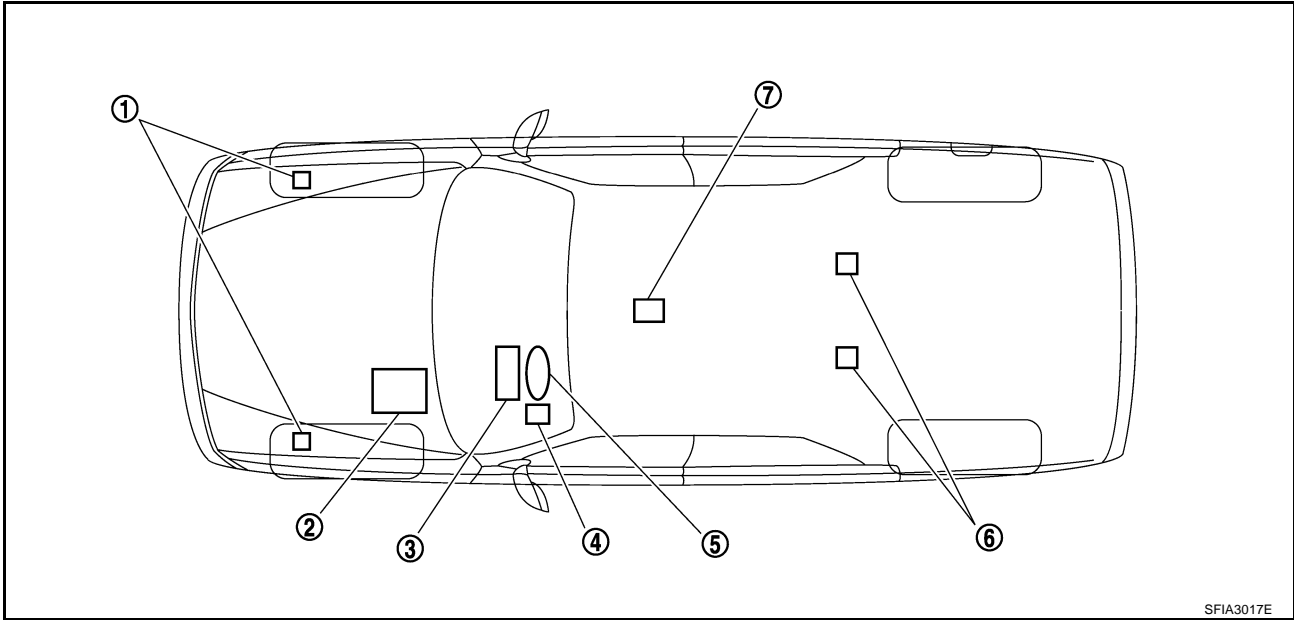
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Component Parts Location

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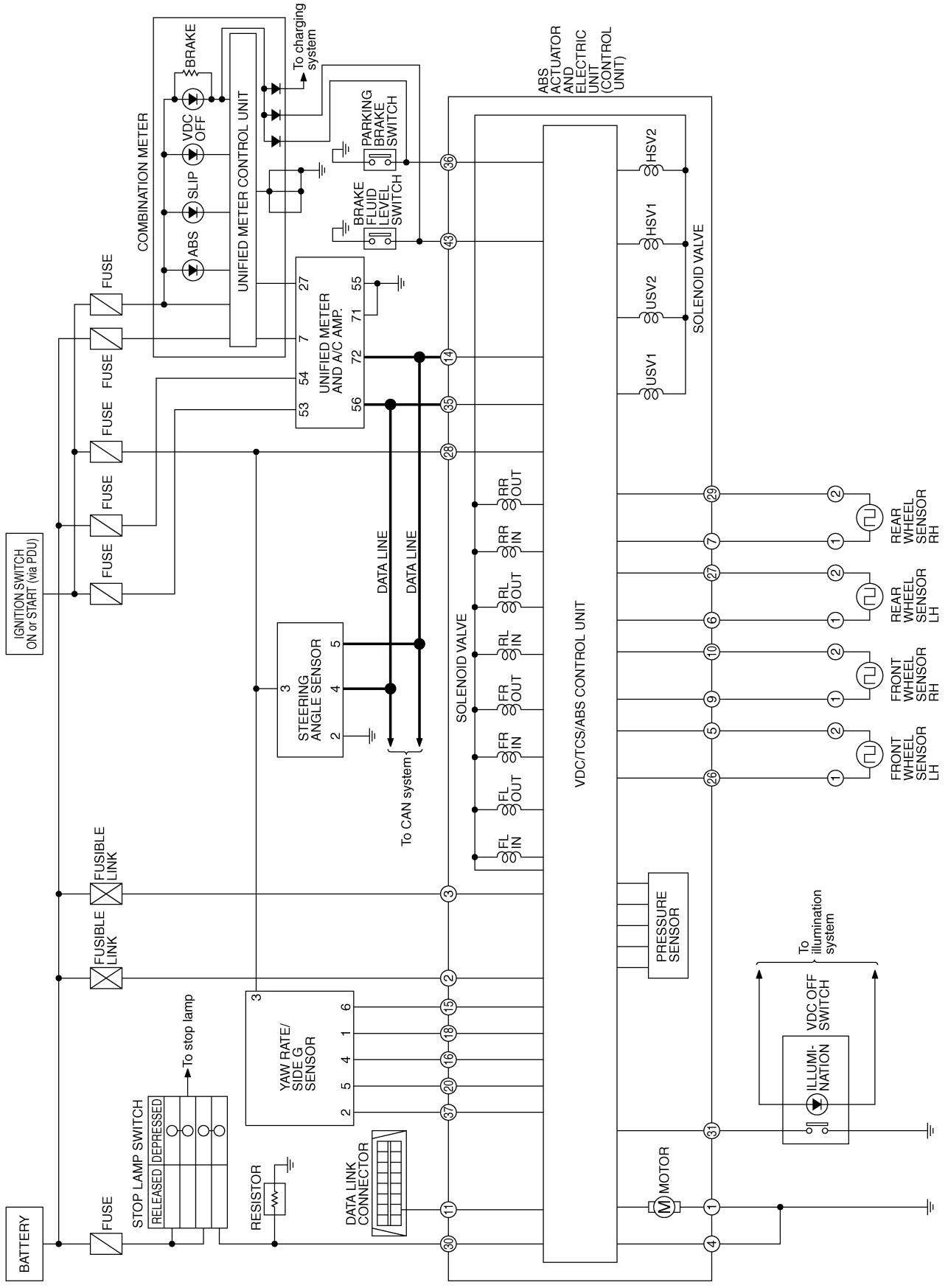


- | | | |
|---------------------------|--|---|
| 1. Front wheel sensor | 2. ABS actuator and electric unit (control unit) | 3. Warning lamp, Indicator lamp (Combination meter) |
| 4. VDC OFF switch | 5. Steering angle sensor | 6. Rear wheel sensor |
| 7. Yaw rate/side G sensor | | |

Schematic

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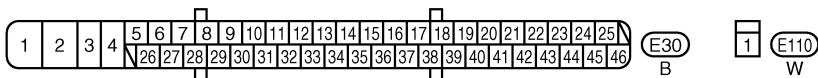
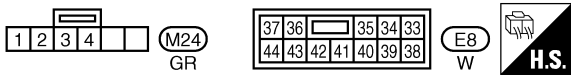
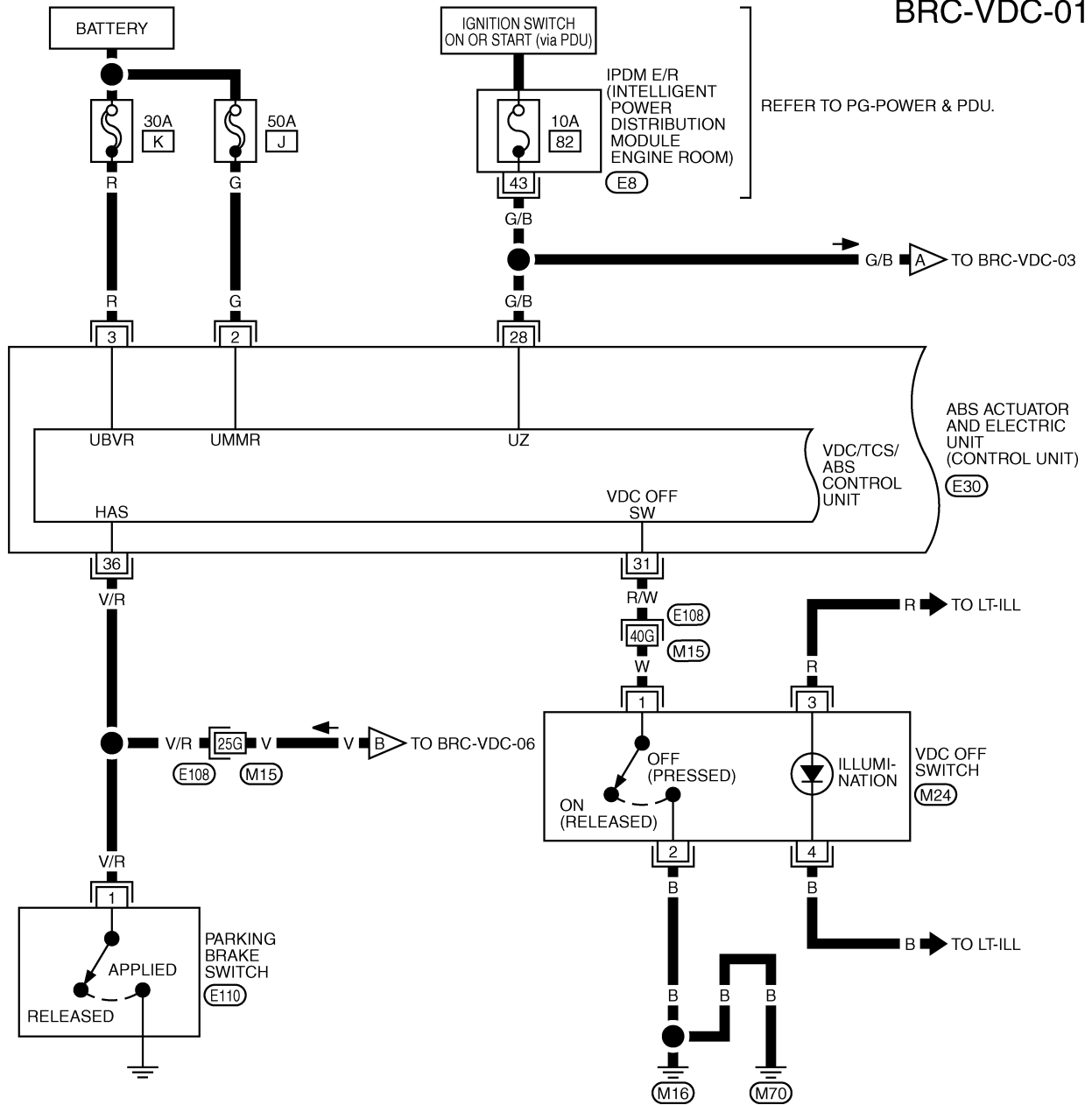
TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

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Wiring Diagram — VDC —

BRC-VDC-01



REFER TO THE FOLLOWING.

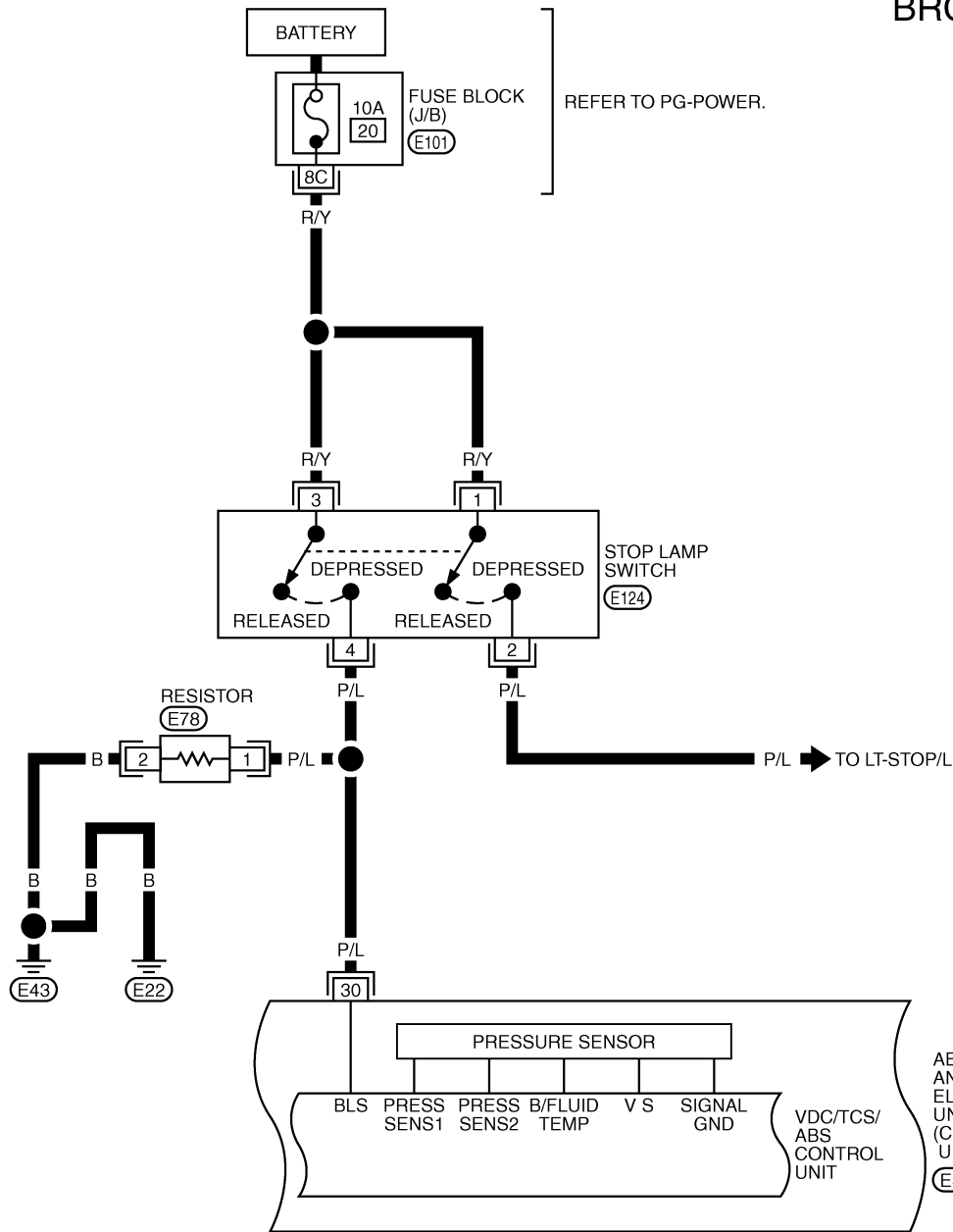
(E108) -SUPER MULTIPLE JUNCTION (SMJ)

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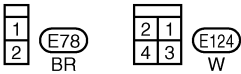
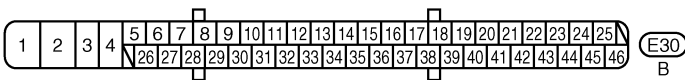
TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

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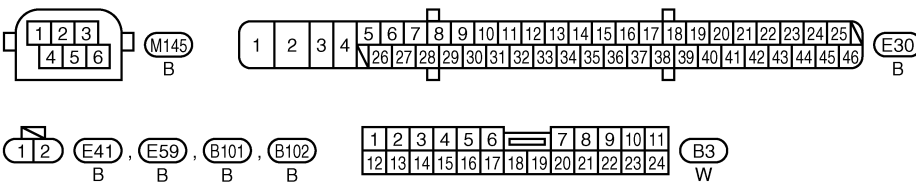
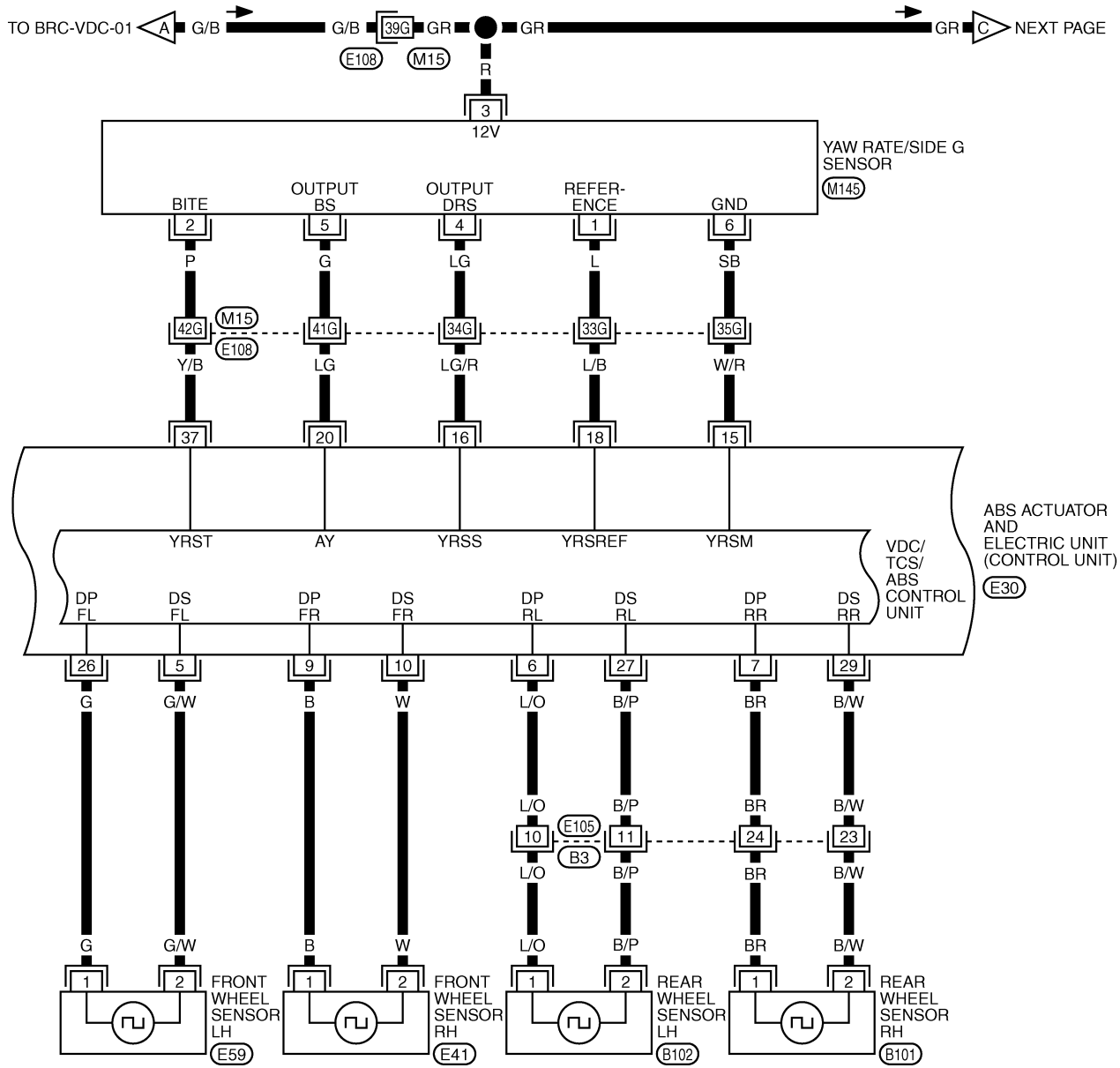
REFER TO THE FOLLOWING.
E101 - FUSE BLOCK-JUNCTION BOX (J/B)

TFWT0262E

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-03



REFER TO THE FOLLOWING.

(E108) -SUPER MULTIPLE JUNCTION (SMJ)

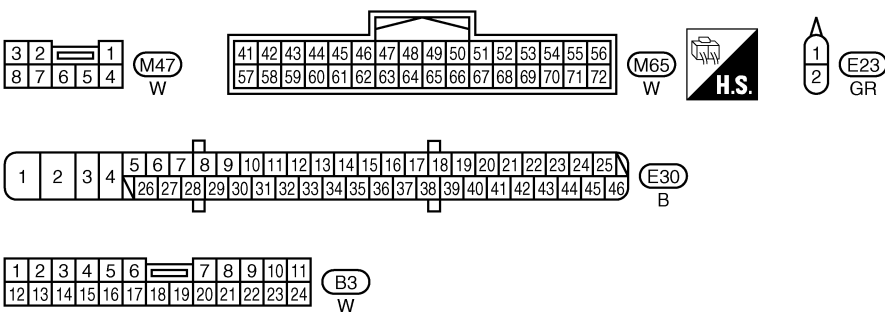
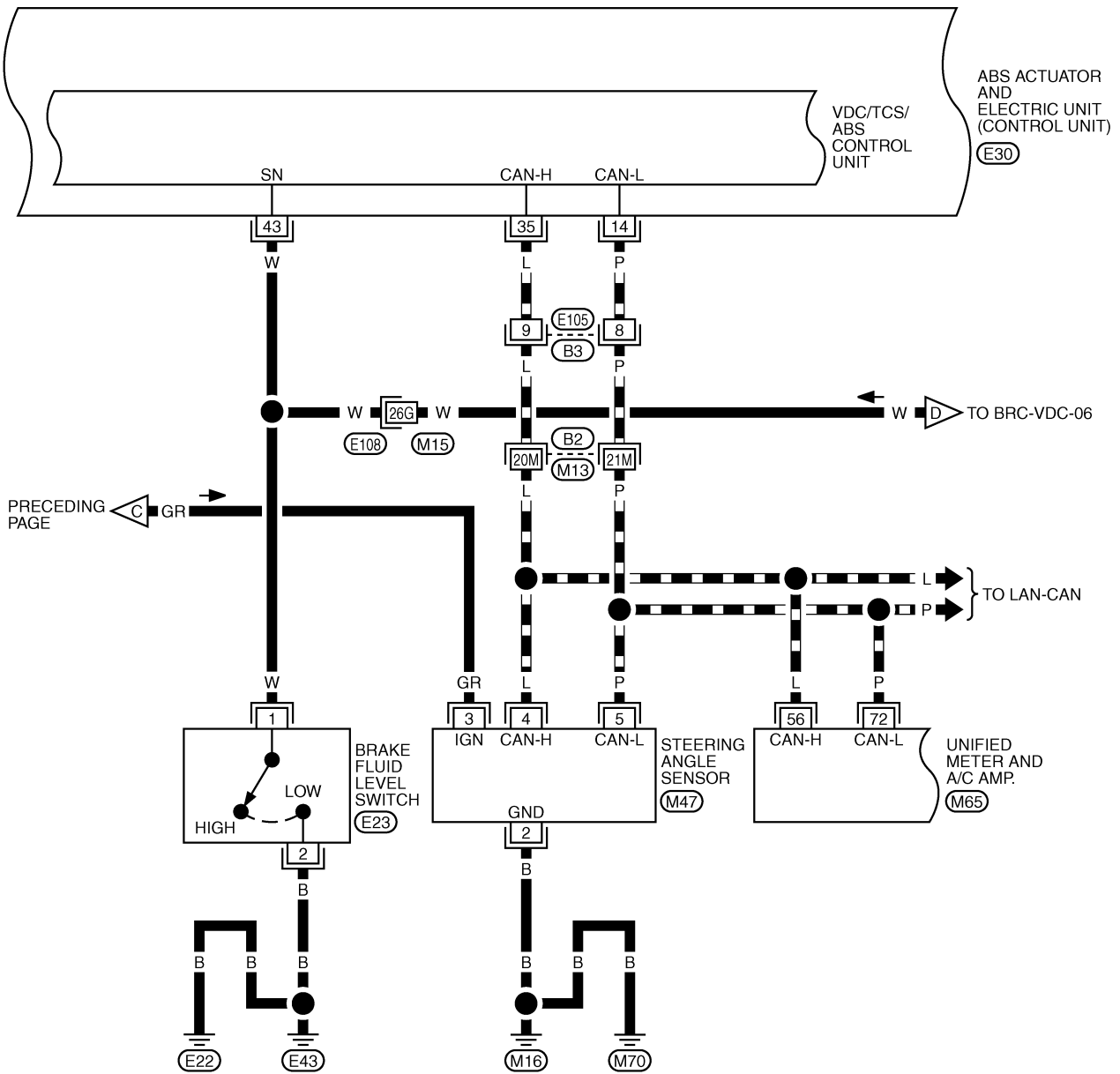
TFWT0263E

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-04

▬ : DATA LINE



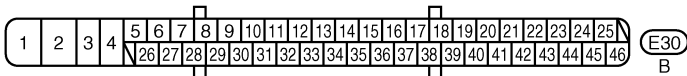
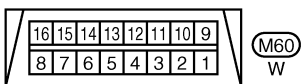
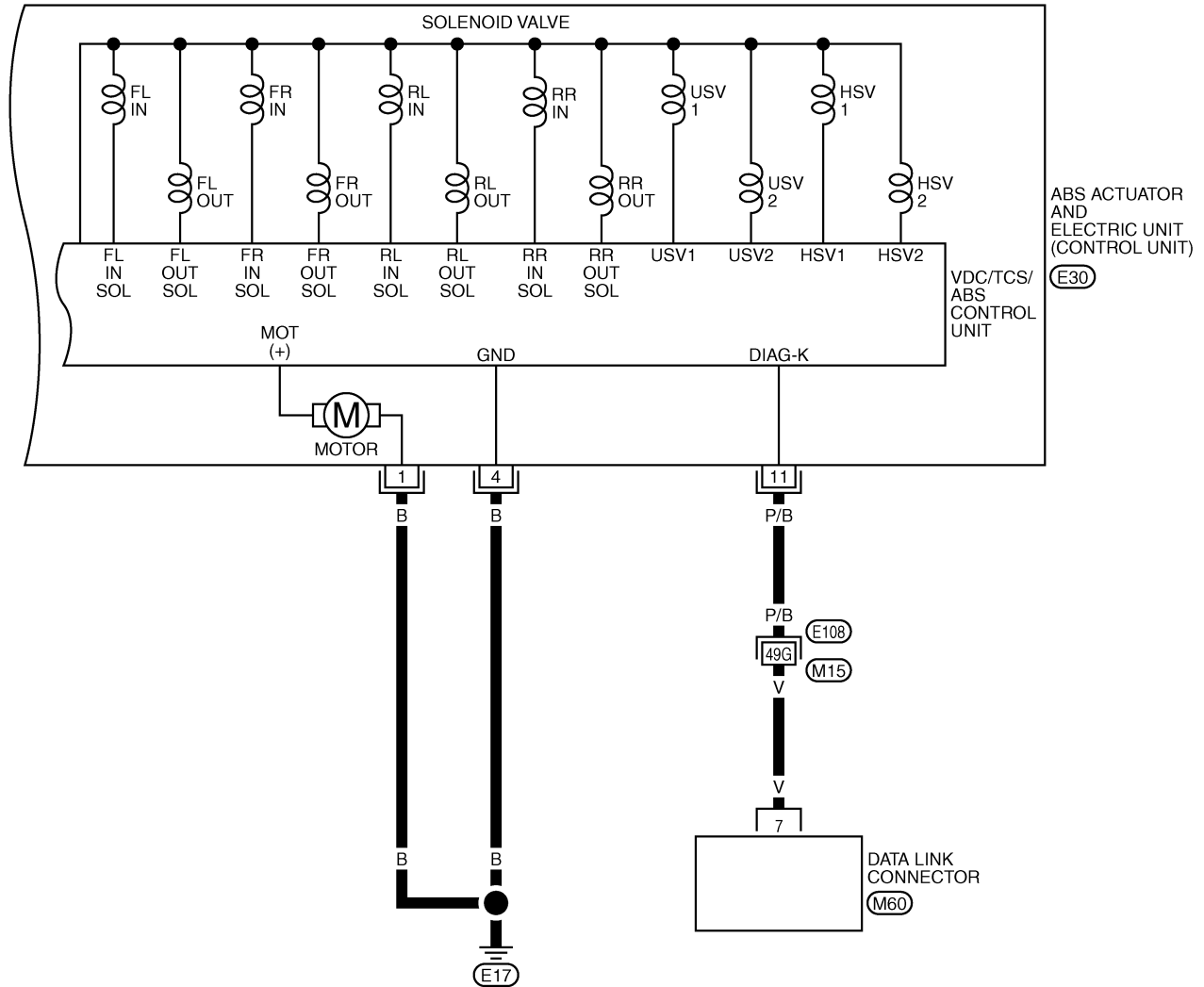
REFER TO THE FOLLOWING.
 (E108), (B2) -SUPER MULTIPLE JUNCTION (SMJ)

TFWT0264E

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-05



REFER TO THE FOLLOWING.

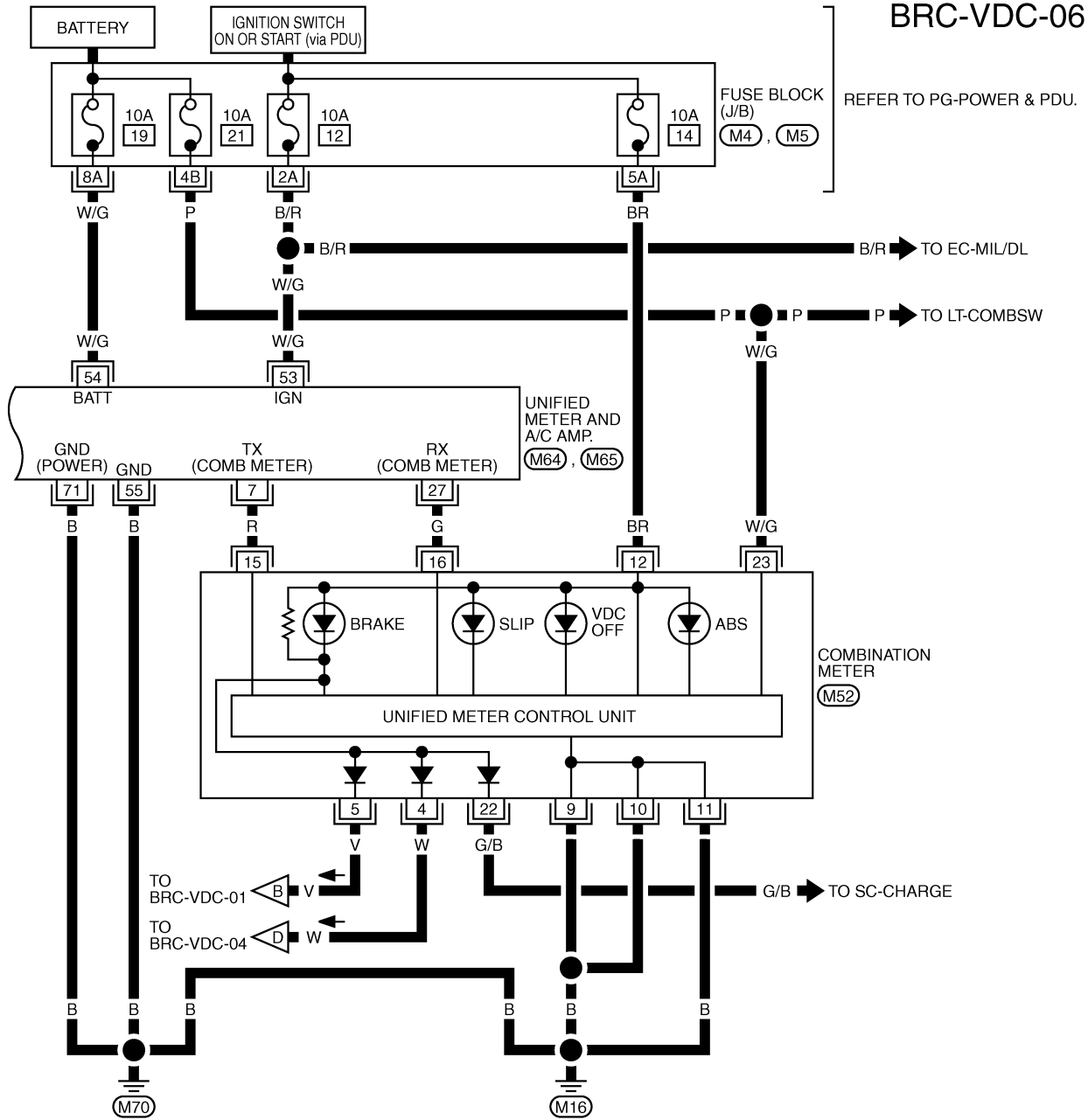
(E108) -SUPER MULTIPLE JUNCTION (SMJ)

TFWT0265E

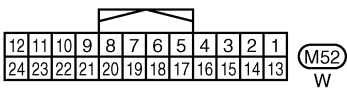
TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

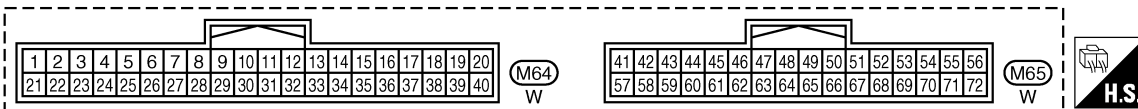
BRC-VDC-06



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REFER TO THE FOLLOWING.
 (M4), (M5) - FUSE BLOCK-
 JUNCTION BOX (J/B)



TFWT0266E

CONSULT-II Functions (ABS)

NFS000QF

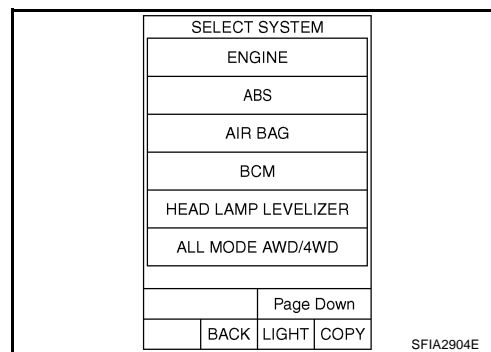
CONSULT-II MAIN FUNCTION

In a diagnosis function (main function), there are "WORK SUPPORT", "SELF-DIAG RESULTS", "DATA MONITOR", "CAN DIAG SUPPORT MNTR", "ACTIVE TEST", "FUNCTION TEST", "ECU PART NUMBER".

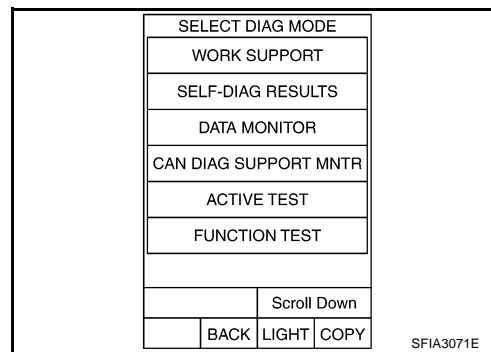
Diagnostic test mode	Function	Reference
WORK SUPPORT	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-II.	BRC-6. "Adjustment of Steering Angle Sensor Neutral Position"
SELF-DIAG RESULTS	Self-diagnostic results can be read and erased quickly.	BRC-23. "Self-Diagnosis"
DATA MONITOR	Input/Output data in the ABS actuator and electric unit (control unit) can be read.	BRC-27. "Data Monitor"
CAN DIAG SUPPORT MNTR	The results of transmit/receive diagnosis of communication can be read.	LAN-20. "CAN Diagnostic Support Monitor"
ACTIVE TEST	Diagnostic Test Mode in which CONSULT-II drives some actuators apart from the ABS actuator and electric unit (control unit) and also shifts some parameters in a specified range.	BRC-30. "Active Test"
FUNCTION TEST	Performed by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".	Separate volume "CONSULT-II OPERATION MANUAL (FUNCTION TEST)"
ECU PART NUMBER	ABS actuator and electric unit (control unit) part number can be read.	—

CONSULT-II BASIC OPERATION PROCEDURE

1. Touch "ABS" in the "SELECT SYSTEM" screen.



2. Select the required diagnosis location from the "SELECT DIAG MODE" screen. For further details, refer to the separate volume "CONSULT-II OPERATION MANUAL".



Self-Diagnosis**OPERATION PROCEDURE**

1. Turn ignition switch OFF.
2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector.
3. Turn ignition switch ON.
4. Start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.
5. After stopping vehicle, with the engine running, touch "START (NISSAN BASED VHCL)", "ABS", "SELF-DIAG RESULTS" in order on the CONSULT-II screen.

CAUTION:

If "START (NISSAN BASED VHCL)" is touched immediately after starting engine or turning on the ignition switch, "ABS" might not be displayed in the "SELECT SYSTEM" screen. In this case, repeat the operation from step 1.

6. The self-diagnostic results are displayed. (Touch "PRINT" to print out self-diagnostic results, if necessary.)
 - Check ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp if "NO FAILURE" is displayed. Refer to [BRC-53, "Inspection 19: Warning Lamp and Indicator Lamp Circuit"](#).
7. Perform the appropriate inspection from display item list, and repair or replace the malfunctioning component. Refer to [BRC-24, "DISPLAY ITEM LIST"](#).
8. Start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.

CAUTION:

When the wheel sensor malfunctions, after inspecting the wheel sensor system, the ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp will not turn off even when the system is normal unless the vehicle is driving at approximately 30 km/h (19 MPH) or more for approximately 1 minute.

ERASE MEMORY

1. Turn ignition switch OFF.
2. Start engine and touch "START (NISSAN BASED VHCL)", "ABS", "SELF-DIAG RESULTS", "ERASE MEMORY" in order on the CONSULT-II screen to erase the diagnostic memory. If "ABS" is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

CAUTION:

If the diagnostic memory is not erased, re-perform the operation from step 4.

3. Perform self-diagnosis again, and make sure that diagnostic memory is erased.
4. Drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute as the final inspection, and make sure that the ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp turn off.

NOTE:

- Brake warning lamp will turn on in case of parking brake operation (when switch is ON) or of brake fluid level switch operation (when brake fluid is insufficient).
- VDC OFF switch should not stay "ON" position.

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

DISPLAY ITEM LIST

Code	Display item	Malfunction detecting condition	Check item
C1101	RR RH SENSOR-1	Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
C1102	RR LH SENSOR-1	Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
C1103	FR RH SENSOR-1	Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
C1104	FR LH SENSOR-1	Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
C1105	RR RH SENSOR-2	When the circuit in the rear RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	BRC-34. "Inspection 1: Wheel Sensor Circuit" (Note 1)
C1106	RR LH SENSOR-2	When the circuit in the rear LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	
C1107	FR RH SENSOR-2	When the circuit in the front RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	
C1108	FR LH SENSOR- 2	When the circuit in the front LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	
C1109	BATTERY VOLTAGE [ABNORMAL]	When the ABS actuator and electric unit (control unit) power supply voltage is lower than normal.	BRC-37. "Inspection 4: ABS Actuator and Electric Unit (Control Unit) Power Supply and Ground Circuit"
C1110	CONTROLLER FAILURE	When there is an internal malfunction in the ABS actuator and electric unit (control unit).	BRC-36. "Inspection 3: ABS Actuator and Electric Unit (Control Unit)"
C1111	PUMP MOTOR	During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open.	BRC-38. "Inspection 5: ABS Motor and Motor Relay Circuit"
		During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground.	
C1114	MAIN RELAY	During the actuator relay operating with OFF, when the actuator relay turns ON. Or when the control line for the relay is shorted to the ground.	BRC-40. "Inspection 6: Solenoid, VDC Change-Over Valve and Actuator Relay Circuit"
		During the actuator relay operating with ON, when the actuator relay turns OFF, or when the control line for the relay is open.	
C1115	ABS SENSOR [ABNORMAL SIGNAL]	When wheel sensor input signal is malfunctioning.	BRC-34. "Inspection 1: Wheel Sensor Circuit" (Note 1)

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Code	Display item	Malfunction detecting condition	Check item
C1116	STOP LAMP SW	When stop lamp switch circuit is open.	BRC-44. "Inspection 10: Stop Lamp Switch Circuit"
C1118	4WD SYSTEM	When AWD control unit is malfunctioning.	BRC-50. "Inspection 15: AWD Control Unit Circuit (AWD Model)"
C1120	FR LH IN ABS SOL	When the control unit detects a malfunction in the front left inlet solenoid circuit.	BRC-40. "Inspection 6: Solenoid VDC Change-Over Valve and Actuator Relay Circuit"
C1121	FR LH OUT ABS SOL	When the control unit detects a malfunction in the front left outlet solenoid circuit.	
C1122	FR RH IN ABS SOL	When the control unit detects a malfunction in the front right inlet solenoid circuit.	
C1123	FR RH OUT ABS SOL	When the control unit detects a malfunction in the front right outlet solenoid circuit.	
C1124	RR LH IN ABS SOL	When the control unit detects a malfunction in the rear left inlet solenoid circuit.	
C1125	RR LH OUT ABS SOL	When the control unit detects a malfunction in the rear left outlet solenoid circuit.	
C1126	RR RH IN ABS SOL	When the control unit detects a malfunction in the rear right inlet solenoid circuit.	
C1127	RR RH OUT ABS SOL	When the control unit detects a malfunction in the rear right outlet solenoid circuit.	
C1130	ENGINE SIGNAL 1	Major engine components are malfunctioning.	BRC-36. "Inspection 2: Engine System"
C1131	ENGINE SIGNAL 2		
C1132	ENGINE SIGNAL 3		
C1133	ENGINE SIGNAL 4		
C1136	ENGINE SIGNAL 6		
C1137	RAS CIRCUIT	When RAS control unit is malfunctioning.	BRC-49. "Inspection 13: RAS Control Unit Circuit (With RAS)"
C1142	PRESS SEN CIRCUIT	Pressure sensor signal line is open or shorted, or pressure sensor is malfunctioning.	BRC-41. "Inspection 7: Pressure Sensor Circuit"
C1143	ST ANG SEN CIRCUIT	Neutral position of steering angle sensor is dislocated, or the steering angle sensor is malfunctioning.	BRC-41. "Inspection 8: Steering Angle Sensor Circuit"
C1144	ST ANG SEN SIGNAL	Neutral position correction of steering angle sensor is not finished.	BRC-6. "Adjustment of Steering Angle Sensor Neutral Position"
C1145	YAW RATE SENSOR	Yaw rate sensor is malfunctioning, or the yaw rate sensor signal line is open or shorted.	BRC-45. "Inspection 11: Yaw Rate/Side G Sensor Circuit"
C1146	SIDE G-SEN CIRCUIT	Side G sensor is malfunctioning, or circuit of side G sensor is open or shorted.	

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TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Code	Display item	Malfunction detecting condition	Check item
C1147	USV LINE [FL-RR]	VDC switch-over solenoid valve (USV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	BRC-40. "Inspection 6: Solenoid, VDC Change-Over Valve and Actuator Relay Circuit"
C1148	USV LINE [FR-RL]	VDC switch-over solenoid valve (USV2) on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
C1149	HSV LINE [FL-RR]	VDC switch-over solenoid valve (HSV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
C1150	HSV LINE [FR-RL]	VDC switch-over solenoid valve (HSV2) on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
C1153	EMERGENCY BRAKE	When ABS actuator and electric unit (control unit) is malfunctioning. (pressure increase is too much or too little)	BRC-36. "Inspection 3: ABS Actuator and Electric Unit (Control Unit)"
C1154	PNP POS SIG	TCM or ABS actuator and electric unit (control unit) internal malfunction.	BRC-43. "Inspection 9: Park/Neutral Position (PNP) Switch Circuit"
C1155	BR FLUID LEVEL LOW	Brake fluid level is low or communication line between the ABS actuator and electric unit (control unit) and brake fluid level switch is open or shorted.	BRC-48. "Inspection 12: Brake Fluid Level Switch Circuit"
C1156	ST ANG SEN COM CIR	CAN communication circuit or steering angle sensor is malfunctioning.	BRC-51. "Inspection 16: CAN Communication Circuit"
C1170	VARIANT CODING	In a case where VARIANT CODING is different.	BRC-36. "Inspection 3: ABS Actuator and Electric Unit (Control Unit)"
C1185	ACC CONT	ICC sensor integrated unit internal malfunction.	BRC-50. "Inspection 14: ICC Sensor Integrated Unit Circuit (With ICC)"
U1000	CAN COMM CIRCUIT	When there is a malfunction in the CAN communication circuit.	BRC-51. "Inspection 16: CAN Communication Circuit" (Note 2)
U1100	ACC COMM CIRCUIT	When there is a malfunction in the CAN communication circuit or ICC sensor integrated unit.	BRC-51. "Inspection 16: CAN Communication Circuit"

Note 1: After completing repairs of shorted sensor circuit, when ignition switch is turned ON, ABS warning lamp turns on. Make sure that ABS warning lamp turns off while driving vehicle at 30 km/h (19 MPH) or more for approximately 1 minute according to self-diagnosis procedure. In addition, if wheel sensor 2 is displayed for wheels, check wheel sensor circuit and also check control unit power voltage.

Note 2: When malfunctions are detected in several systems, including CAN communication circuit [U1000], troubleshoot CAN communication circuit. Refer to [BRC-51, "Inspection 16: CAN Communication Circuit"](#).

Data Monitor**OPERATION PROCEDURE**

1. Touch "START (NISSAN BASED VHCL)", "ABS", "DATA MONITOR" in order on CONSULT-II screen.

CAUTION:

When "START (NISSAN BASED VHCL)" is touched immediately after starting engine or turning on the ignition switch, "ABS" might not be displayed in the system selection screen. In this case, repeat the operation from step 1.

2. At the monitor item selection screen, touch one of the items "ECU INPUT SIGNALS", "MAIN SIGNALS" or "SELECTION FROM MENU".
3. Touch "START" to proceed to the data monitor screen.

DISPLAY ITEM LIST**CAUTION:**

The display shows the control unit calculation data, so a normal value might be displayed even in the event the output circuit (harness) is open or short - circuited.

E: ECU INPUT SIGNALS M: MAIN SIGNALS S: SELECTION FROM MENU

SELECT MONITOR ITEM	Monitor item	Display content	Data monitor	
			Condition	Reference value in normal operation
E, M, S	FR LH SENSOR FR RH SENSOR RR LH SENSOR RR RH SENSOR	Wheel speed	0 [km/h]	Vehicle stopped
			Nearly matches the speed meter display ($\pm 10\%$ or less)	Vehicle running (Note 1)
E, M, S	STOP LAMP SW	Brake pedal operation	When brake pedal is depressed	ON
			When brake pedal is not depressed	OFF
E, M, S	BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 - 16 V
E, M, S	GEAR	Gear position determined by TCM	1st gear	1
			2nd gear	2
			3rd gear	3
			4th gear	4
			5th gear	5
E, M, S	SLCT LVR POSI	A/T shift position	P position	P
			R position	R
			N position	N
			D position	D
E, M, S	OFF SW	VDC OFF switch ON/OFF	VDC OFF switch ON (When VDC OFF indicator lamp is ON)	ON
			VDC OFF switch OFF (When VDC OFF indicator lamp is OFF)	OFF
E, M, S	YAW RATE SEN	Yaw rate detected by yaw rate/side G sensor	When vehicle stop	Approx. 0 d/s
			When vehicle turning	(-75 to 75 d/s)
E, M, S	4WD MODE MON (Note 2)	AWD activated	Engine running	AUTO
E, S	ACCEL POS SIG	Throttle actuator opening/closing is displayed (linked with accelerator pedal)	Accelerator pedal not depressed (ignition switch is ON)	0 %
			Depress accelerator pedal (ignition switch is ON)	0 - 100 %

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

E: ECU INPUT SIGNALS M: MAIN SIGNALS S: SELECTION FROM MENU

SELECT MONITOR ITEM	Monitor item	Display content	Data monitor	
			Condition	Reference value in normal operation
E, S	SIDE G-SENSOR	Transverse G detected by side G sensor	Vehicle stopped	Approx. 0 m/s ²
			Vehicle turning right	Negative value (m/s ²)
			Vehicle turning left	Positive value (m/s ²)
E, S	STR ANGLE SIG	Steering angle detected by steering angle sensor	Straight-ahead	Approx. 0°
			Steering wheel turned	-720 to 720°
E, S	PRESS SENSOR	Brake fluid pressure detected by pressure sensor	With ignition switch turned ON and brake pedal released	Approx. 0 bar
			With ignition switch turned ON and brake pedal depressed	-40 to 300 bar
E, S	ENGINE RPM	With engine running	With engine stopped	0 rpm
			Engine running	Almost in accordance with tachometer display
E, S	FLUID LEV SW	Brake fluid level switch	When brake fluid level switch ON	ON
			When brake fluid level switch OFF	OFF
E, S	PARK BRAKE SW	Parking brake switch	Parking brake switch is active	ON
			Parking brake switch is inactive	OFF
M, S	FR RH IN SOL FR RH OUT SOL FR LH IN SOL FR LH OUT SOL RR RH IN SOL RR RH OUT SOL RR LH IN SOL RR LH OUT SOL	Operation status of all solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT-II) or actuator relay is inactive (in fail-safe mode)	ON
			When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF
M, S	MOTOR RELAY	Motor and motor relay operation	When the motor relay and motor are operating	ON
			When the motor relay and motor are not operating	OFF
M, S	ACTUATOR RLY (Note 3)	Actuator relay operation	When the actuator relay is operating	ON
			When the actuator relay is not operating	OFF
M, S	ABS WARN LAMP	ABS warning lamp (Note 4)	When ABS warning lamp is ON	ON
			When ABS warning lamp is OFF	OFF
M, S	OFF LAMP	VDC OFF indicator lamp (Note 4)	When VDC OFF indicator lamp is ON	ON
			When VDC OFF indicator lamp is OFF	OFF

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

E: ECU INPUT SIGNALS M: MAIN SIGNALS S: SELECTION FROM MENU

SELECT MONITOR ITEM	Monitor item	Display content	Data monitor	
			Condition	Reference value in normal operation
M, S	SLIP LAMP	SLIP indicator lamp (Note 4)	When SLIP indicator lamp is ON	ON
			When SLIP indicator lamp is OFF	OFF
S	4WD FAIL REQ (Note 2)	AWD control unit fail-safe signal	When AWD control unit is fail-safe mode	ON
			When AWD control unit is normal	OFF
S	SNOW MODE SW	Snow mode switch	When snow mode switch is ON	ON
			When snow mode switch is OFF	OFF
S	BST OPER SIG	Not applied but displayed	—	OFF
S	M-MODE SIG	Manual mode activated	When the manual mode is active	ON
			When the manual mode is inactive	OFF
S	EBD SIGNAL	EBD operation	EBD is active	ON
			EBD is inactive	OFF
S	ABS SIGNAL	ABS operation	ABS is active	ON
			ABS is inactive	OFF
S	TCS SIGNAL	TCS operation	TCS is active	ON
			TCS is inactive	OFF
S	VDC SIGNAL	VDC operation	VDC is active	ON
			VDC is inactive	OFF
S	EBD FAIL SIG	EBD fail-safe signal	In EBD fail-safe	ON
			EBD is normal	OFF
S	ABS FAIL SIG	ABS fail-safe signal	In ABS fail-safe	ON
			ABS is normal	OFF
S	TCS FAIL SIG	TCS fail-safe signal	In TCS fail-safe	ON
			TCS is normal	OFF
S	VDC FAIL SIG	VDC fail-safe signal	In VDC fail-safe	ON
			VDC is normal	OFF
S	CRANKING SIG	Crank operation	Crank is active	ON
			Crank is inactive	OFF
S	USV HSV (FL-RR, FR-RL) (Note 3)	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-II) or actuator relay is inactive (when in fail-safe mode)	ON
			When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	OFF

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TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

E: ECU INPUT SIGNALS M: MAIN SIGNALS S: SELECTION FROM MENU

SELECT MONITOR ITEM	Monitor item	Display content	Data monitor	
			Condition	Reference value in normal operation
S	V/R OUTPUT (Note 3)	Solenoid valve relay activated	When the solenoid valve relay is active (When ignition switch OFF)	ON
			When the solenoid valve relay is not active (in the fail-safe mode)	OFF
S	M/R OUTPUT	Actuator motor and motor relay activated	When the actuator motor and motor relay are active ("ACTIVE TEST" with CONSULT-II)	ON
			When the actuator motor and motor relay are inactive	OFF

Note 1: Confirm tire pressure is normal.

Note 2: Only AWD model.

Note 3: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Note 4: On and off timing for warning lamp and indicator lamp. Refer to [BRC-33, "ON and OFF Timing for Warning Lamp and Indicator Lamp"](#).

Active Test

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CAUTION:

- Do not perform active test while driving vehicle.
- Make sure to completely bleed air from brake system.
- The active test cannot be performed with the ABS warning lamp, VDC indicator lamp, SLIP indicator lamp and brake warning lamp are on.
- ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp are on during active test.
- Erase memory of ICC system after implementing active test. Refer to [ACS-34, "Self-Diagnostic Function"](#).

OPERATION PROCEDURE

1. Touch "START (NISSAN BASED VHCL)", "ABS", "ACTIVE TEST" in order on the CONSULT-II screen.

CAUTION:

When "START (NISSAN BASED VHCL)" is touched immediately after starting engine or turning on ignition switch, "ABS" might not be displayed in the "SELECT SYSTEM" screen. In this case, repeat the operation from step 1.

2. Touch "SELECT TEST ITEM" is displayed.
3. Touch necessary test item.

ACTIVE TEST			
FR RH SOL		UP	
MONITOR			
FR RH IN SOL		OFF	
FR RH OUT SOL		OFF	
USV[FR-RL]		OFF	
HSV[FR-RL]		OFF	
	KEEP	DOWN	
		▽	
MODE	BACK	LIGHT	COPY

SFIA0591E

4. While "MAIN SIGNALS" indication is inverted, touch "START".
5. "ACTIVE TEST" screen will be displayed so perform the following test.

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

NOTE:

- When active test is performed while depressing the pedal, the pedal depression amount will change. This is normal. (Only solenoid valve and ABS motor)
- "TEST IS STOPPED" is displayed 10 seconds after operation start.
- After "TEST IS STOPPED" is displayed, to perform test again, touch "BACK" and repeat step 3.

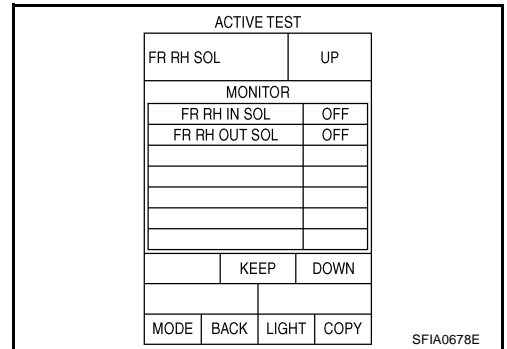
TEST ITEMS

Solenoid Valve

NOTE:

The example shown is for front right wheel. The procedure for the other wheels is the same as given below.

- When performing an active test of the ABS function, select the "MAIN SIGNALS" for each test item. In addition, when performing an active test of the VDC/TCS function, select the item menu for each test item.
- For ABS solenoid valve, touch "UP", "KEEP", and "DOWN" on the display screen. For ABS solenoid valve (ACT), touch "UP", "ACT UP", "ACT KEEP" and confirm that solenoid valves (IN, OUT, USV, HSV) operate as shown in the table below.



Operation (Note)	ABS solenoid valve			ABS solenoid valve (ACT)		
	UP	KEEP	DOWN	UP	ACT UP	ACT KEEP
FR RH IN SOL	OFF	ON	ON	OFF	OFF	OFF
FR RH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
USV [FR-RL]	OFF	OFF	OFF	OFF	ON	ON
HSV [FR-RL]	OFF	OFF	OFF	OFF	ON*	OFF

*: ON for 1 to 2 seconds after the touch, and then OFF

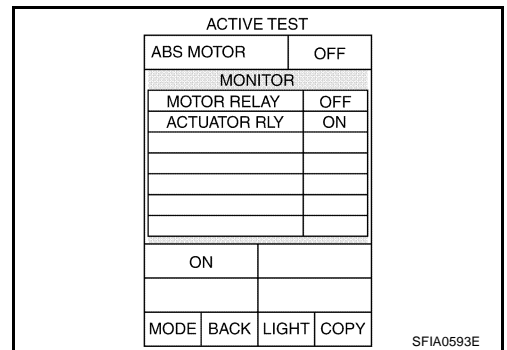
Note: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

ABS Motor

Touch "ON" and "OFF" on screen. Make sure motor relay and actuator relay operates as shown in table below.

Operation	ON	OFF
MOTOR RELAY	ON	OFF
ACTUATOR RLY (Note)	ON	ON

Note: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.



For Fast and Accurate Diagnosis

NFS000QJ

PRECAUTIONS FOR DIAGNOSIS

- Before performing diagnosis, always read General Information (GI) to confirm general precautions. Refer to [GI-4, "General Precautions"](#) .
- If steering angle sensor, steering system parts, suspension system parts, ABS actuator and electric unit (control unit) or tires have been replaced, or if wheel alignment has been adjusted, be sure to adjust neutral position of steering angle sensor before driving. Refer to [BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"](#) .
- After diagnosis is finished, be sure to erase memory. Refer to [BRC-23, "ERASE MEMORY"](#) .
- When checking continuity and voltage between unit, be sure to check for disconnection, looseness, bend, or collapse of connector terminals. If any malfunction is found, repair or replace connector terminals.
- For intermittent symptoms, possible cause is malfunction in harness, harness connector, or terminals. Move harness, harness connector, and terminals to check for poor connections.
- If a circuit tester is used for the check, be careful not to forcibly extend any connector terminal.
- The following symptoms may be caused by normal operations.

Symptom	Symptom description	Result
Motor operation sound	This is sound of motor inside VDC actuator. Slight sound may occur during VDC, TCS, and ABS operation.	Normal
	Just after engine starts, the motor operating sound may be heard. This is a normal condition of the system operation check.	
System operation check sound	When engine starts, slight "click" sound may be heard from engine room. This is normal and is part of system operation check.	Normal
VDC/TCS operation (SLIP indicator lamp ON)	TCS may activate momentarily if wheel speed changes when driving over location where friction varies, when downshifting, or when fully depressing accelerator pedal.	Normal Cancel the VDC/TCS function for the inspection on a chassis dynamometer.
	When checking speed meter etc. with a 2-wheel-drive chassis dynamometer, vehicle speed is not increased by pressing down on the accelerator.	
ABS operation (Longer stopping distance)	On roads with low friction, such as snowy roads or gravel roads, vehicles with ABS may require a longer stopping distance. Therefore, when driving on such roads, avoid overconfidence and keep speed sufficiently low.	Normal
Insufficient feeling of acceleration	Depending on road conditions, driver may feel that feeling of acceleration is insufficient. This is because traction control, which controls engine and brakes to achieve optimal traction, has the highest priority (for safety). As a result, there may be times when acceleration is slightly less than usual for the same accelerator pedal operation.	Normal

Basic Inspection

BASIC INSPECTION 1: BRAKE FLUID LEVEL, LEAK INSPECTION AND BRAKE PAD

1. Check fluid level in brake reservoir tank. If fluid level is low, refill brake fluid. Refer to [BR-10, "CHECKING BRAKE FLUID LEVEL"](#).
2. Check for leakage in brake tubes or hoses and around ABS actuator and electric unit (control unit). If there is leaking or seeping fluid, check the following items.
 - If the brake tube connections at ABS actuator and electric unit (control unit) are loose, tighten flare nuts to the specified torque. Then inspect again and confirm that there is no leakage.
 - If flare nuts or screws of ABS actuator and electric unit (control unit) are damaged and loose, replace damaged parts. Then inspect again and confirm that there is no leakage.
 - If there is leakage at any location other than ABS actuator and electric unit (control unit) connections, wipe away leakage with clean cloth. Then inspect again and confirm that there is no leakage.
 - If there is leakage from ABS actuator and electric unit (control unit), wipe away leakage with clean cloth. Then inspect again. If there is still leakage, replace ABS actuator and electric unit (control unit).

CAUTION:

ABS actuator and electric unit (control unit) cannot be disassembled.

3. Check brake disc rotor and pads. Refer to [BR-28, "DISC ROTOR INSPECTION"](#) (front disc rotor), [BR-23, "PAD WEAR INSPECTION"](#) (front brake pad), [BR-34, "DISC ROTOR INSPECTION"](#) (rear disc rotor), [BR-29, "PAD WEAR INSPECTION"](#) (rear brake pad).

BASIC INSPECTION 2: LOOSENESS OF POWER SYSTEM TERMINALS AND BATTERY

Check battery for looseness on battery positive/negative terminals and ground connection. Also make sure battery voltage does not drop and alternator is normal.

BASIC INSPECTION 3: ABS WARNING LAMP, BRAKE WARNING LAMP, VDC OFF INDICATOR LAMP AND SLIP INDICATOR LAMP

ON and OFF Timing for Warning Lamp and Indicator Lamp

Condition	×: ON -: OFF			
	ABS warning lamp	VDC OFF indicator lamp	SLIP indicator lamp	Brake warning lamp [Note1]
Ignition SW OFF	-	-	-	-
For 1 second after turning ON ignition switch	×	×	×	×
1 second later after turning ON ignition switch	-	-	-	×
VDC OFF switch turned ON. (VDC function is OFF.)	-	×	-	-
VDC/TCS function is malfunctioning.	-	×	×	-
ABS function is malfunctioning.	×	×	×	-
EBD function is malfunctioning.	×	×	×	×

Note1: Brake warning lamp will turn on in case of parking brake operation (when switch is ON) or of brake fluid level switch operation (when brake fluid is insufficient).

Note2: After starting engine, brake warning lamp is turned off.

Check the following items when unsuitable for an above condition.

- ABS warning lamp: [BRC-51, "Inspection 16: CAN Communication Circuit"](#)
- Brake warning lamp: [BRC-51, "Inspection 16: CAN Communication Circuit"](#) , [BRC-48, "Inspection 12: Brake Fluid Level Switch Circuit"](#) , [BRC-52, "Inspection 18: Parking Brake Switch Circuit"](#)
- VDC OFF indicator lamp: [BRC-51, "Inspection 16: CAN Communication Circuit"](#) , [BRC-51, "Inspection 17: VDC OFF Switch Circuit"](#)
- SLIP indicator lamp: [BRC-51, "Inspection 16: CAN Communication Circuit"](#)

If malfunction is not found, refer to [BRC-53, "Inspection 19: Warning Lamp and Indicator Lamp Circuit"](#).

Inspection 1: Wheel Sensor Circuit

CAUTION:

Do not check between wheel sensor terminals.

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check the self-diagnosis results.

Self-diagnosis results
FR RH SENSOR-1, -2
FR LH SENSOR-1, -2
RR RH SENSOR-1, -2
RR LH SENSOR-1, -2
ABS SENSOR [ABNORMAL SIGNAL]

Is above displayed on the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK TIRE

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES >> GO TO 3.

NO >> ● Adjust air pressure, or replace tire.

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

3. CHECK SENSOR AND SENSOR ROTOR

- Check sensor rotor for damage.
- Check wheel sensor for damage, disconnection or looseness.

OK or NG

OK >> GO TO 4.

NG >> ● Repair wheel sensor mount or replace sensor rotor. Then perform the self-diagnosis.

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK CONNECTOR

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30 and malfunctioning wheel sensor connector E41(FR-RH), E59(FR-LH), B101(RR-RH), B102(RR-LH). Check terminal to see if it is deformed, disconnected, loose, etc., Repair or replace it if any malfunction condition is found.
2. Reconnect connectors and then perform the self-diagnosis. Refer to [BRC-23, "OPERATION PROCEDURE"](#).

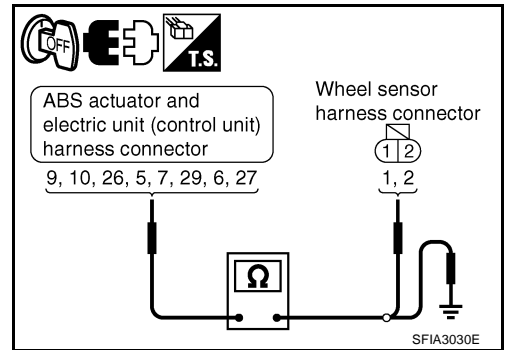
OK or NG

OK >> INSPECTION END

NG >> GO TO 5.

5. CHECK WHEEL SENSOR HARNESS

1. Turn ignition switch OFF and disconnect malfunctioning wheel sensor connector E41(FR-RH), E59(FR-LH), B101(RR-RH), B102(RR-LH) and ABS actuator and electric unit (control unit) connector E30.
2. Check continuity between terminals. (Also check continuity when steering wheel is turned right and left and when sensor harness inside the wheel house is moved.)



Wheel	Power supply circuit		Signal circuit		Ground circuit	
	ABS actuator and electric unit (control unit)	Wheel sensor	ABS actuator and electric unit (control unit)	Wheel sensor	ABS actuator and electric unit (control unit) (signal)	Ground
Front RH	9	1	10	2	9, 10	—
Front LH	26	1	5	2	26, 5	
Rear RH	7	1	29	2	7, 29	
Rear LH	6	1	27	2	6, 27	

- Power supply circuit** : Yes
Signal circuit : Yes
Ground circuit : No

OK or NG

- OK >> GO TO 6.
 NG >> ● Repair or replace malfunctioning components.
 ● Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

6. CHECK WHEEL SENSOR

1. Replace wheel sensor that resulted in malfunction by self-diagnosis.
2. Reconnect connectors, drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute, and then perform self-diagnosis.

Is above displayed on the self-diagnosis display?

- OK >> INSPECTION END
 NG >> ● Replace ABS actuator and electric unit (control unit).
 ● Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

Inspection 2: Engine System

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
ENGINE SIGNAL 1
ENGINE SIGNAL 2
ENGINE SIGNAL 3
ENGINE SIGNAL 4
ENGINE SIGNAL 6

Is above displayed on the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK ENGINE SYSTEM

1. Perform ECM self-diagnosis. Repair or replace items indicated, then perform ECM self-diagnosis again. Refer to [EC-100, "TROUBLE DIAGNOSIS"](#) (VQ35DE), [EC-811, "TROUBLE DIAGNOSIS"](#) (VK45DE).
2. Perform ABS actuator and electric unit (control unit) self-diagnosis.

OK or NG

OK >> INSPECTION END

NG >> ● Repair or replace malfunctioning components.

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Inspection 3: ABS Actuator and Electric Unit (Control Unit)

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
CONTROLLER FAILURE
EMERGENCY BRAKE
VARIANT CODING

CAUTION:

Replace ABS actuator and electric unit (control unit) when self-diagnostic result shows items other than those above.

Is above displayed on the self-diagnosis display?

YES >> ● Replace ABS actuator and electric unit (control unit).

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NO >> INSPECTION END

Inspection 4: ABS Actuator and Electric Unit (Control Unit) Power Supply and Ground Circuit

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
BATTERY VOLTAGE [ABNORMAL]

Is above displayed on the self-diagnosis display?

- YES >> GO TO 2.
- NO >> INSPECTION END

2. CHECK CONNECTOR

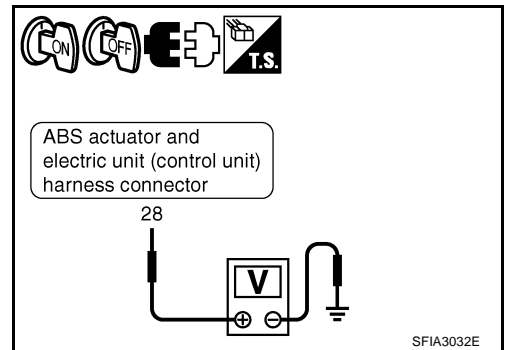
1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

OK or NG

- OK >> INSPECTION END
- NG >> GO TO 3.

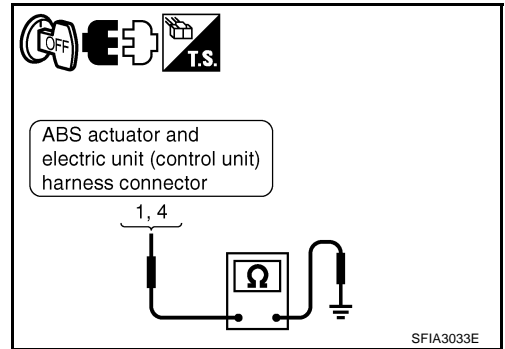
3. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY CIRCUIT AND GROUND CIRCUIT

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30.
2. Turn ignition switch ON or OFF and check voltage between ABS actuator and electric unit (control unit) harness connector E30 terminal 28 and ground.



ABS actuator and electric unit (control unit)	Ground	Condition	Voltage
28	—	Ignition switch ON	Battery voltage (Approx. 12 V)
		Ignition switch OFF	Approx. 0 V

3. Turn ignition switch OFF and check continuity between ABS actuator and electric unit (control unit) harness connector E30 terminal 1, 4 and ground.



ABS actuator and electric unit (control unit)	Ground	Continuity
1, 4	—	Yes

OK or NG

- OK >> ● Check battery for terminal looseness, low voltage, etc. If any malfunction is found, repair malfunctioning parts.
- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".
- NG >> ● Repair or replace malfunctioning components.
- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Inspection 5: ABS Motor and Motor Relay Circuit

NFS000QP

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
PUMP MOTOR

Is above displayed on the self-diagnosis display?

- YES >> GO TO 2.
 NO >> INSPECTION END

2. CHECK CONNECTOR

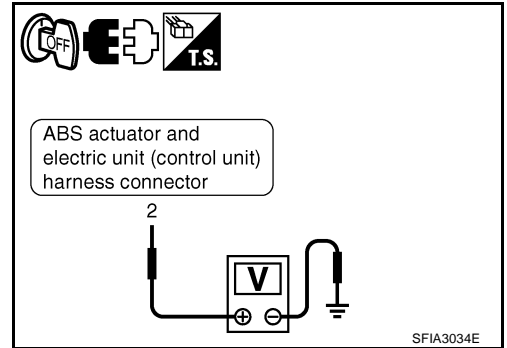
1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

OK or NG

- OK >> INSPECTION END
 NG >> GO TO 3.

3. CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30.
2. Check voltage between the ABS actuator and electric unit (control unit) harness connector E30 terminal 2 and ground.



ABS actuator and electric unit (control unit)	Ground	Voltage
2	—	Battery voltage (Approx. 12 V)

OK or NG

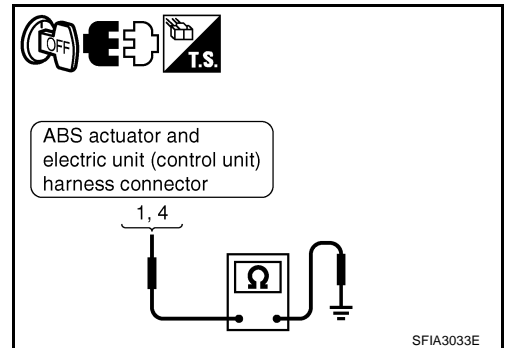
OK >> GO TO 4.

NG >> ● Repair or replace malfunctioning components.

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector E30 terminal 1, 4 and ground.



ABS actuator and electric unit (control unit)	Ground	Continuity
1, 4	—	Yes

OK or NG

OK >> ● Replace ABS actuator and electric unit (control unit).

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NG >> ● Repair or replace malfunctioning components.

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Inspection 6: Solenoid, VDC Change-Over Valve and Actuator Relay Circuit NFS00000

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
FR RH IN ABS SOL
FR RH OUT ABS SOL
FR LH IN ABS SOL
FR LH OUT ABS SOL
RR RH IN ABS SOL
RR RH OUT ABS SOL
RR LH IN ABS SOL
RR LH OUT ABS SOL
USV LINE [FL-RR]
USV LINE [FR-RL]
HSV LINE [FL-RR]
HSV LINE [FR-RL]
MAIN RELAY

Is above displayed on the self-diagnosis display?

- YES >> GO TO 2.
 NO >> INSPECTION END

2. CHECK CONNECTOR

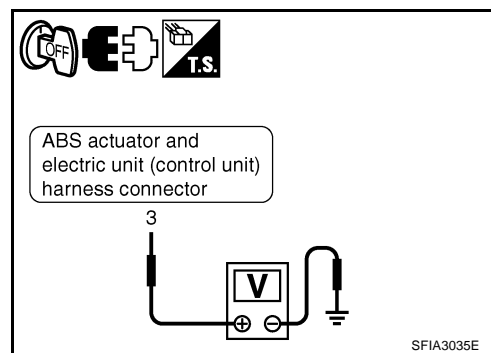
1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

OK or NG

- OK >> INSPECTION END
 NG >> GO TO 3.

3. CHECK SOLENOID, VDC CHANGE-OVER VALVE AND ACTUATOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30.
2. Check voltage between ABS actuator and electric unit (control unit) harness connector E30 terminal 3 and ground.



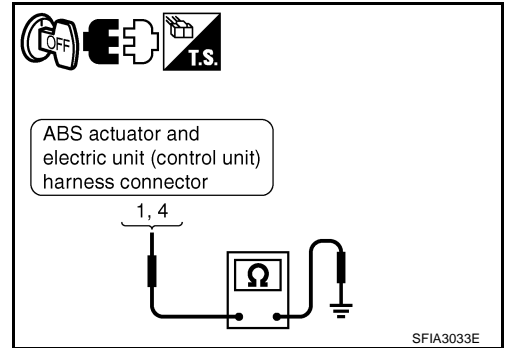
ABS actuator and electric unit (control unit)	Ground	Voltage
3	—	Battery voltage (Approx. 12 V)

OK or NG

- OK >> GO TO 4.
- NG >> ● Repair or replace malfunctioning components.
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK SOLENOID, VDC CHANGE-OVER VALVE, ACTUATOR RELAY GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector E30 terminal 1, 4 and ground.



ABS actuator and electric unit (control unit)	Ground	Continuity
1, 4	—	Yes

OK or NG

- OK >> ● Replace ABS actuator and electric unit (control unit).
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".
- NG >> ● Repair or replace malfunctioning components.
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Inspection 7: Pressure Sensor Circuit

NFS000QR

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
PRESS SEN CIRCUIT

Is above displayed on the self-diagnosis display?

- YES >> ● Replace ABS actuator and electric unit (control unit).
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".
- NO >> INSPECTION END

Inspection 8: Steering Angle Sensor Circuit

NFS000QS

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
ST ANG SEN CIRCUIT

Is above displayed on the self-diagnosis display?

- YES >> GO TO 2.
- NO >> INSPECTION END

2. CHECK CONNECTOR

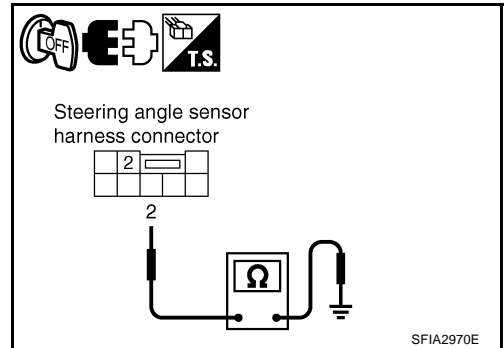
1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

OK or NG

- OK >> INSPECTION END
- NG >> GO TO 3.

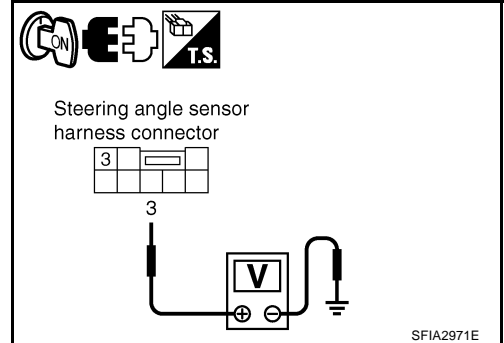
3. CHECK STEERING ANGLE SENSOR HARNESS

1. Check CAN communication system. Refer to [BRC-51, "Inspection 16: CAN Communication Circuit"](#) .
2. Turn ignition switch OFF and disconnect steering angle sensor connector.
3. Check continuity between steering angle sensor harness connector M47 terminal 2 and ground.



Steering angle sensor	Ground	Continuity
2	—	Yes

4. Turn ignition switch ON and check voltage between steering angle sensor harness connector M47 terminal 3 and ground.



Steering angle sensor	Ground	Voltage
3	—	Battery voltage (Approx. 12 V)

OK or NG

- OK >> GO TO 4.
- NG >>
 - Repair or replace malfunctioning components.
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK DATA MONITOR

1. Turn ignition switch OFF and connect the steering angle sensor connector and ABS actuator and electric unit (control unit) connector.
2. Select "STR ANGLE SIG" in "Data Monitor" and check steering angle sensor signal.

Steering condition	STR ANGLE SIG (Data monitor)
Driving straight	- 2.5 ° to + 2.5 °
Turn 90° to right	Approx.+ 90 °
Turn 90° to left	Approx.- 90 °

OK or NG

OK >> Perform self-diagnosis.

NG >> ● Replace spiral cable (steering angle sensor) and adjust neutral position of steering angle sensor. Refer to [BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"](#).

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Inspection 9: Park/Neutral Position (PNP) Switch Circuit

NFS000QT

INSPECTION PROCEDURE**1. CHECK SELF-DIAGNOSIS RESULTS**

Check self-diagnosis results.

Self-diagnosis results
PNP POSI SIG

Is above displayed on the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK DATA MONITOR

Select "SLCT LVR POSI" in "Data Monitor" and check Park/Neutral position switch signal.

Selector lever position	SLCT LVR POSI (Data monitor)
P position	P
R position	R
N position	N
D position	D

OK or NG

OK >> ● Replace ABS actuator and electric unit (control unit).

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NG >> GO TO 3.

3. CHECK PARK/NEUTRAL POSITION (PNP) SWITCH

Perform Park/Neutral position switch inspection. Refer to [AT-113, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#).

OK or NG

- OK >> ● Replace ABS actuator and electric unit (control unit).
 ● Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".
- NG >> ● Repair or replace malfunctioning components.
 ● Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Inspection 10: Stop Lamp Switch Circuit

NFS000QU

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
STOP LAMP SW

Is above displayed on the self-diagnosis display?

- YES >> GO TO 2.
 NO >> INSPECTION END

2. CHECK CONNECTOR

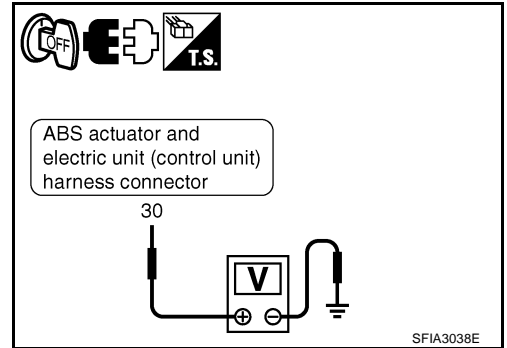
1. Turn ignition switch OFF and disconnect stop lamp switch connector E124 and ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connectors securely.
3. Start engine.
4. Repeat pumping brake pedal carefully several times, and perform self-diagnosis.

OK or NG

- OK >> INSPECTION END
 NG >> GO TO 3.

3. CHECK STOP LAMP SWITCH CIRCUIT

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30.
2. Check voltage between ABS actuator and electric unit (control unit) harness connector E30 terminal 30 and ground.



ABS actuator and electric unit (control unit)	Ground	Condition	Voltage
30	—	Brake pedal depressed	Battery voltage (Approx. 12 V)
		Brake pedal not depressed	Approx. 0V

OK or NG

- OK >> Perform self-diagnosis.
- NG >> ● Repair or replace stop lamp switch circuit.
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Inspection 11: Yaw Rate/Side G Sensor Circuit

NFS000QV

CAUTION:

- Sudden turns (such as spin turns, acceleration turns), drifting, etc., when VDC function is off (VDC OFF switch "ON") may cause yaw rate/side G sensor system to indicate a malfunction. However, this is not a malfunction, if normal operation can be resumed after restarting engine. Then erase memory of self-diagnosis.
- If vehicle is on turn-table at entrance to parking garage, or on other moving surface, VDC OFF indicator lamp may illuminate and CONSULT-II self-diagnosis may indicate yaw rate sensor system malfunction. However, in this case there is no malfunction in yaw rate sensor system. Take vehicle off of turn-table or other moving surface, and start engine. Results will return to normal. And after doing spin turns or acceleration turns with VDC function is being off (VDC OFF switch "ON"), too, the results will return to a normal condition by re-starting vehicle.

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
YAW RATE SENSOR
SIDE G-SEN CIRCUIT

Is above displayed on the self-diagnosis display?

- YES >> GO TO 2.
- NO >> INSPECTION END

2. CHECK CONNECTOR

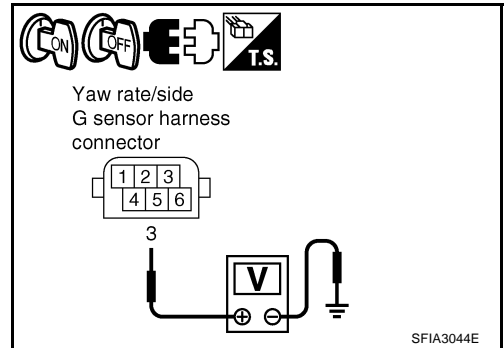
1. Turn ignition switch OFF and disconnect yaw rate/side G sensor connector M145 and ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

OK or NG

- OK >> INSPECTION END
- NG >> GO TO 3.

3. CHECK YAW RATE/SIDE G SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF and disconnect yaw rate/side G sensor connector M145.
2. Turn ignition switch ON or OFF and check voltage between yaw rate/side G sensor harness connector M145 terminal 3 and ground.



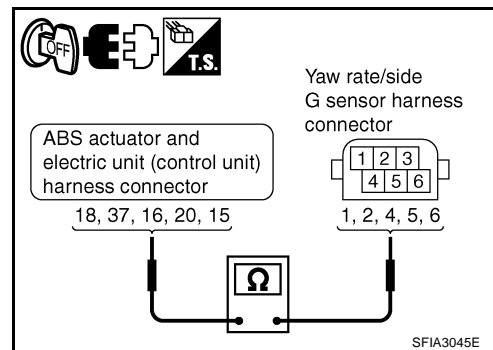
Yaw rate/side G sensor	Ground	Condition	Voltage
3	—	Ignition switch ON	Battery voltage (Approx. 12 V)
		Ignition switch OFF	Approx. 0V

OK or NG

- OK >> GO TO 4.
- NG >>
 - Repair or replace malfunctioning components.
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK YAW RATE/SIDE G SENSOR HARNESS

1. Turn ignition switch OFF and disconnect Yaw rate/side G sensor connector M145 and ABS actuator and electric unit (control unit) connector E30.
2. Check continuity between Yaw rate/side G sensor harness connector M145 and ABS actuator and electric unit (control unit) harness connector E30.



ABS actuator and electric unit (control unit)	Yaw rate/side G sensor	Continuity
18	1	Yes
37	2	
16	4	
20	5	
15	6	

OK or NG

OK >> GO TO 5.

NG >> ● Repair or replace malfunctioning components.

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

5. CHECK DATA MONITOR

1. Connect the Yaw rate/side G sensor connector and ABS actuator and electric unit (control unit) connector.
2. Select "YAW RATE SEN", "SIDE G-SENSOR" in "Data Monitor" and check Yaw rate/side G sensor signal.

Vehicle condition	YAW RATE SEN (Data monitor)	SIDE G-SENSOR (Data monitor)
Stopped	Approx. 0 d/s	Approx. 0 m/s ²
Turning right	Negative value	Negative value
Turning left	Positive value	Positive value

OK or NG

OK >> ● Replace ABS actuator and electric unit (control unit).

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

NG >> ● Replace Yaw rate/side G sensor.

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Inspection 12: Brake Fluid Level Switch Circuit

CAUTION:

Check brake fluid level in brake reservoir tank before starting inspection.

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

1. Check brake fluid level in brake reservoir tank. If brake fluid level is low, refill brake fluid.
2. Check self-diagnosis results.

Self-diagnosis results

BR FLUID LEVEL LOW

Is above displayed on the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK CONNECTOR

1. Turn ignition switch OFF and disconnect brake fluid level switch connector E23 and ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

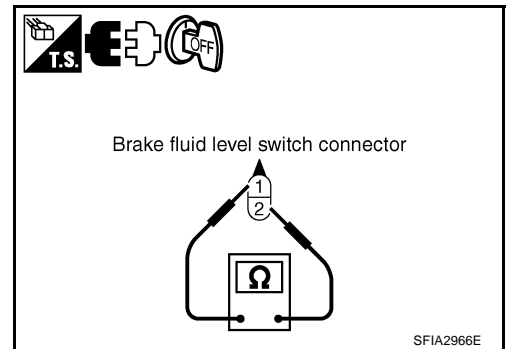
OK or NG

OK >> INSPECTION END

NG >> GO TO 3.

3. CHECK BRAKE FLUID LEVEL SWITCH

1. Turn ignition switch OFF and disconnect brake fluid level switch connector E23.
2. Check continuity between brake fluid level switch connector E23 terminal 1 and 2.



Brake fluid level switch	Condition	Continuity
1, 2	When brake fluid is full in the reservoir tank	No
	When brake fluid is empty in the reservoir tank	Yes

OK or NG

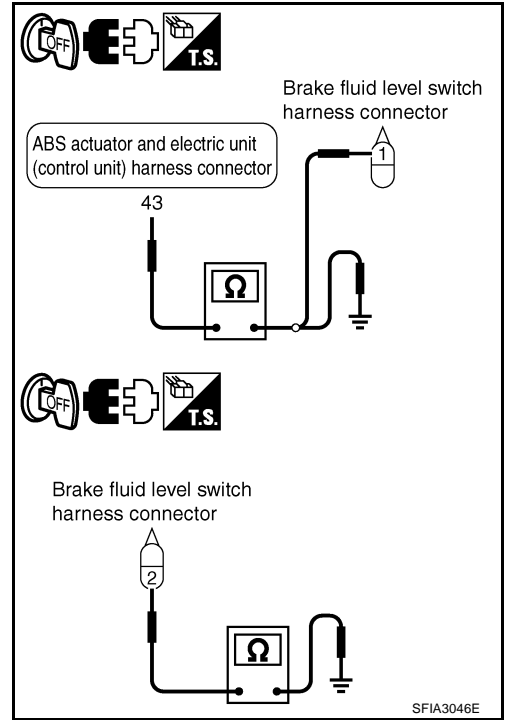
OK >> GO TO 4.

NG >> ● Brake fluid level switch is malfunctioning. Replace reservoir tank. Refer to [BR-15. "BRAKE MASTER CYLINDER"](#).

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

4. CHECK BRAKE FLUID LEVEL SWITCH HARNESS

1. Disconnect ABS actuator and electric unit (control unit) connector E30.
2. Check continuity between brake fluid level switch harness connector E23 and ABS actuator and electric unit (control unit) harness connector E30.



ABS actuator and electric unit (control unit)	Brake fluid level switch	Continuity
43	1	Yes
	Ground	No
Ground	2	Yes

OK or NG

- OK >> Connect connector securely and perform self-diagnosis.
- NG >> ● Repair or replace malfunctioning components.
 - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Inspection 13: RAS Control Unit Circuit (With RAS)

NFS000QX

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results

RAS CIRCUIT

Is above displayed on the self-diagnosis display?

- YES >> GO TO 2.
- NO >> INSPECTION END

2. CHECK RAS CONTROL UNIT CIRCUIT

1. Perform RAS control unit self-diagnosis. Repair or replace items indicated, then perform RAS control unit self-diagnosis again. Refer to [STC-31, "SELF-DIAGNOSIS PROCEDURE"](#).
2. Perform ABS actuator and electric unit (control unit) self-diagnosis.

OK or NG

OK >> INSPECTION END

NG >> ● Repair or replace malfunctioning components.

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Inspection 14: ICC Sensor Integrated Unit Circuit (With ICC)

NFS000QY

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
ACC CONT

Is above displayed on the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK ICC SENSOR INTEGRATED UNIT CIRCUIT

1. Perform ICC sensor integrated unit self-diagnosis. Repair or replace items indicated, then perform ICC sensor integrated unit self-diagnosis again. Refer to [ACS-27, "TROUBLE DIAGNOSIS - GENERAL DESCRIPTION"](#).
2. Perform ABS actuator and electric unit (control unit) self-diagnosis.

OK or NG

OK >> INSPECTION END

NG >> ● Repair or replace malfunctioning components.

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Inspection 15: AWD Control Unit Circuit (AWD Model)

NFS000QZ

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
4WD SYSTEM

Is above displayed on the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK AWD C/U CIRCUIT

1. Perform AWD control unit self-diagnosis. Repair or replace items indicated, then perform AWD control unit self-diagnosis again. Refer to [TF-14, "TROUBLE DIAGNOSIS"](#).
2. Perform ABS actuator and electric unit (control unit) self-diagnosis.

OK or NG

OK >> INSPECTION END

NG >> ● Repair or replace malfunctioning components.

- Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

Inspection 16: CAN Communication Circuit

NFS000R0

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

Self-diagnosis results
CAN COMM CIRCUIT
ST ANG SEN COM CIR
ACC COMM CIRCUIT (Note)

Note: Indicated only for vehicles with ICC.

Is above displayed on the self-diagnosis display?

YES >> Print out self-diagnosis results and go to Refer to [LAN-7, "Precautions When Using CONSULT-II"](#)

NO >> INSPECTION END

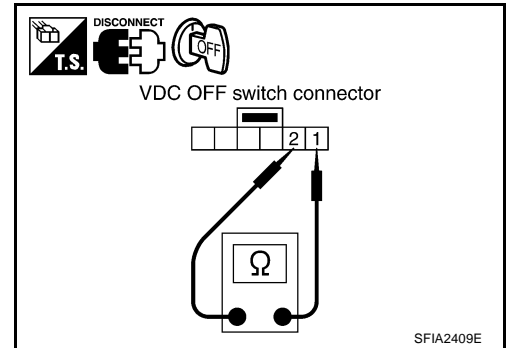
Inspection 17: VDC OFF Switch Circuit

NFS000R1

INSPECTION PROCEDURE

1. CHECK VDC OFF SWITCH

1. Turn ignition switch OFF and disconnect VDC OFF switch connector M24.
2. Check continuity between VDC OFF switch connector M24 terminal 1 and 2.



VDC OFF switch	Condition	Continuity
1,2	VDC OFF switch ON	Yes
	VDC OFF switch OFF	No

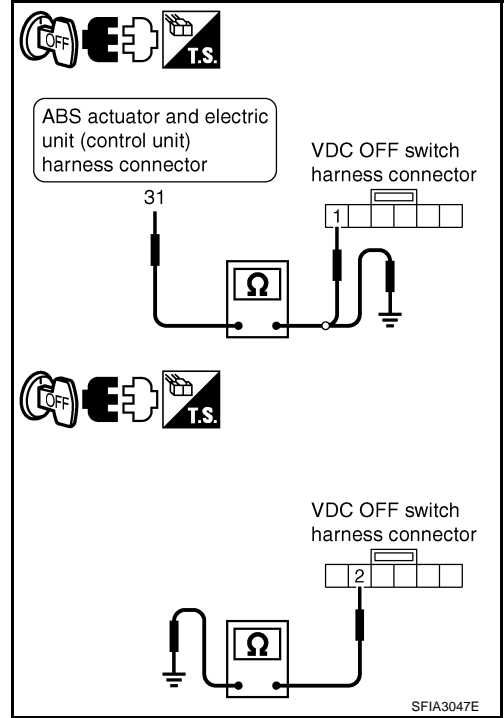
OK or NG

OK >> GO TO 2.

NG >> VDC OFF switch is malfunctioning. Replace VDC OFF switch.

2. CHECK VDC OFF SWITCH HARNESS

1. Disconnect ABS actuator and electric unit (control unit) connector E30.
2. Check continuity between VDC OFF switch connector M24 and ABS actuator and electric unit (control unit) connector E30.



ABS actuator and electric unit (control unit)	VDC OFF switch	Continuity
31	1	Yes
	Ground	No
Ground	2	Yes

OK or NG

- OK >> INSPECTION END
- NG >> Repair or replace malfunctioning components.

Inspection 18: Parking Brake Switch Circuit

NFS000R2

INSPECTION PROCEDURE

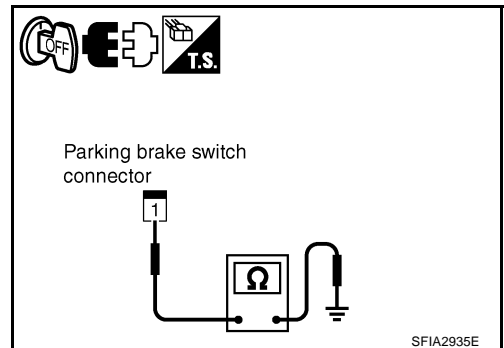
1. CHECK PARKING BRAKE SWITCH

1. Turn ignition switch OFF and disconnect parking brake switch connector E110.
2. Check continuity between parking brake switch connector E110 and ground.

Condition	Continuity
When the parking brake pedal is operated	Yes
When the parking brake pedal is not operated	No

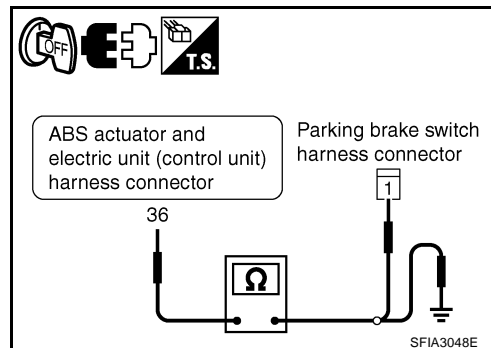
OK or NG

- OK >> GO TO 2.
- NG >> Parking brake switch is malfunctioning. Replace parking brake switch.



2. CHECK PARKING BRAKE SWITCH HARNESS

1. Disconnect ABS actuator and electric unit (control unit) connector E30.
2. Check continuity between parking brake switch connector E110 and ABS actuator and electric unit (control unit) connector E30.



ABS actuator and electric unit (control unit)	Parking brake switch	Continuity
36	1	Yes
	Ground	No

OK or NG

- OK >> INSPECTION END
- NG >> Repair or replace malfunctioning components.

Inspection 19: Warning Lamp and Indicator Lamp Circuit

NFS000R3

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Perform ABS actuator and electric unit (control unit) self-diagnosis.

OK or NG

- OK >> GO TO 2.
- NG >> Check items displayed by self-diagnosis. Refer to [BRC-24, "DISPLAY ITEM LIST"](#).

2. CHECK COMBINATION METER

Check the indication and operation of combination meter are normal. Refer to [DI-17, "Self-Diagnosis Mode of Combination Meter"](#).

OK or NG

- OK >> INSPECTION END
- NG >> Combination meter is malfunctioning. Repair or replace combination meter. Refer to [DI-5, "COMBINATION METERS"](#).

Symptom 1 Excessive ABS Function Operation Frequency

NFS000R4

1. CHECK START

Check front and rear brake force distribution using a brake tester. Refer to [BR-35, "SERVICE DATA AND SPECIFICATIONS \(SDS\)"](#).

OK or NG

- OK >> GO TO 2.
- NG >> Check brake system.

2. CHECK FRONT AND REAR AXLE

Make sure that there is no excessive play in the front and rear axles. Refer to front: [FAX-5, "WHEEL BEARING INSPECTION"](#) , Rear: [RAX-5, "WHEEL BEARING INSPECTION"](#) .

OK or NG

- OK >> GO TO 3.
 NG >> Repair or replace malfunctioning components.

3. CHECK WHEEL SENSOR AND SENSOR ROTOR

Check the following.

- Wheel sensor installation for damage.
- Sensor rotor installation for damage.
- Wheel sensor connector connection.
- Wheel sensor harness inspection.

OK or NG

- OK >> GO TO 4.
 NG >> ● Replace wheel sensor or sensor rotor.
 ● Repair harness.

4. CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp is turned off after the ignition switch is turned ON or when driving.

OK or NG

- OK >> Normal
 NG >> Perform self-diagnosis. Refer to [BRC-23, "Self-Diagnosis"](#) .

Symptom 2 Unexpected Pedal Reaction

NFS000R5

1. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to [BR-6, "Inspection and Adjustment"](#) .

Is the stroke too big?

- YES >> ● Bleed air from brake tube and hose. Refer to [BR-11, "Bleeding Brake System"](#) .
 ● Check brake pedal, brake booster, and master cylinder for mount play, looseness, brake system fluid leakage, etc. Refer to brake pedal: [BR-7, "COMPONENTS"](#) , brake booster and master cylinder: [BR-19, "COMPONENTS"](#) .
- NO >> GO TO 2.

2. CHECK FUNCTION

Disconnect ABS actuator and electric unit (control unit) connector to deactivate ABS. Check if braking force is normal in this condition. Connect connector after inspection.

OK or NG

- OK >> GO TO procedure 3 "CHECK WHEEL SENSOR AND SENSOR ROTOR" of symptom 1. Refer to [BRC-53, "Symptom 1 Excessive ABS Function Operation Frequency"](#) .
 NG >> Check brake system.

Symptom 3 The Braking Distance Is Long

NFS000R6

A

CAUTION:

The stopping distance on slippery road surfaces might be longer with the ABS operating than when the ABS is not operating.

1. CHECK FUNCTION

B

Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector to deactivate ABS. In this condition, check stopping distance. After inspection, connect connector.

C

OK or NG

- OK >> GO TO procedure 3 "CHECK WHEEL SENSOR AND SENSOR ROTOR" of symptom 1. Refer to [BRC-53, "Symptom 1 Excessive ABS Function Operation Frequency"](#) .
- NG >> Check brake system.

D

Symptom 4 ABS Function Does Not Operate

NFS000R7

E

CAUTION:

ABS does not operate when speed is 10 km/h (6 MPH) or lower.

1. CHECK ABS WARNING LAMP DISPLAY

BRC

Make sure that the ABS warning lamp turns OFF after ignition switch is turned on or when driving.

OK or NG

- OK >> GO TO procedure 3 "CHECK WHEEL SENSOR AND SENSOR ROTOR" of symptom 1. Refer to [BRC-53, "Symptom 1 Excessive ABS Function Operation Frequency"](#) .
- NG >> Perform self-diagnosis. Refer to [BRC-23, "Self-Diagnosis"](#) .

G

H

Symptom 5 Pedal Vibration or ABS Operation Sound Occurs

NFS000R8

CAUTION:

Under the following conditions, ABS is activated and vibration is felt when brake pedal is lightly depressed (just place a foot on it). However, this is normal.

- When shifting gears
- When driving on slippery road
- During cornering at high speed
- When passing over bumps or grooves [at approximately 50 mm (1.97 in) or more]
- When pulling away just after starting engine [at approximately 10 km/h (6 MPH) or higher]

J

K

1. SYMPTOM CHECK 1

Check if there is pedal vibration or operation sound when the engine is started.

Do symptoms occur?

- YES >> GO TO 2.
- NO >> Perform self -diagnosis. Refer to [BRC-23, "Self-Diagnosis"](#) .

L

M

2. SYMPTOM CHECK 2

Check symptoms when electrical component (headlamps, etc.) switches are operated.

Do symptoms occur?

- YES >> Check if there is a radio, antenna, antenna lead wire, or wiring close to the control unit. If there is, move it farther away.
- NO >> GO TO procedure 3 "CHECK WHEEL SENSOR AND SENSOR ROTOR" of symptom 1. Refer to [BRC-53, "Symptom 1 Excessive ABS Function Operation Frequency"](#) .

Symptom 6 Vehicle Jerks During VDC/TCS/ABS Control

NFS000R9

1. SYMPTOM CHECK

Check if the vehicle jerks during VDC/TCS/ABS control.

OK or NG

- OK >> Normal.
NG >> GO TO 2.

2. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnostic of ABS actuator and electric unit (control unit).

Are self-diagnosis results indicated?

- YES >> Check corresponding items, make repairs, and perform ABS actuator and electric unit (control unit) self-diagnosis.
NO >> GO TO 3.

3. CHECK CONNECTOR

- Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector and check terminal for deformation, disconnection, looseness, etc.
- Securely connect connectors and perform ABS actuator and electric unit (control unit) self-diagnosis.

Are self-diagnosis results indicated?

- YES >> If poor contact, damage, open or short circuit of connector terminal is found, repair or replace.
NO >> GO TO 4.

4. CHECK ECM AND A/T SELF-DIAGNOSIS RESULTS

Perform ECM and A/T self-diagnosis.

Are self-diagnosis results indicated?

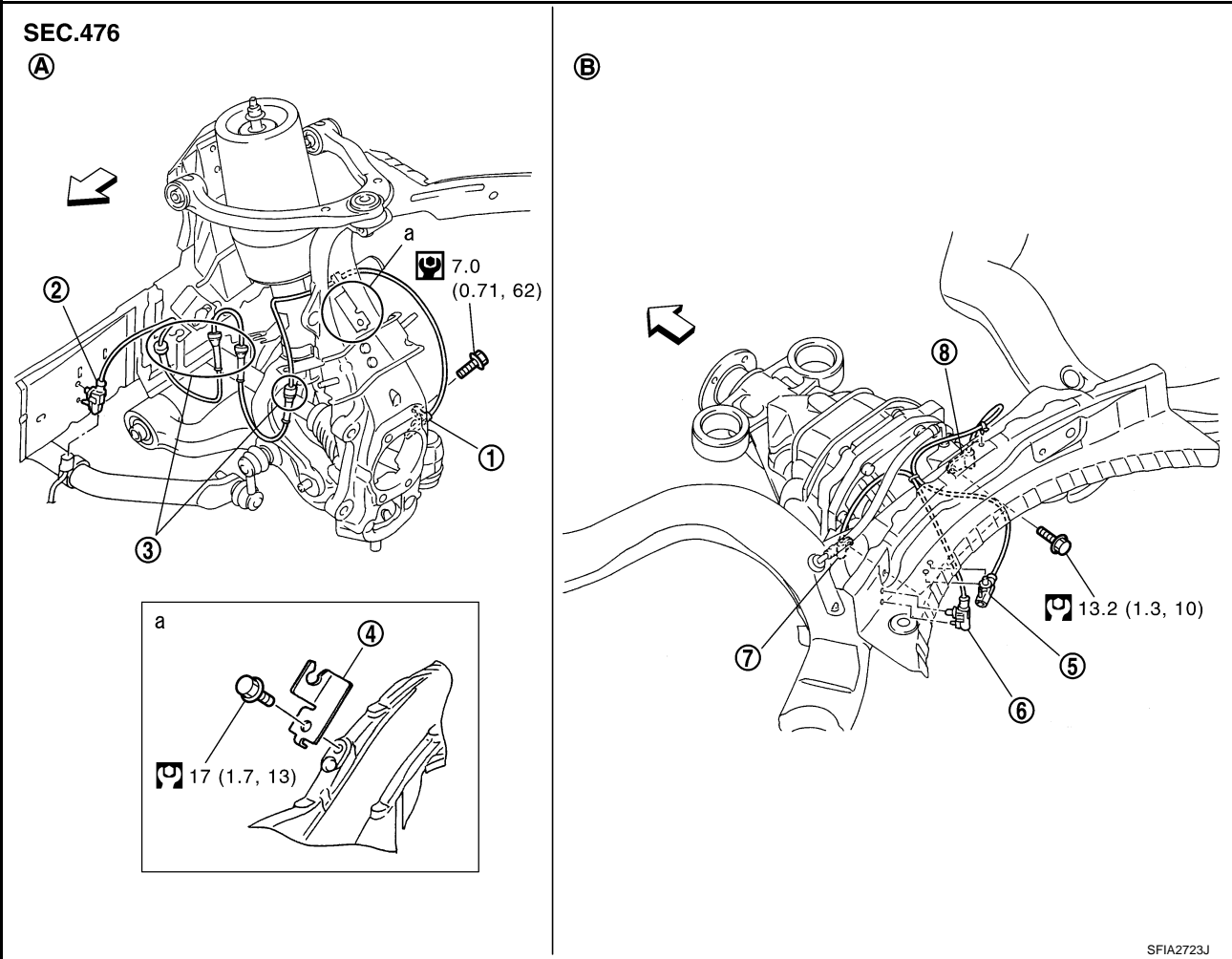
- YES >> Check the corresponding items.
- ECM: Refer to [EC-100, "TROUBLE DIAGNOSIS"](#) (VQ35DE), [EC-811, "TROUBLE DIAGNOSIS"](#) (VK45DE).
 - A/T: Refer to [AT-44, "TROUBLE DIAGNOSIS"](#).
- NO >> Replace ABS actuator and electric unit (control unit).

WHEEL SENSOR

PFP:47910

Removal and Installation COMPONENT

NFS000RA



- | | | |
|--------------------------|------------------------------------|-----------------------------------|
| 1. Front LH wheel sensor | 2. Front LH wheel sensor connector | 3. Clamp |
| 4. Bracket | 5. Rear RH wheel sensor connector | 6. Rear LH wheel sensor connector |
| 7. Rear LH wheel sensor | 8. Rear RH wheel sensor | |
| A. Front side | B. Rear side | ← : Front |

Refer to GI section [GI-11, "Components"](#) for symbol marks in the figure.

NOTE:

The above figure (front side) shows left side. Right side is the mirror image.

REMOVAL

Pay attention to the following when removing sensor.

CAUTION:

- Do not twist sensor harness as much as possible, when removing it. Pull sensors out without pulling on sensor harness.
- Take care to avoid damaging sensor edges or rotor teeth. Remove wheel sensor first before removing front or rear wheel hub. This is to avoid damage to sensor wiring and loss of sensor function.

INSTALLATION

Pay attention to the following when installing wheel sensor. Tighten installation bolts to the specified torques. Refer to [BRC-57, "COMPONENT"](#).

WHEEL SENSOR

[VDC/TCS/ABS]

-
- When installing, make sure there is no foreign material such as iron chips on and in the mounting hole of the wheel sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.
 - When installing wheel sensor, be sure to press rubber grommets in until they lock at locations shown above in the figure. When installed, harness must not be twisted.

SENSOR ROTOR

PFP:47970

Removal and Installation

NFS000RB

REMOVAL

CAUTION:
Do not reuse sensor rotor.

Front

- Sensor rotor cannot be disassembled. Remove the sensor rotor together with hub bearing assembly. Refer to [FAX-5, "REMOVAL"](#) .

Rear

- Follow the procedure below to remove rear sensor rotor.
 - Remove side flange. Refer to [RFD-14, "SIDE OIL SEAL"](#) .
 - Using a bearing replacer (suitable tool) and puller (suitable tool), remove sensor rotor from side flange.

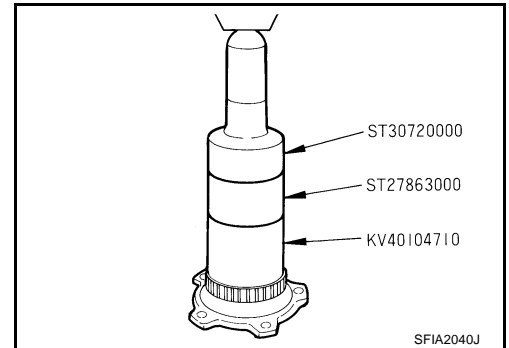
INSTALLATION

Front

- Sensor rotor cannot be disassembled. Remove the sensor rotor together with hub bearing assembly. Refer to [FAX-7, "INSTALLATION"](#) .

Rear

- Follow the procedure below to install rear sensor rotor.
 - Using a drift (SST), press rear sensor rotor onto side flange.
 - Install side flange. Refer to [RFD-14, "SIDE OIL SEAL"](#) .



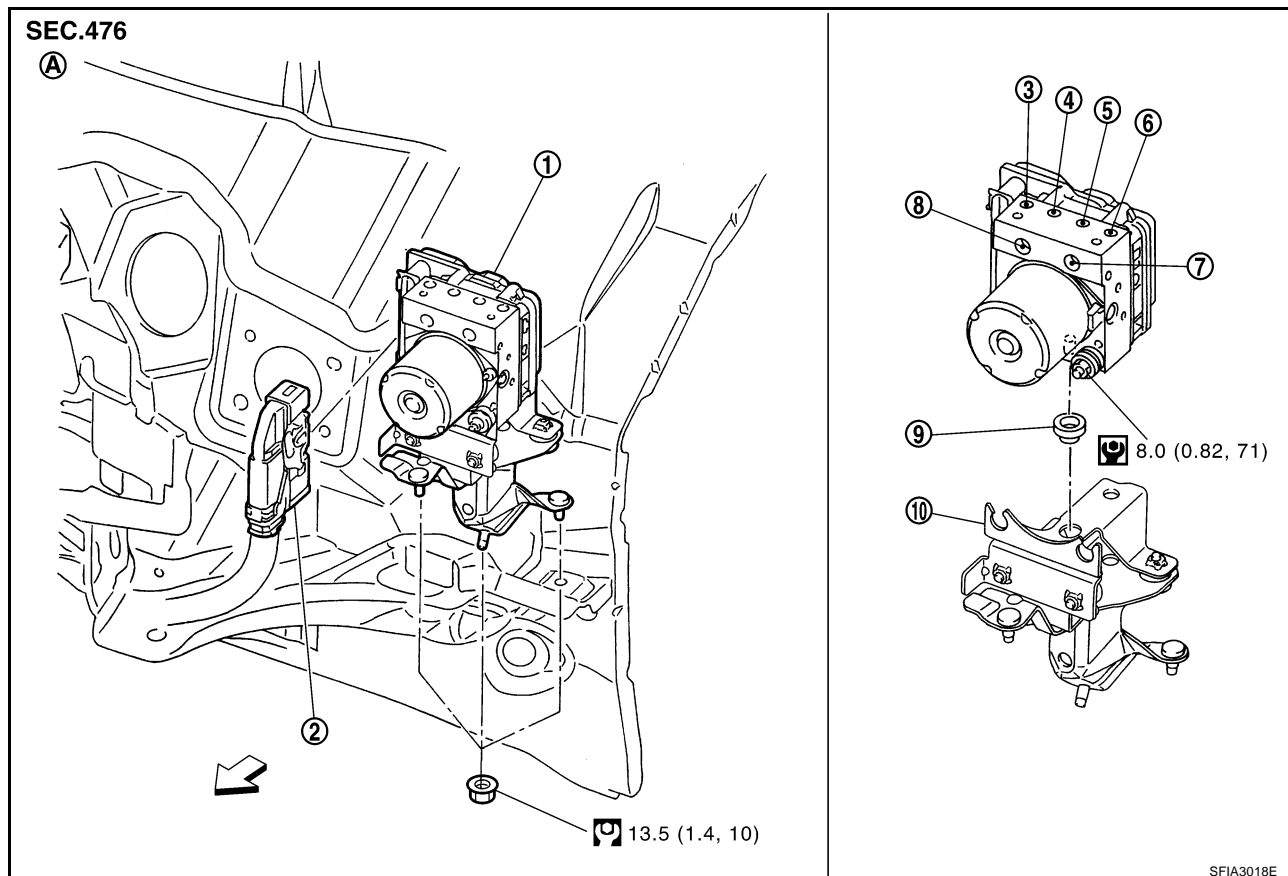
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ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

PFP:47660

Removal and Installation COMPONENT

NFS000RC



- | | | |
|--|--|------------------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Connector | 3. To front RH brake caliper |
| 4. To rear LH brake caliper | 5. To rear RH brake caliper | 6. To front LH brake caliper |
| 7. From master cylinder primary side | 8. From master cylinder secondary side | 9. Bushing |
| 10. Bracket | A. Left side of dash panel | |

Refer to GI section [GI-11, "Components"](#) for symbol marks in the figure.

CAUTION:

Be careful of the following.

- Before servicing, disconnect the battery cable from negative terminal.
- To remove brake tube, use a flare nut wrench to prevent flare nuts and brake tube from being damaged. To install, use flare nut torque wrench.
- Do not apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.
- Do not remove and install actuator by holding harness.
- After work is completed, bleed air from brake tube. Refer to [BR-11, "Bleeding Brake System"](#).
- After installing harness connector in the ABS actuator and electric unit (control unit), make sure connector is securely locked.

REMOVAL

1. Remove cowl top cover. Refer to [EI-18, "REMOVAL"](#).
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Loosen brake tube flare nuts, then remove brake tubes from ABS actuator and electric unit (control unit).
4. Remove tire.
5. Remove fender protector (rear): (front LH side). Refer to [EI-20, "REMOVAL"](#).
6. Remove ABS actuator and electric unit (control unit) bracket mounting nut.

ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

[VDC/TCS/ABS]

7. Remove ABS actuator and electric unit (control unit) from vehicle.

INSTALLATION

Installation is the reverse order of removal.

CAUTION:

When replacing ABS actuator and electric unit (control unit), make sure to adjust neutral position of steering angle sensor. Refer to [BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"](#)

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G-SENSOR

PFP:47930

Removal and Installation

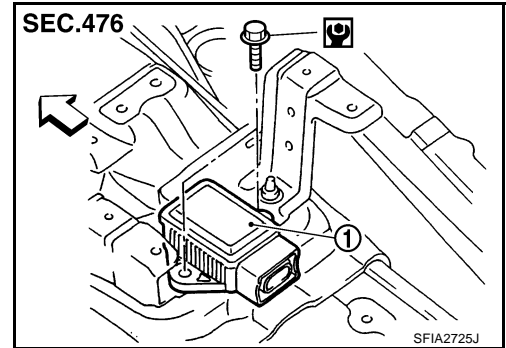
NFS000RD

CAUTION:

- Do not drop or strike yaw rate/side G sensor, because it has little endurance to impact.
- Do not use power tool etc., because yaw rate/side G sensor is sensitive for the impact.

REMOVAL

1. Remove center console. Refer to [JP-10. "Component Parts Drawing"](#).
2. Disconnect yaw rate/side G sensor harness connector.
3. Remove mounting bolts. Remove yaw rate/side G sensor. (Shown in the figure 1).



INSTALLATION

Installation is the reverse order of removal.

Yaw rate/side G sensor mounting bolt : 6.5 N-m (0.66 kg-m, 58 in-lb)

STEERING ANGLE SENSOR

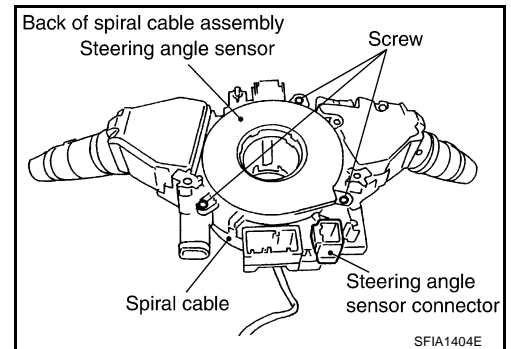
PF2:25554

Removal and Installation

NFS000RE

REMOVAL

1. Remove spiral cable assembly. Refer to [SRS-40, "SPIRAL CABLE"](#) .
2. Remove steering angle sensor from spiral cable assembly.



INSTALLATION

Installation is the reverse order of removal.

CAUTION:

After work, make sure to adjust neutral position of steering angle sensor. Refer to [BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"](#) .

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