

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”

EFS005U7

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:

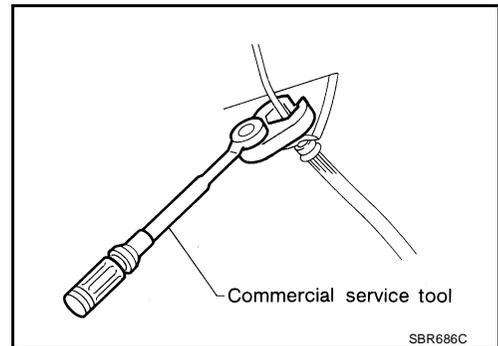
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation 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 Brake System

EFS0059K

CAUTION:

- Refer to [MA-11. "RECOMMENDED FLUIDS AND LUBRICANTS"](#) for recommended brake fluid.
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.
- To clean or wash all parts of master cylinder and disc brake caliper, use clean brake fluid.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use flare nut wrench when removing and installing brake tube.
- If a brake fluid leak is found, the part must be disassembled without fail. Then it has to be replaced with a new one if a defect exists.
- Turn the ignition switch OFF and remove the connector of the ABS actuator and electric unit (control unit) or the battery terminal before performing the work.
- Always torque brake lines when installing.
- Burnish the brake contact surfaces after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.



SBR686C

Refer to [BR-27. "BRAKE BURNISHING PROCEDURE"](#) (front disc brake) or [BR-32. "BRAKE BURNISHING PROCEDURE"](#) (rear disc brake).

WARNING:

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

Precautions When Using CONSULT-II

EFS0059L

When connecting CONSULT-II to data link connector, connect them through CONSULT-II CONVERTER.

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 carries out CAN communication.

CHECK POINTS FOR USING CONSULT-II

1. Has CONSULT-II been used without connecting CONSULT-II CONVERTER on this vehicle?
 - If YES, GO TO 2.

- If NO, GO TO 5.
- 2. Is there any indication other than indications relating to CAN communication system in the self-diagnosis results?
 - If YES, GO TO 3.
 - If NO, GO TO 4.
- 3. Based on self-diagnosis results unrelated to CAN communication, carry out the inspection.
- 4. Malfunctions may be detected in self-diagnosis depending on control units carrying out CAN communication. Therefore, erase the self-diagnosis results.
- 5. Diagnose CAN communication system. Refer to [LAN-22, "CAN COMMUNICATION"](#).

Precautions for Brake Control

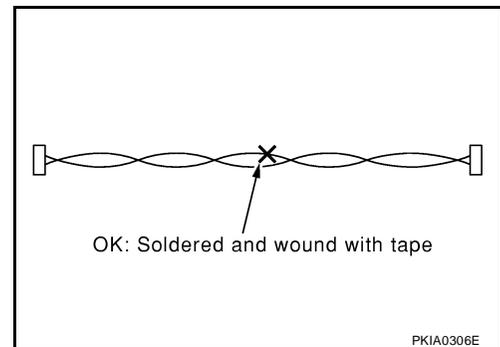
EFS0059M

- During ABS operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting vehicle, the brake pedal may vibrate or a motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.
- 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 diagnosis. Besides electrical system inspection, check brake booster operation, brake fluid level, and fluid leaks.
- If incorrect tire sizes or types are installed on the vehicle or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- If there is a radio, antenna or related wiring near control module, ABS function may have a malfunction or error.
- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits or improper wiring.

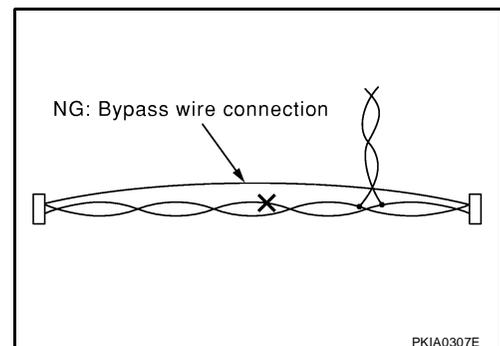
Precautions for CAN System

EFS0059N

- Do not apply voltage of 7.0V or higher to terminal to be measured.
- Maximum open terminal voltage of tester in use must be less than 7.0V.
- Before checking harnesses, turn ignition switch OFF and disconnect battery negative cable.
- Area to be repaired must be soldered and wrapped with tape. Make sure that fraying of twisted wire is within 110 mm (4.33 in).



- Do not make a bypass connection to repaired area. (If the circuit is bypassed, characteristics of twisted wire will be lost.)



Wiring Diagrams and Trouble Diagnosis

When you read wiring diagrams, refer to the following:

- [GI-17, "How to Read Wiring Diagrams"](#).
- [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).

When you perform trouble diagnosis, refer to the following:

- [GI-13, "HOW TO FOLLOW TEST GROUPS IN TROUBLE DIAGNOSES"](#).
- [GI-29, "How to Perform Efficient Diagnosis for an Electrical Incident"](#).

PREPARATION

[ABS]

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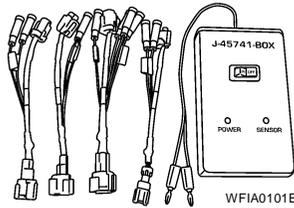
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PREPARATION

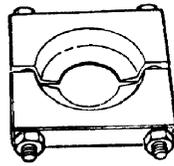
Special Service Tool

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
— (J-45741) ABS active wheel sensor tester	Checking operation of ABS active wheel sensors
205-D002 (—) Bearing splitter	Removing axle shaft bearing



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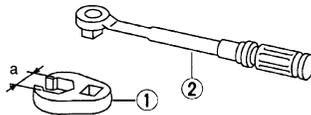


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Commercial Service Tools

EFS0051U

Tool name	Description
1. Flare nut crowfoot 2. Torque wrench	Removing and installing brake piping a: 10mm (0.39 in)/12mm (0.47 in)



S-NT360

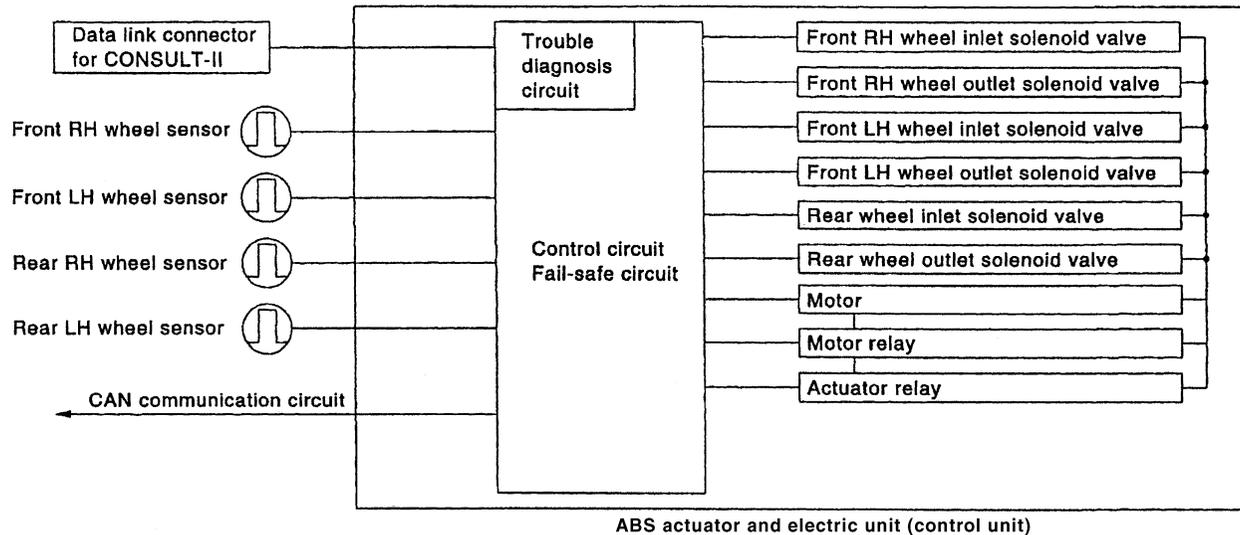
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SYSTEM DESCRIPTION

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System Components

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ABS Function

EFS0051W

- The Anti-Lock Brake System detects wheel revolution while braking and improves handling stability during sudden braking by electrically preventing wheel lockup. Maneuverability is also improved for avoiding obstacles.
- If the electrical system malfunctions, the Fail-Safe function is activated, the ABS becomes inoperative and the ABS warning lamp turns on.
- The electrical system can be diagnosed using CONSULT-II.
- During ABS operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting the vehicle, the brake pedal may vibrate or a motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.

EBD Function

EFS0051X

- Electronic Brake Distribution is a function that detects subtle slippages between the front and rear wheels during braking, and it improves handling stability by electronically controlling the brake fluid pressure which results in reduced rear wheel slippage.
- If the electrical system malfunctions, the Fail-Safe function is activated, the EBD and ABS become inoperative, and the ABS warning lamp and brake warning lamp are turned on.
- The electrical system can be diagnosed using CONSULT-II.
- During EBD operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting the vehicle, the brake pedal may vibrate or a motor operating noise may be heard from engine compartment. This is a normal status of operation check.

Fail-Safe Function

EFS0051Y

CAUTION:

If the Fail-Safe function is activated, perform the Self Diagnosis for ABS system.

ABS/EBD SYSTEM

In case of an electrical malfunction with the ABS, the ABS warning lamp will turn on. In case of an electrical malfunction with the EBD system, the brake warning lamp and the ABS warning lamp will turn on. The system will revert to one of the following conditions of the Fail-Safe function.

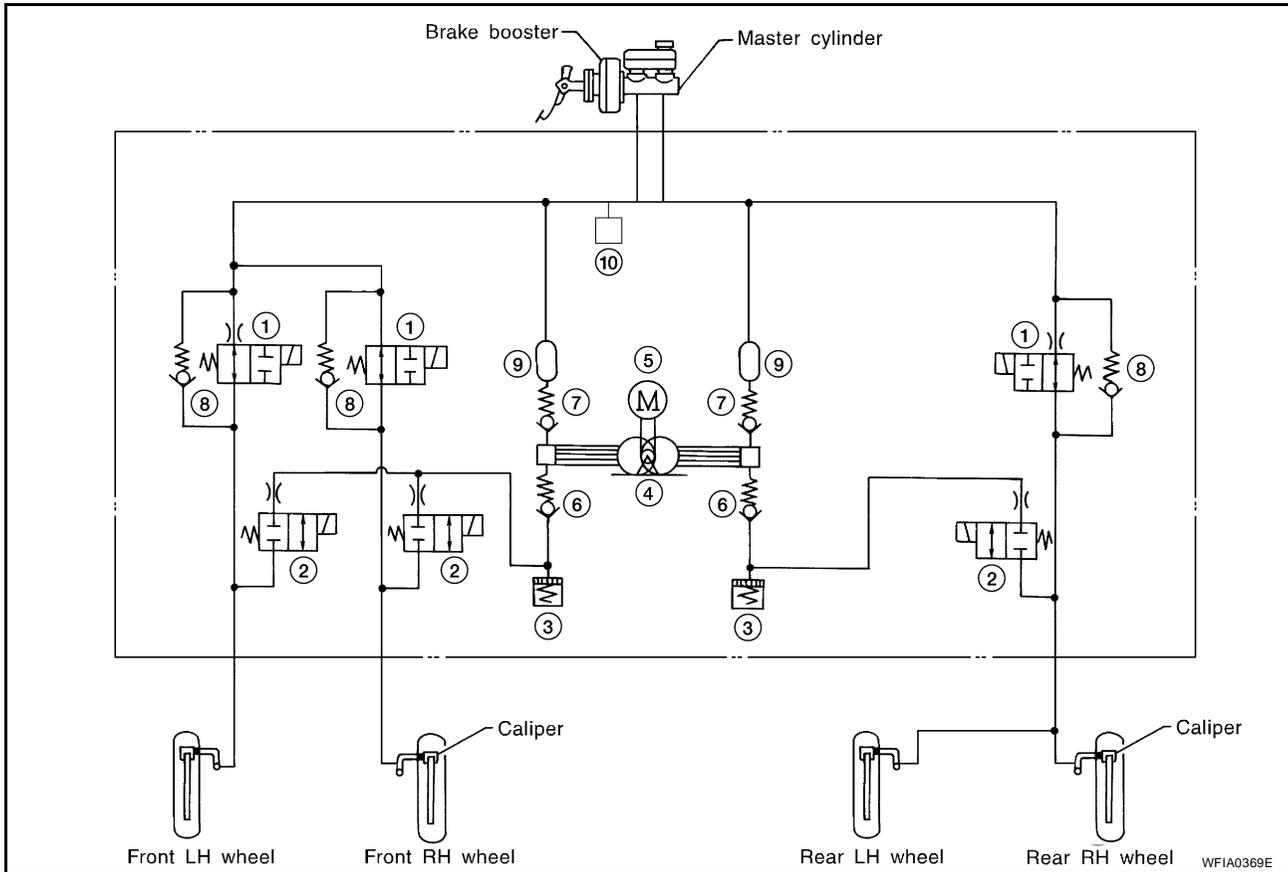
SYSTEM DESCRIPTION

[ABS]

1. For ABS malfunction, only the EBD is operative and the condition of the vehicle is the same condition of vehicles without ABS system.
2. For EBD malfunction, the EBD and ABS become inoperative, and the condition of the vehicle is the same as the condition of vehicles without ABS or EBD system.

Hydraulic Circuit Diagram

EFS0051Z



- | | | |
|-------------------------|--------------------------|----------------|
| 1. Inlet solenoid valve | 2. Outlet solenoid valve | 3. Reservoir |
| 4. Pump | 5. Motor | 6. Inlet valve |
| 7. Outlet valve | 8. Bypass check valve | 9. Damper |
| 10. Pressure switch | | |

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CAN COMMUNICATION

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System Description

EF500520

Refer to [LAN-22, "CAN COMMUNICATION"](#) .

TROUBLE DIAGNOSIS

How to Perform Trouble Diagnoses for Quick and Accurate Repair

INTRODUCTION

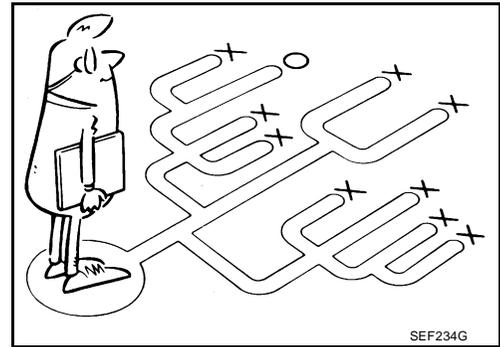
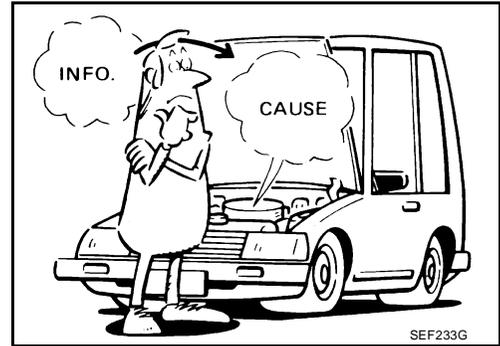
The ABS system has an electronic control unit to control major functions. The control unit accepts input signals from sensors and controls actuator operation. It is also important to check for air leaks in the booster or lines, lack of brake fluid, or other malfunctions in the brake system.

It is much more difficult to diagnose a malfunction that occurs intermittently rather than continuously. Most intermittent conditions are caused by poor electrical connections or damaged wiring. In this case, careful checking of suspicious circuits may help prevent the replacement of good parts.

A visual check only may not find the cause of the malfunction, so a road test should be performed.

Before undertaking actual checks, take just a few minutes to talk with a customer who approaches with an ABS complaint. The customer is a very good source of information, especially for intermittent conditions. Through the talks with the customer, find out what symptoms are present and under what conditions they occur.

Start your diagnosis by looking for "conventional" malfunctions first. This is one of the best ways to troubleshoot brake malfunctions on an ABS equipped vehicle. Also check related Service Bulletins for information.



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TROUBLE DIAGNOSIS

[ABS]

CLARIFY CONCERN

- A customer's description of a vehicle concern may vary depending on the individual. It is important to clarify the customer's concern.
- Ask the customer about what symptoms are present under what conditions. Use this information to reproduce the symptom while driving.
- It is also important to use the diagnosis sheet to understand what type of symptoms the customer is experiencing.

KEY POINTS

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

SBR339B

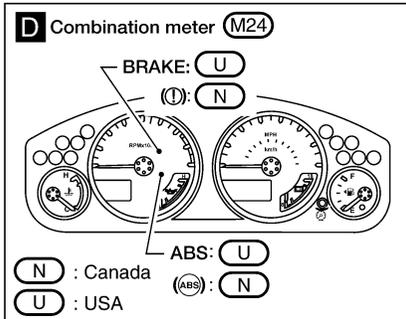
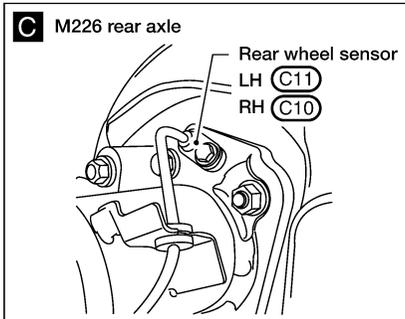
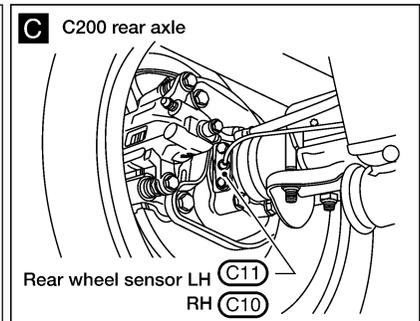
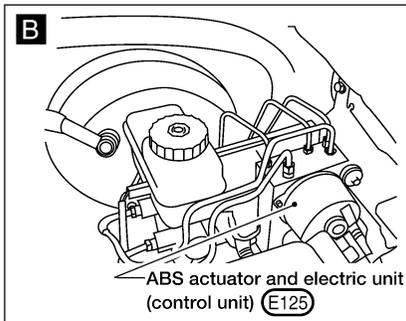
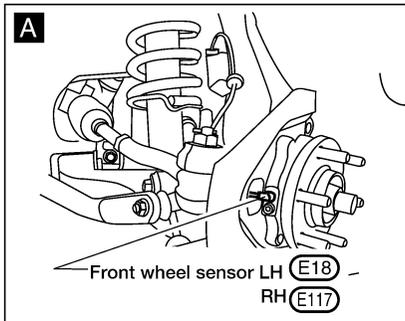
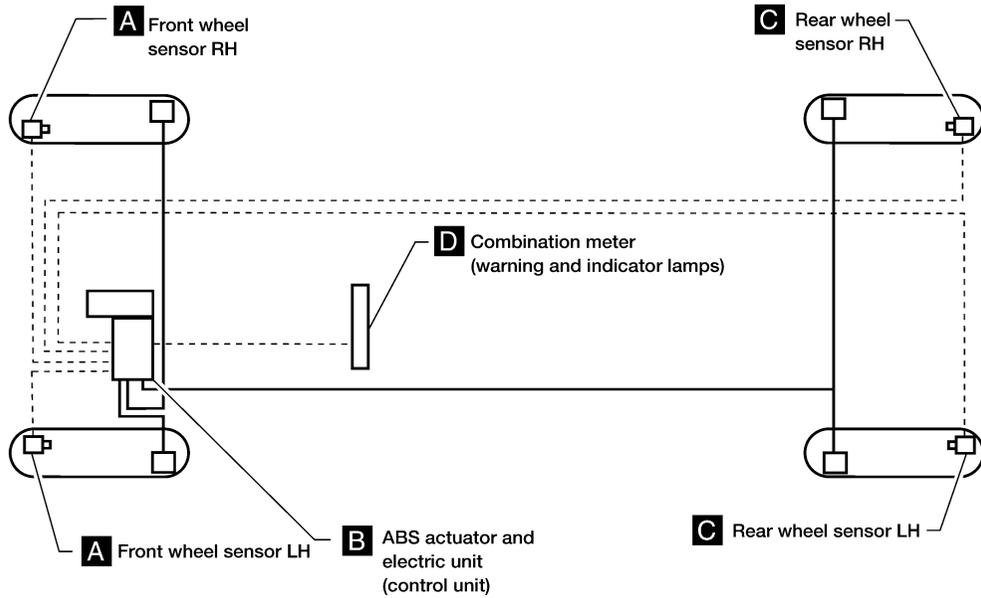
EXAMPLE OF DIAGNOSIS SHEET

Customer name	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"/> ABS warning lamp activates	<input type="checkbox"/> Pedal operation
	<input type="checkbox"/> Noise and vibration (from axle)		<input type="checkbox"/> Large stroke pedal operation
	<input type="checkbox"/> ABS does not work (wheels lock when braking)	<input type="checkbox"/> ABS does not work (wheels slip when braking)	<input type="checkbox"/> Firm pedal
			<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		

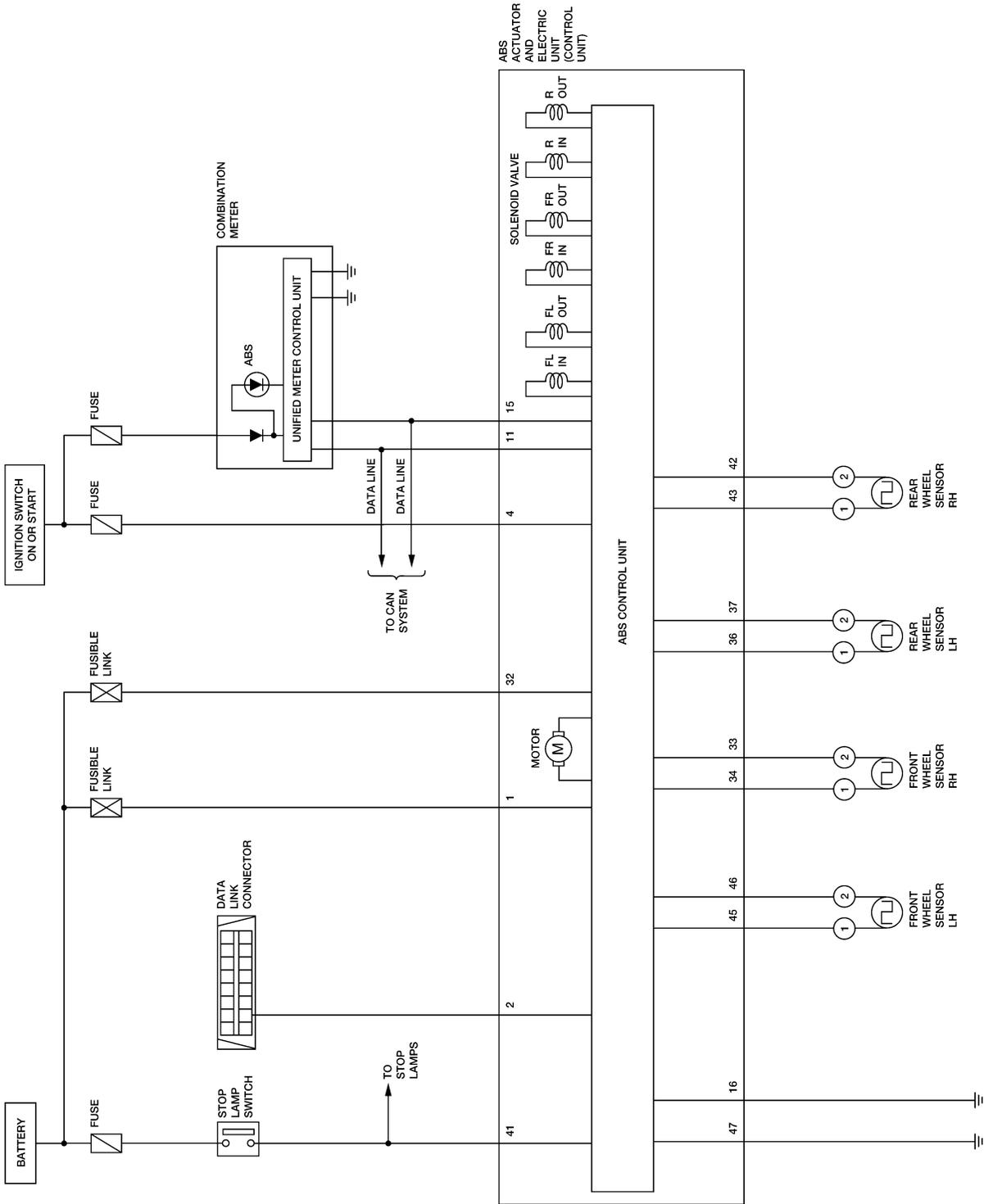
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Component Parts and Harness Connector Location



Schematic



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TROUBLE DIAGNOSIS

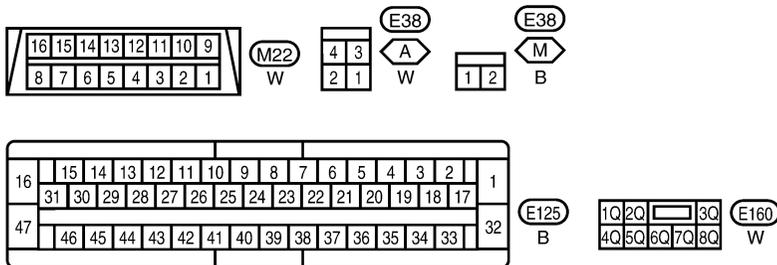
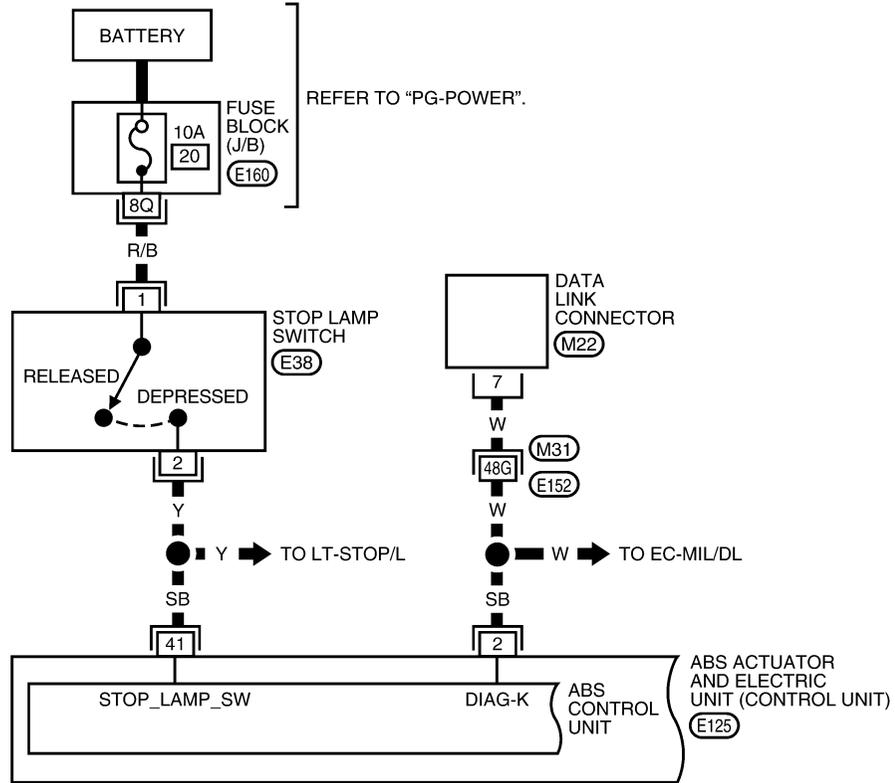
[ABS]

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Wiring Diagram — ABS —

BRC-ABS-01

⬡A : WITH A/T
⬡M : WITH M/T



REFER TO THE FOLLOWING.
⬡M31 - SUPER MULTIPLE JUNCTION (SMJ)

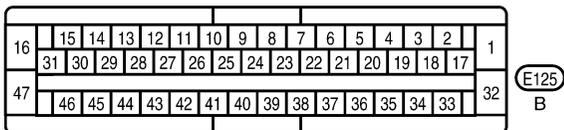
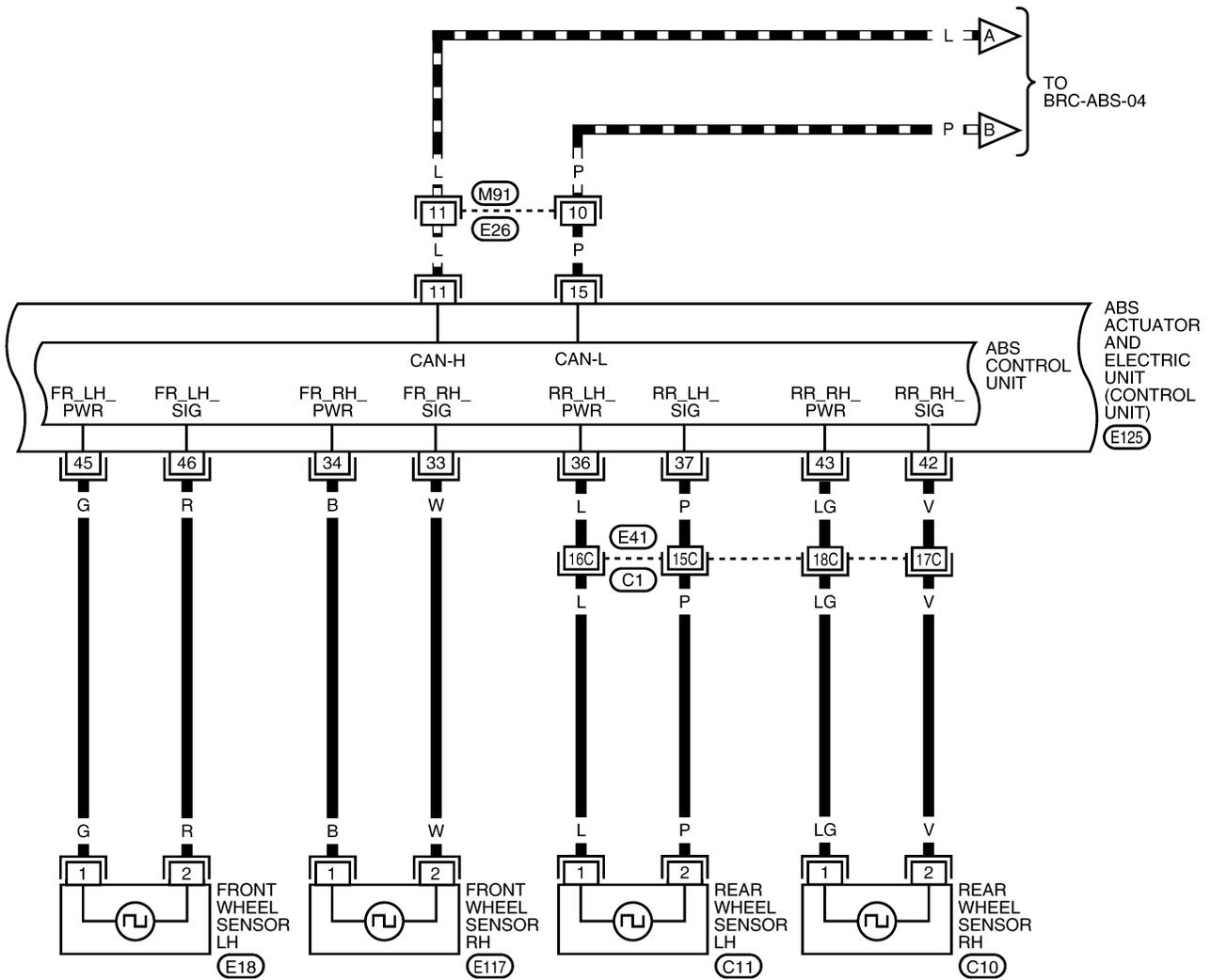
WFWA0263E

TROUBLE DIAGNOSIS

[ABS]

BRC-ABS-02

— : DATA LINE



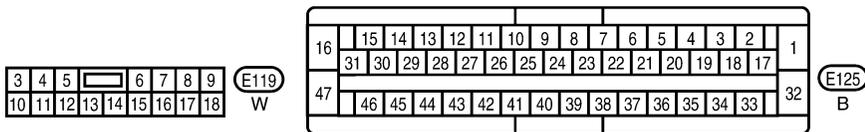
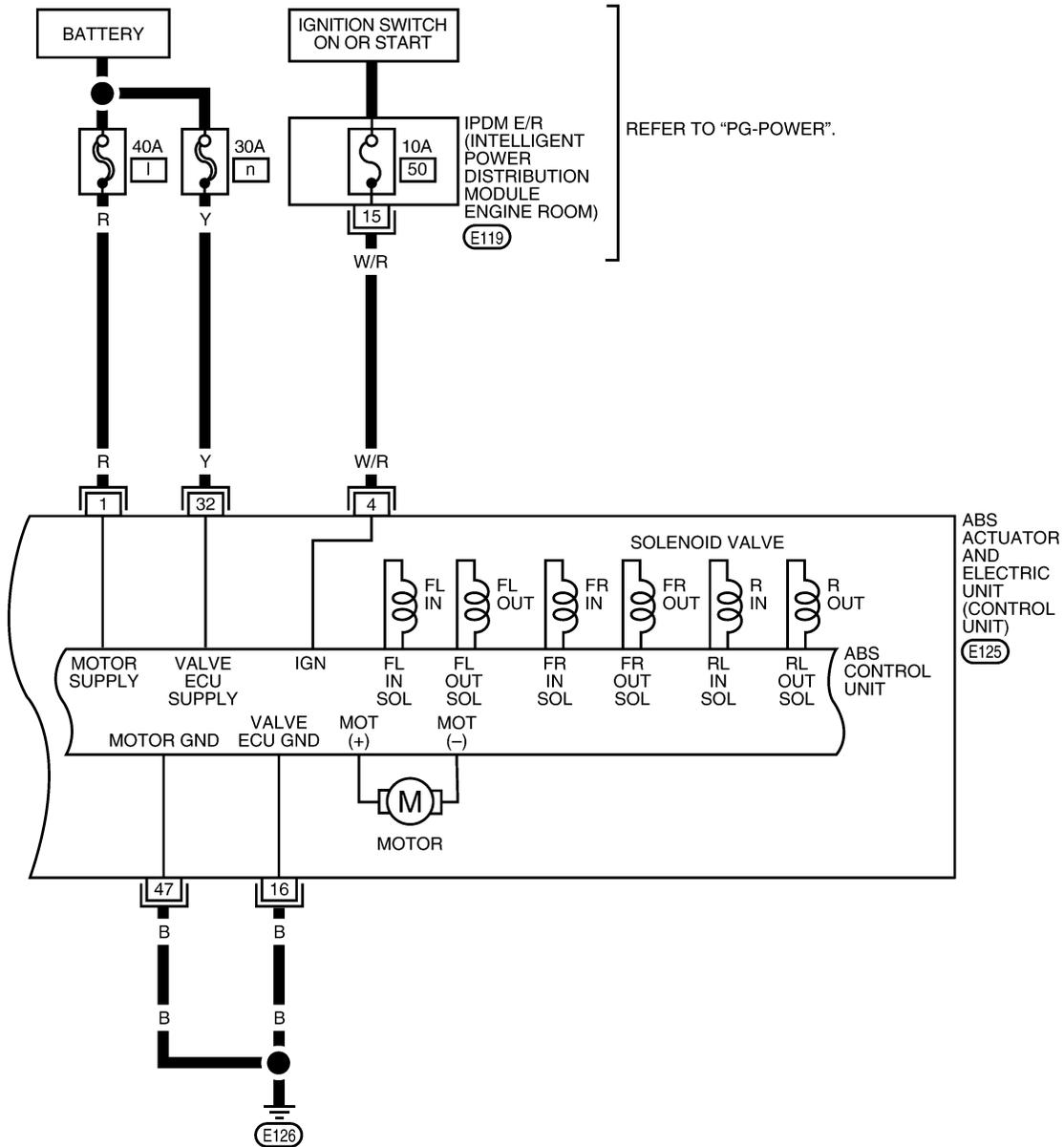
REFER TO THE FOLLOWING.
(C1) - SUPER MULTIPLE JUNCTION (SMJ)

WFWA0166E

TROUBLE DIAGNOSIS

[ABS]

BRC-ABS-03



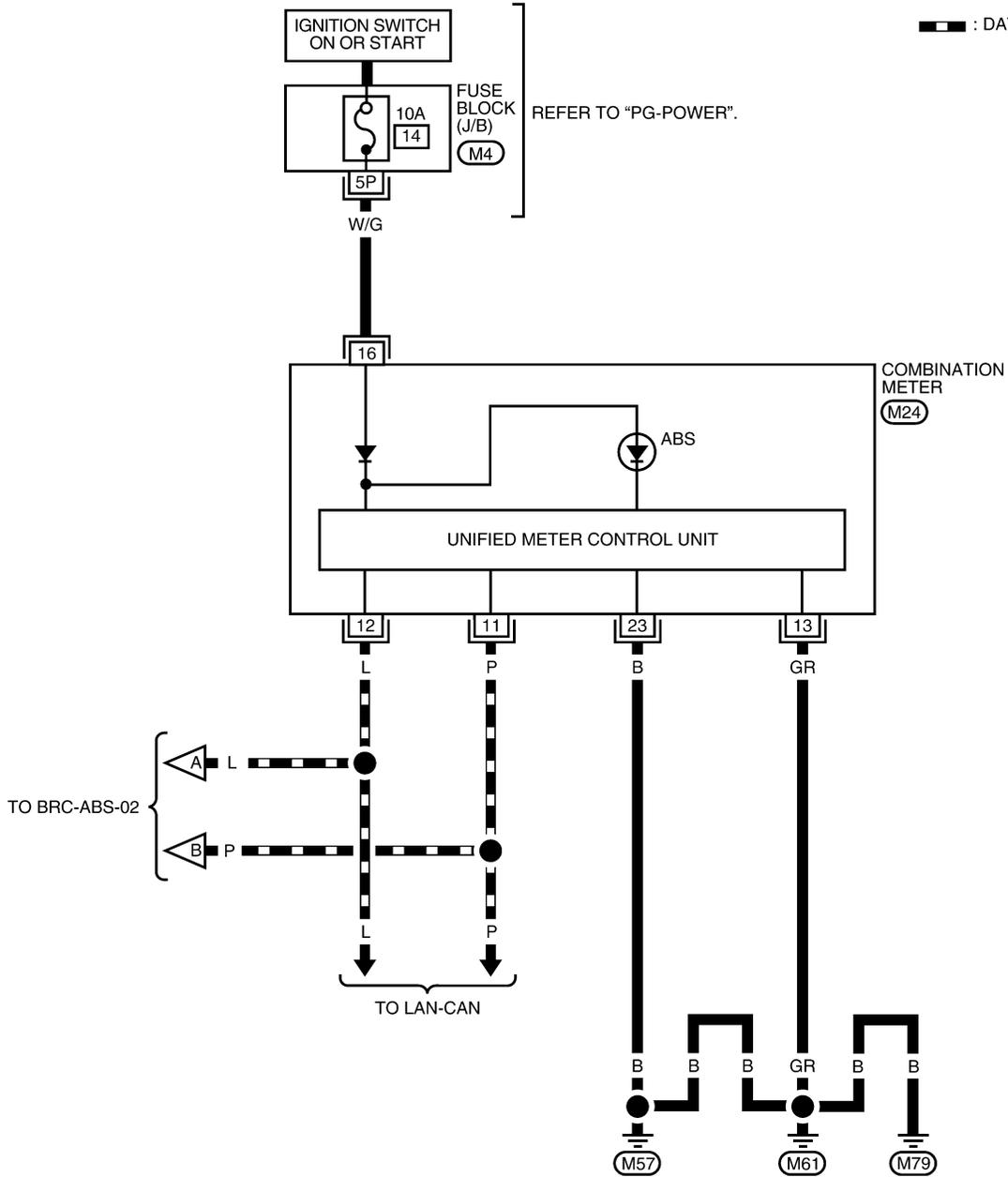
WFWA0167E

TROUBLE DIAGNOSIS

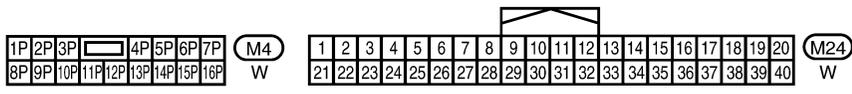
[ABS]

BRC-ABS-04

▬ : DATA LINE



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WFWA0168E

Basic Inspection**BRAKE FLUID LEVEL, FLUID LEAK, AND BRAKE PAD INSPECTION**

1. Check fluid level in the brake fluid reservoir. If fluid level is low, add fluid.
2. Check the brake piping and around the ABS actuator and electric unit (control unit) for leaks. If there is leaking or seeping fluid, check the following items.
 - If ABS actuator and electric unit (control unit) connection is loose, tighten the piping to the specified torque and recheck for leaks.
 - If there is damage to the connection flare nut or ABS actuator and electric unit (control unit) threads, replace the damaged part and recheck for leaks.
 - When there is fluid leaking or seeping from a fluid connection, use a clean cloth to wipe off the fluid and recheck for leaks. If fluid is still seeping out, replace the damaged part. If the fluid is leaking at the ABS actuator and electric unit (control unit), replace the ABS actuator and electric unit (control unit) assembly.

CAUTION:

The ABS actuator and electric unit (control unit) cannot be disassembled and must be replaced as an assembly.

3. Check the brake pads for excessive wear.

POWER SYSTEM TERMINAL LOOSENESS AND BATTERY INSPECTION

Make sure the battery positive cable, negative cable and ground connection are not loose. In addition, make sure the battery is sufficiently charged.

ABS WARNING LAMP INSPECTION

1. Make sure ABS warning lamp turns on for approximately 2 seconds when the ignition switch is turned ON. If it does not, check CAN communications. If there are no errors with the CAN communication system, check the combination meter. Refer to [DI-5, "COMBINATION METERS"](#) .
2. Make sure the lamp turns off approximately 2 seconds after the ignition switch is turned ON. If the lamp does not turn off, conduct self-diagnosis.
3. Make sure ABS warning lamp turns off approximately 2 seconds after the engine is started. If ABS warning lamp has not turned off 10 seconds after the engine has been started, conduct self-diagnosis of the ABS actuator and electric unit (control unit).
4. After conducting the self-diagnosis, be sure to erase the error memory. Refer to [BRC-23, "CONSULT-II Function \(ABS\)"](#) .

Warning Lamp and Indicator Timing

EFS00526

Condition	ABS warning lamp	Remarks
When the ignition switch is OFF	—	—
After the ignition switch is turned ON for approx. 1 second	×	—
After the ignition switch is turned ON for approx. 2 seconds	—	Lamp goes off approx. 2 seconds after the engine is started.
ABS malfunction	×	—
	×	When the ABS actuator and electric unit (control unit) is malfunctioning (power supply or ground malfunction).

X: ON
—: OFF

Control Unit Input/Output Signal Standard REFERENCE VALUE FROM CONSULT-II

EFS00527

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.

Monitor item	Display content	Data monitor		Note: Error inspection checklist
		Condition	Reference value in normal operation	
FR RH SENSOR FR LH SENSOR RR RH SENSOR RR LH SENSOR	Wheel speed	Vehicle stopped	0 [km/h (MPH)]	BRC-29, "Wheel Sensor System"
		Vehicle running (Note 1)	Almost in accordance with speedometer display (within ±10%)	
BATTERY VOLT	Battery voltage supplied to ABS actuator and electric unit (control unit)	Ignition switch ON	10 to 16V	BRC-33, "ABS Control Unit Power and Ground Systems Inspection"
CRANKING SIG	Cranking status	Cranking	ON	—
		Not cranking	OFF	
STOP LAMP SW	Stop lamp switch operation	Brake pedal depressed	ON	—
		Brake pedal not depressed	OFF	
ABS WARN LAMP	ABS warning lamp ON condition (Note 2)	ABS warning lamp ON	ON	BRC-37, "ABS Warning Lamp Does Not Come On When Ignition Switch Is Turned On"
		ABS warning lamp OFF	OFF	
EBD WARN LAMP	EBD warning lamp status	When EBD warning lamp is on	ON	BRC-33, "CAN Communication System Inspection"
		When EBD warning lamp is off	OFF	
MOTOR RELAY	Operation status of motor and motor relay	Ignition switch ON or running (ABS not activated)	OFF	BRC-32, "Actuator Motor, Motor Relay, and Circuit Inspection"
		Ignition switch ON or engine running (ABS activated)	ON	
ACTUATOR RLY	Actuator relay operation status	Vehicle stopped (Ignition switch ON)	OFF	BRC-32, "Actuator Motor, Motor Relay, and Circuit Inspection"
		Vehicle stopped (Engine running)	ON	

TROUBLE DIAGNOSIS

[ABS]

Monitor item	Display content	Data monitor		Note: Error inspection checklist
		Condition	Reference value in normal operation	
FR LH IN SOL FR LH OUT SOL FR RH IN SOL FR RH OUT SOL REAR IN SOL REAR OUT SOL	Solenoid valve operation	Actuator (solenoid) is active ("ACTIVE TEST" with CONSULT-II) or actuator relay is inactive (in fail-safe mode).	ON	BRC-31, "Solenoid Valve System Inspection"
		When actuator (solenoid) is not active and actuator relay is active (ignition switch ON).	OFF	
ABS SIGNAL EBD SIGNAL	Signal status	ABS active EBD active	ON	ABS system EBD system
		ABS not active EBD not active	OFF	
ABS FAIL SIG EBD FAIL SIG	Fail signal status	ABS fail EBD fail	ON	ABS system EBD system
		ABS normal EBD normal	OFF	

Note 1: Confirm tire pressure is normal.

Note 2: ON/OFF timing of ABS warning lamp

ON: For approximately 2 seconds after ignition switch is turned ON, or when a malfunction is detected.

OFF: Approximately 2 seconds after ignition switch is turned ON (when system is in normal operation).

CONSULT-II Function (ABS)

CONSULT-II can display each diagnostic item using the diagnostic test modes shown following.

ABS diagnostic mode	Description
WORK SUPPORT	Supports inspection and adjustments. Commands are transmitted to the ABS actuator and electric unit (control unit) for setting the status suitable for required operation, input/output signals are received from the ABS actuator and electric unit (control unit) and received data is displayed.
SELF-DIAG RESULTS	Displays ABS actuator and electric unit (control unit) self-diagnosis results.
DATA MONITOR	Displays ABS actuator and electric unit (control unit) input/output data in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ACTIVE TEST	Operation of electrical loads can be checked by sending drive signal to them.
FUNCTION TEST	Conducted by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".
ECU PART NUMBER	ABS actuator and electric unit (control unit) part number can be read.

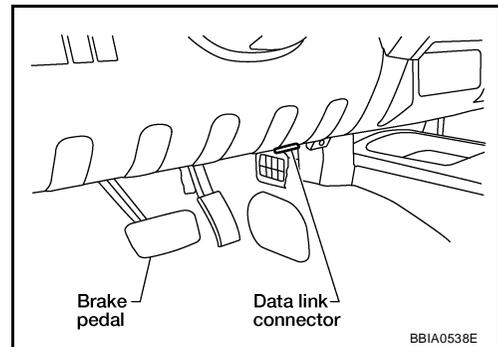
CONSULT-II BASIC OPERATION PROCEDURE

1. Turn ignition switch OFF.
2. Connect CONSULT-II and CONSULT-II CONVERTER to the data link connector.

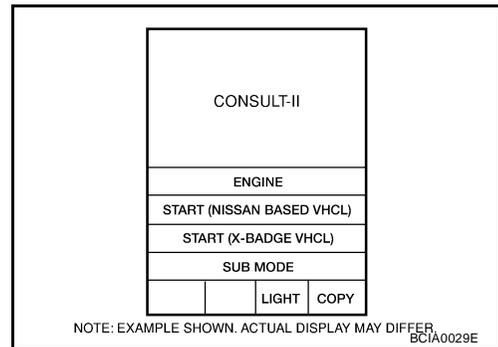
CAUTION:

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

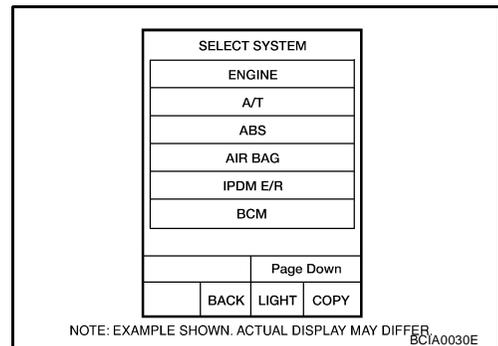
3. Turn ignition switch ON.



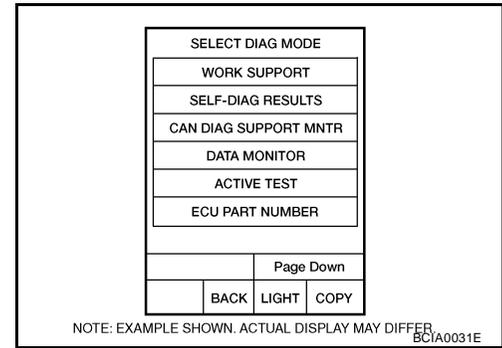
4. Touch "START (NISSAN BASED VHCL)".



5. Touch "ABS" in the "SELECT SYSTEM" screen. If "ABS" is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).



6. Select the required diagnostic location from the “SELECT DIAG MODE” screen.
For further information, see the CONSULT-II Operation Manual.



SELF-DIAGNOSIS

Description

If an error is detected in the system, the ABS warning lamp will turn on. In this case, perform self-diagnosis as follows:

Operation Procedure

1. Turn ignition switch OFF.
2. Connect CONSULT-II and CONSULT-II CONVERTER to the data link connector.

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 carries out CAN communication.

3. Turn ignition switch ON.
4. Start engine and drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute.
5. After stopping the 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 the 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. (If necessary, the self-diagnostic results can be printed out by touching “PRINT”.)
 - When “NO DTC IS DETECTED” is displayed, check the ABS warning lamp.
7. Conduct the appropriate inspection from the display item list, and repair or replace the malfunctioning component.
8. Start engine and drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute.

CAUTION:

● When a wheel sensor “short-circuit” is detected, if the vehicle is not driven at 30 km/h (19 MPH) for at least 1 minute, the ABS warning lamp will not turn off even if the malfunction is repaired.

9. Turn ignition switch OFF to prepare for erasing the memory.
10. Start the engine and touch “START (NISSAN BASED VHCL)”, “ABS”, “SELF-DIAG RESULTS”, “ERASE” in order on the CONSULT-II screen to erase the error memory.

If “ABS” is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#) .

CAUTION:

If the error memory is not erased, re-conduct the operation from step 5.

11. For the final inspection, drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute and confirm that the ABS warning lamp is off.

TROUBLE DIAGNOSIS

[ABS]

Display Item List

Self-diagnostic item	Malfunction detecting condition	Check system
FR LH SENSOR 1 [C1104]	Circuit of front LH wheel sensor is open, shorted or sensor power voltage is unusual.	BRC-29, "Wheel Sensor System" (Note 1)
RR RH SENSOR 1 [C1101]	Circuit of rear RH wheel sensor is open, shorted or sensor power voltage is unusual.	
FR RH SENSOR 1 [C1103]	Circuit of front RH wheel sensor is open, shorted or sensor power voltage is unusual.	
RR LH SENSOR 1 [C1102]	Circuit of rear LH wheel sensor is open, shorted or sensor power voltage is unusual.	
FR LH SENSOR 2 [C1108]	ABS actuator and electric unit (control unit) cannot identify sensor pulses, because of large gap between wheel sensor and sensor rotor.	
RR RH SENSOR 2 [C1105]	ABS actuator and electric unit (control unit) cannot identify sensor pulses, because of large gap between wheel sensor and sensor rotor.	
FR RH SENSOR 2 [C1107]	ABS actuator and electric unit (control unit) cannot identify sensor pulses, because of large gap between wheel sensor and sensor rotor.	
RR LH SENSOR 2 [C1106]	ABS actuator and electric unit (control unit) cannot identify sensor pulses, because of large gap between wheel sensor and sensor rotor.	
ABS SENSOR [C1115]	Wheel sensor input is abnormal.	
BATTERY VOLTAGE [ABNORMAL] [C1109]	ABS actuator and electric unit (control unit) power voltage is too low.	
CONTROLLER FAILURE [C1110]	Internal malfunction of ABS actuator and electric unit (control unit)	BRC-30, "ABS Control Unit Inspection"
PUMP MOTOR (Note 3) [C1111]	During actuator motor operation with ON, when actuator motor turns OFF or when control line for actuator motor relay is open.	BRC-32, "Actuator Motor, Motor Relay, and Circuit Inspection"
	During actuator motor operation with OFF, when actuator motor turns ON or when control line for relay is shorted to ground.	
G-SENSOR [C1113]	G-sensor is malfunctioning.	BRC-30, "ABS Control Unit Inspection"
FR LH IN ABS SOL [C1120]	Circuit of front LH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	BRC-31, "Solenoid Valve System Inspection"
FR LH OUT ABS SOL [C1121]	Circuit of front LH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
FR RH IN ABS SOL [C1122]	Circuit of front RH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
FR RH OUT ABS SOL [C1123]	Circuit of front RH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
R-EV [C1190]	Circuit of rear IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
R-AV [C1191]	Circuit of rear OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
ACTUATOR RLY [C1140]	ABS actuator relay or circuit malfunction.	

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TROUBLE DIAGNOSIS

[ABS]

Self-diagnostic item	Malfunction detecting condition	Check system
VARIANT CODING [C1170]	V coding is not malfunctioning.	BRC-30, "ABS Control Unit Inspection"
CAN COMM CIRCUIT [U1000]	<ul style="list-style-type: none"> ● CAN communication line is open or shorted. ● ABS actuator and electric unit (control unit) internal malfunction ● Battery voltage for ECM is suddenly interrupted for approximately 0.5 second or more. 	BRC-33, "CAN Communication System Inspection" (Note 2)

Note 1. If wheel sensor 2 for each wheel is indicated, check ABS actuator and electric unit (control unit) power supply voltage in addition to wheel sensor circuit check.

Note 2. If multiple malfunctions are detected including CAN communication line [U1000], perform diagnosis for CAN communication line first.

Note 3: "ACTUATOR RLY" on the CONSULT-II self-diagnosis results indicates the malfunction of the actuator motor relay or circuit.

DATA MONITOR

Operation Procedure

1. After turning OFF the ignition switch, connect CONSULT-II and the CONSULT-II CONVERTER to the data link connector.

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 carries out CAN communication.

2. Touch "START (NISSAN BASED VHCL)", "ABS", "DATA MONITOR" in order on the CONSULT-II screen. If "ABS" is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

CAUTION:

When "START (NISSAN BASED VHCL)" is touched immediately after starting the 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 2.

3. Return to the SELECT MONITOR ITEM screen, and touch "ECU INPUT SIGNALS", "MAIN SIGNALS" or "SELECTION FROM MENU". Refer to the following information.
4. When "START" is touched, the data monitor screen is displayed.

Display Item List

Item (Unit)	Data monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
FR RH SENSOR (km/h, MPH)	×	×	×	Wheel speed calculated by front RH wheel sensor signal is displayed.
FR LH SENSOR (km/h, MPH)	×	×	×	Wheel speed calculated by front LH wheel sensor signal is displayed.
RR RH SENSOR (km/h, MPH)	×	×	×	Wheel speed calculated by rear RH wheel sensor signal is displayed.
RR LH SENSOR (km/h, MPH)	×	×	×	Wheel speed calculated by rear LH wheel sensor signal is displayed.
BATTERY VOLT (V)	×	×	×	Voltage supplied to ABS actuator and electric unit (control unit) is displayed.
STOP LAMP SW (ON/OFF)	×	×	×	Stop lamp switch (ON/OFF) status is displayed.
ABS WARN LAMP (ON/OFF)	—	×	×	ABS warning lamp (ON/OFF) status is displayed.
EBD WARN LAMP	—	—	×	Brake warning lamp (ON/OFF) status is displayed.
FR LH IN SOL (ON/OFF)	—	×	×	Front LH IN ABS solenoid (ON/OFF) status is displayed.

TROUBLE DIAGNOSIS

[ABS]

Item (Unit)	Data monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
FR LH OUT SOL (ON/OFF)	–	×	×	Front LH OUT ABS solenoid (ON/OFF) status is displayed.
FR RH IN SOL (ON/OFF)	–	×	×	Front RH IN ABS solenoid (ON/OFF) status is displayed.
FR RH OUT SOL (ON/OFF)	–	×	×	Front RH OUT ABS solenoid (ON/OFF) status is displayed.
REAR IN SOL (ON/OFF)	–	–	×	Rear IN ABS solenoid (ON/OFF) status is displayed.
REAR OUT SOL (ON/OFF)	–	–	×	Rear OUT ABS solenoid (ON/OFF) status is displayed.
MOTOR RELAY (ON/OFF)	–	×	×	ABS motor relay signal (ON/OFF) status is displayed.
ACTUATOR RLY (ON/OFF)	–	×	×	ABS actuator relay signal (ON/OFF) status is displayed.
ABS FAIL SIG (ON/OFF)	–	–	×	ABS fail signal (ON/OFF) status is displayed.
EBD FAIL SIG (ON/OFF)	–	–	×	EBD fail signal (ON/OFF) status is displayed.
EBD SIGNAL (ON/OFF)	–	–	×	EBD operation (ON/OFF) status is displayed.
ABS SIGNAL (ON/OFF)	–	–	×	ABS operation (ON/OFF) status is displayed.
CRANKING SIG	–	–	×	The input state of the key SW START position signal is displayed.

×: Applicable

–: Not applicable

ACTIVE TEST

CAUTION:

- Do not perform active test while driving.
- Make sure to completely bleed air from the brake system.
- The ABS and brake warning lamps turn on during the active test.

Operation Procedure

1. Connect the CONSULT-II and CONSULT-II CONVERTER to the data link connector and start the engine.

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 carries out CAN communication.

2. Touch “START (NISSAN BASED VHCL)” on the display screen.
3. Touch “ABS”.
If “ABS” is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#) .
4. Touch “ACTIVE TEST”.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS**Wheel Sensor System**

INSPECTION PROCEDURE

1. CONNECTOR INSPECTION

Disconnect the ABS actuator and electric unit (control unit) connector E125 and wheel sensor of malfunctioning code.

Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

2. CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.

2. Turn on the ABS active wheel sensor tester power switch.

NOTE:

The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.

3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.

NOTE:

If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3.

NO >> Replace the wheel sensor. Refer to [BRC-38, "Removal and Installation"](#).

3. CHECK TIRES

Check for inflation pressure, wear and size of each tire. Refer to [WT-31, "SERVICE DATA AND SPECIFICATIONS \(SDS\)"](#).

Are tire pressure and size correct and is tire wear within specifications?

YES >> GO TO 4.

NO >> Adjust tire pressure or replace tire(s).

4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to [FAX-5, "WHEEL BEARING INSPECTION"](#), [RAX-6, "Rear Axle Bearing"](#) (C200) or [RAX-18, "Rear Axle Bearing"](#) (M226).

OK or NG

OK >> GO TO 5.

NG >> Repair or replace as necessary. Refer to [FAX-5, "Removal and Installation"](#), [RAX-6, "Rear Axle Bearing"](#) (C200) or [RAX-18, "Rear Axle Bearing"](#) (M226).

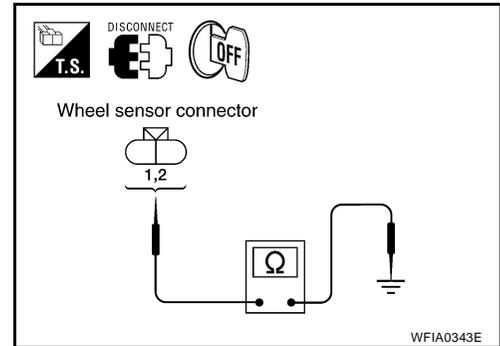
5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunction code No.
2. Check resistance between wheel sensor harness connector terminals and ground.

Continuity should not exist.

OK or NG

- OK >> GO TO 6.
- NG >> Repair the circuit.



6. CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector and wheel sensor harness connector.

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
	Connector	Terminals	Connector	Terminals	
Front LH	E125	45	E18	1	Yes
		46		2	
Front RH		34	E117	1	
		33		2	
Rear LH		37	C11	2	
		36		1	
Rear RH		42	C10	2	
		43		1	

Continuity should exist.

OK or NG

- OK >> Replace the ABS actuator and electric unit (control unit). Refer to [BRC-40, "Removal and Installation"](#).
- NG >> Repair the circuit.

ABS Control Unit Inspection

EFS0052B

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

Self-diagnosis results
CONTROLLER FAILURE
G-SENSOR
VARIANT CODING

Is the above displayed in the self-diagnosis display items?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-40, "Removal and Installation"](#)
- NO >> Inspection End.

Solenoid Valve System Inspection

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

Self-diagnosis results
FR LH IN ABS SOL
FR LH OUT ABS SOL
FR RH IN ABS SOL
FR RH OUT ABS SOL
R-EV
R-AV

Is the above displayed in the self-diagnosis display items?

- YES >> GO TO 2.
- NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector E125.
2. Check the terminals for deformation, disconnection, looseness or damage.

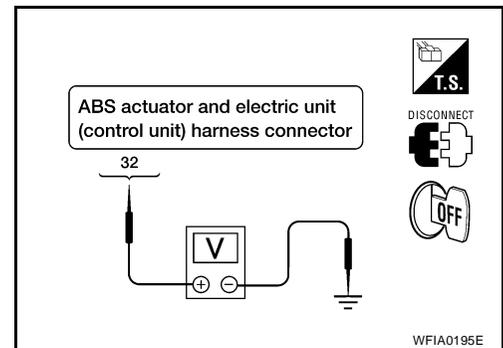
OK or NG

- OK >> GO TO 3.
- NG >> Repair or replace as necessary.

3. CHECKING SOLENOID POWER AND GROUND

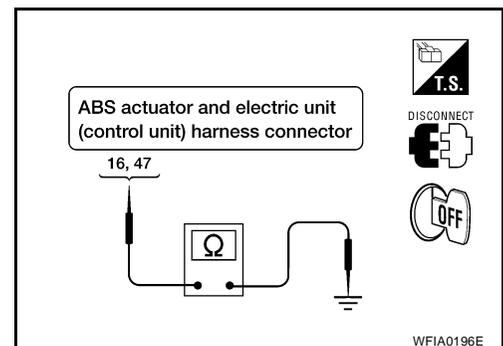
1. Check voltage between ABS actuator and electric unit (control unit) harness connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value (Approx.)
32	—	12V



2. Check resistance between ABS actuator and electric unit (control unit) harness connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value Ω (Approx.)
16	—	0Ω
47	—	0Ω



OK or NG

- OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-40, "Removal and Installation"](#).
- NG >> Repair the circuit.

Actuator Motor, Motor Relay, and Circuit Inspection

INSPECTION PROCEDURE

1. CHECKING SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
PUMP MOTOR
ACTUATOR RLY

Is the above displayed in the self-diagnosis display items?

- YES >> GO TO 2.
- NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector E125.
2. Check the terminals for deformation, disconnection, looseness or damage.

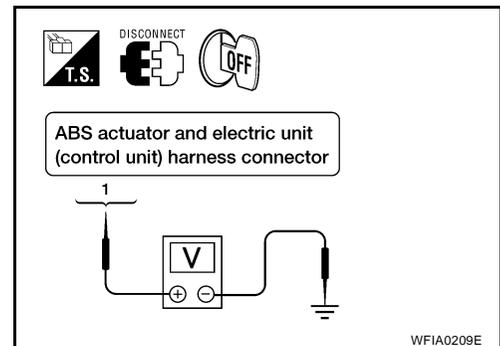
OK or NG

- OK >> GO TO 3.
- NG >> Repair or replace as necessary.

3. CHECKING ABS MOTOR AND MOTOR RELAY POWER SYSTEM

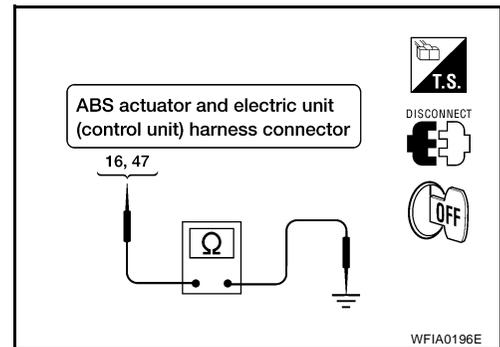
1. Check voltage between ABS actuator and electric unit (control unit) harness connector E125 and ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value (Approx.)
1	—	12V



2. Check resistance between ABS actuator and electric unit (control unit) connector E125 and ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value (Approx.)
16	—	0Ω
47	—	0Ω



OK or NG

- OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-40, "Removal and Installation"](#).
- NG >> Repair the circuit.

ABS Control Unit Power and Ground Systems Inspection

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

Self-diagnosis results

BATTERY VOLTAGE

Is the above displayed in the self-diagnosis display items?

YES >> GO TO 2.

NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect the ABS actuator and electric unit (control unit) connector E125.
2. Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace as necessary.

3. ABS CONTROL UNIT POWER AND GROUND CIRCUIT INSPECTION

Measure the voltage and continuity between the ABS actuator and electric unit (control unit) harness connector E125 and ground.

Signal name	ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value
Power supply	1	—	Battery voltage (Approx. 12V)
	32		
Ground	16	—	Continuity should exist.
	47		

OK or NG

OK >> Check the battery for loose terminals, low voltage, etc. Repair as necessary.

NG >> Repair the circuit.

CAN Communication System Inspection

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

Is "CAN COMM CIRCUIT" displayed in self-diagnosis display items?

YES >> Print out the self-diagnostic results, and refer to [LAN-22, "CAN COMMUNICATION"](#).

NO >> Connector terminal is loose, damaged, open, or shorted.

TROUBLE DIAGNOSES FOR SYMPTOMS

ABS Works Frequently

1. CHECK WARNING LAMP ACTIVATION

Make sure warning lamp remains off while driving.

OK or NG

OK >> GO TO 2.

NG >> Carry out self-diagnosis. Refer to [BRC-24, "SELF-DIAGNOSIS"](#) .

2. CHECK WHEEL SENSORS

Check the following.

- Wheel sensor mounting for looseness
- Wheel sensors for physical damage
- Wheel sensor connectors for terminal damage or loose connections
- Sensor rotor and mount for physical damage (rear only)

OK or NG

OK >> GO TO 3.

NG >> Repair or replace as necessary.

3. CHECK FRONT AND REAR AXLES

Check front and rear axles for excessive looseness. Refer to [FAX-5, "WHEEL BEARING INSPECTION"](#) , [RAX-6, "Rear Axle Bearing"](#) (C200) or [RAX-18, "Rear Axle Bearing"](#) (M226).

OK or NG

OK >> GO TO 4.

NG >> Repair as necessary.

4. CHECK BRAKE FLUID PRESSURE

Check brake fluid pressure distribution.

Refer to [BRC-20, "Basic Inspection"](#) .

Is brake fluid pressure distribution normal?

YES >> Inspection End.

NO >> Perform Basic Inspection. Refer to [BRC-20, "Basic Inspection"](#) .

Unexpected Pedal Action

1. CHECK WARNING LAMP ACTIVATION

Make sure warning lamp remains off while driving.

OK or NG

OK >> GO TO 2.

NG >> Carry out self-diagnosis. Refer to [BRC-24, "SELF-DIAGNOSIS"](#) .

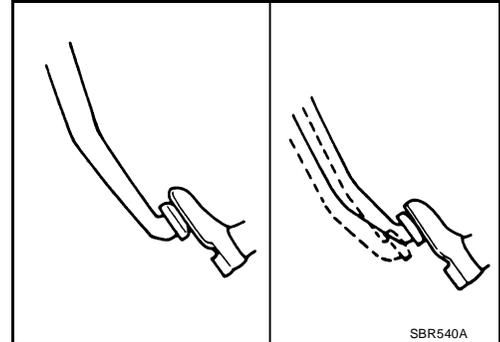
2. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke.

Is brake pedal stroke excessive?

YES >> Perform Basic Inspection. Refer to [BRC-20, "Basic Inspection"](#) .

NO >> GO TO 3.



3. CHECK CONNECTOR AND BRAKING PERFORMANCE

1. Disable ABS by disconnecting ABS actuator and electric unit (control unit) connector.

2. Drive vehicle and check brake operation.

NOTE:

- Stopping distance may be longer than vehicles without ABS when road condition is slippery.
- Driving the vehicle with the ABS actuator and electric unit (control unit) disconnected may induce DTCs in electrical control units using CAN communication. After the inspection, clear all DTCs. Refer to [LAN-22, "CAN COMMUNICATION"](#) .

OK or NG

OK >> GO TO 4.

NG >> Perform Basic Inspection. Refer to [BRC-20, "Basic Inspection"](#) .

4. CHECK WHEEL SENSORS

Check the following.

- Wheel sensor mounting for looseness
- Wheel sensors for physical damage
- Wheel sensor connectors for terminal damage or loose connections

OK or NG

OK >> Check ABS actuator and electric unit (control unit) connector terminals for deformation, disconnection, looseness or damage. Reconnect ABS actuator and electric unit (control unit) harness connector. Then retest.

NG >> Repair or replace as necessary.

Long Stopping Distance

1. CHECK BASE BRAKING SYSTEM PERFORMANCE

1. Disable ABS by disconnecting ABS actuator and electric unit (control unit) connector.
2. Drive vehicle and check brake operation.

NOTE:

- Stopping distance may be longer than vehicles without ABS when road condition is slippery.
- Driving the vehicle with the ABS actuator and electric unit (control unit) disconnected may induce DTCs in electrical control units using CAN communication. After the inspection, clear all DTCs. Refer to [LAN-22, "CAN COMMUNICATION"](#).

OK or NG

- OK >> Go to [BRC-34, "ABS Works Frequently"](#).
- NG >> Perform Basic Inspection. Refer to [BRC-20, "Basic Inspection"](#).

ABS Does Not Work

CAUTION:

The ABS does not operate when the vehicle speed is 10 km/h (6 MPH) or less.

1. CHECK WARNING LAMP ACTIVATION

Turn ignition switch ON and check for warning lamp activation.

- Warning lamp should activate for approximately 2 seconds after turning the ignition switch ON.

OK or NG

- OK >> Carry out self-diagnosis. Refer to [BRC-24, "SELF-DIAGNOSIS"](#).
- NG >> Go to [BRC-37, "ABS Warning Lamp Does Not Come On When Ignition Switch Is Turned On"](#).

Pedal Vibration or ABS Operation Noise

NOTE:

During ABS activation, pedal vibration may be felt and a noise may be heard. This is normal and does not indicate a malfunction.

1. CHECK SYMPTOM

1. Apply brake.
2. Start engine.

Does the symptom occur only when engine is started?

- YES >> Carry out self-diagnosis. Refer to [BRC-24, "SELF-DIAGNOSIS"](#).
- NO >> GO TO 2.

2. RECHECK SYMPTOM

Does the symptom occur only when electrical equipment switches (such as headlamps) are turned on?

- YES >> Check for radio, antenna or related wiring that is routed too close to the ABS actuator and electric unit (control unit) and reroute as necessary.
- NO >> Go to [BRC-34, "ABS Works Frequently"](#).

ABS Warning Lamp Does Not Come On When Ignition Switch Is Turned On EFS005F5

1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) FUSES

Check 30A fusible link **n** and 40A fusible link **I** for ABS actuator and electric unit (control unit). For fusible link layout, refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).

OK or NG

OK >> GO TO 2.

NG >> If fusible link is blown, be sure to eliminate cause of problem before replacing.

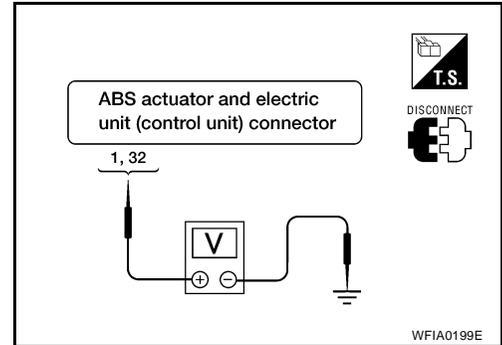
2. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY CIRCUITS

1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Check voltage between ABS actuator and electric unit (control unit) connector terminal 1 and ground and terminal 32 and ground.

Does battery voltage exist?

YES >> GO TO 3.

NO >> Repair harness or connectors between fusible link and ABS actuator and electric unit (control unit).



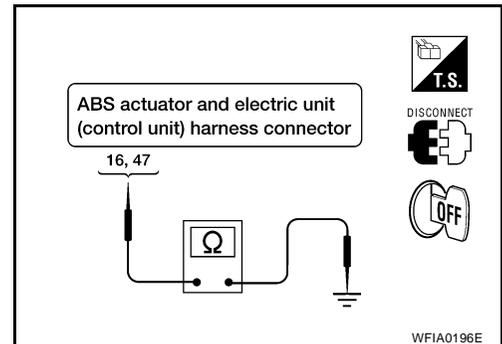
3. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector terminal 16 and ground and terminal 47 and ground.

Does continuity exist?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-40, "Removal and Installation"](#).

NO >> Repair harness or connectors between ABS actuator and electric unit (control unit) and ground.



ABS Warning Lamp Stays On When Ignition Switch Is Turned On EFS005F6

1. CARRY OUT SELF-DIAGNOSIS

Carry out self-diagnosis. Refer to [BRC-24, "SELF-DIAGNOSIS"](#).

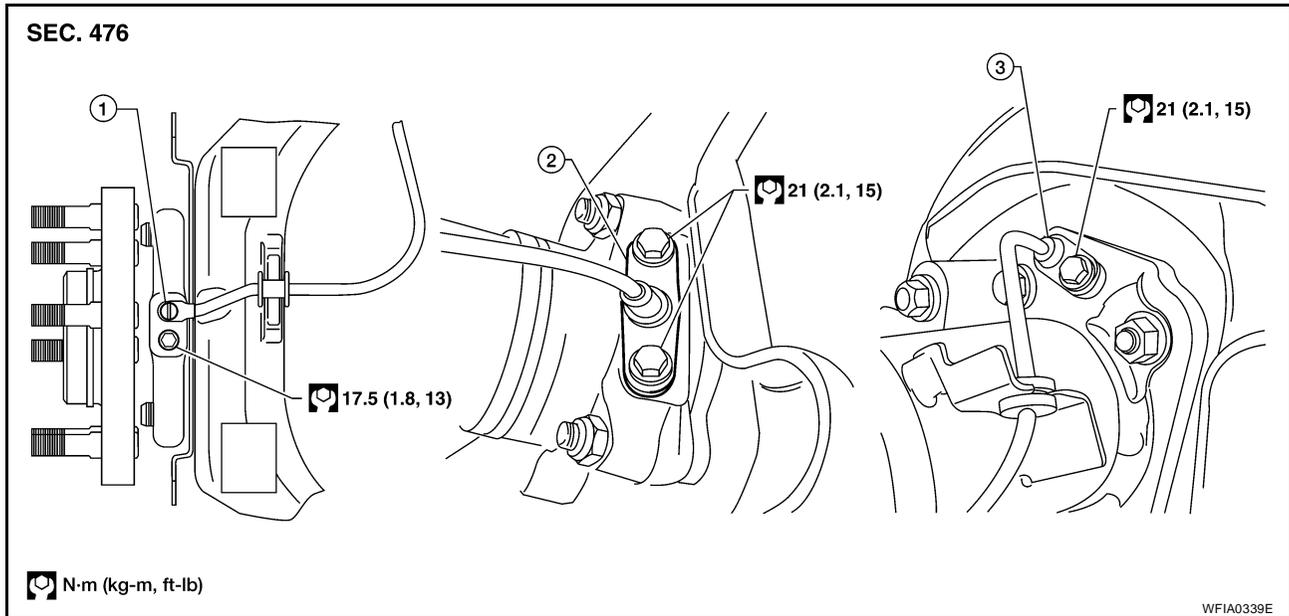
Are malfunctions detected in self-diagnosis?

YES >> Refer to [BRC-25, "Display Item List"](#).

NO >> Refer to [DI-34, "WARNING LAMPS"](#).

WHEEL SENSORS

Removal and Installation



1. Front wheel sensor

2. Rear wheel sensor (C200)

3. Rear wheel sensor (M226)

REMOVAL

1. Remove wheel sensor mounting screw(s).
 - When removing the front wheel sensor, first remove the disc rotor to gain access to the front wheel sensor. Refer to [BR-23, "Removal and Installation of Brake Caliper Assembly and Disc Rotor"](#) .
2. Pull out the sensor, being careful to turn it as little as possible.

CAUTION:

- Be careful not to damage sensor edge and sensor rotor teeth.
- Do not pull on the sensor harness.

3. Disconnect wheel sensor harness electrical connector, then remove harness from mounts.

INSTALLATION

- Before installing wheel sensors,
 - Inspect and replace sensor assembly if damaged.
 - Clean wheel sensor hole and mounting surface with brake cleaner and a lint-free shop rag. Be careful that dirt and debris do not enter the axle.
 - Replace wheel sensor O-ring, then apply a coat of suitable grease to the O-ring and mounting hole.
- Installation is in the reverse order of removal.

SENSOR ROTOR

Removal and Installation FRONT

The wheel sensor rotors are built into the wheel hubs and are not removable. If damaged, replace wheel hub and bearing assembly. Refer to [FAX-5, "Removal and Installation"](#) .

REAR (C200)

Removal and Installation

It is necessary to disassemble the rear axle to replace the sensor rotor. Perform the axle shaft assembly removal procedure to replace sensor rotor. Refer to [RAX-7, "Removal and Installation"](#) .

REAR (M226)

Removal

1. Remove axle shaft assembly. Refer to [RAX-19, "Removal and Installation"](#) .

NOTE:

It is necessary to disassemble the rear axle to replace the sensor rotor.

2. Pull the sensor rotor of off the axle shaft using Tool and a press.

Tool number : 205-D002 (—)

Installation

1. Install new sensor rotor on axle shaft using a suitable length steel tube and a press. Make sure sensor rotor is fully seated.

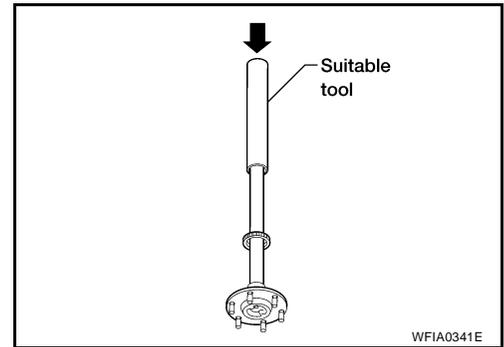
CAUTION:

Do not reuse the old sensor rotor.

2. Install axle shaft assembly. Refer to [RAX-19, "Removal and Installation"](#) .

CAUTION:

Do not reuse the axle oil seal. The axle oil seal must be replaced every time the axle shaft assembly is removed from the axle shaft housing.



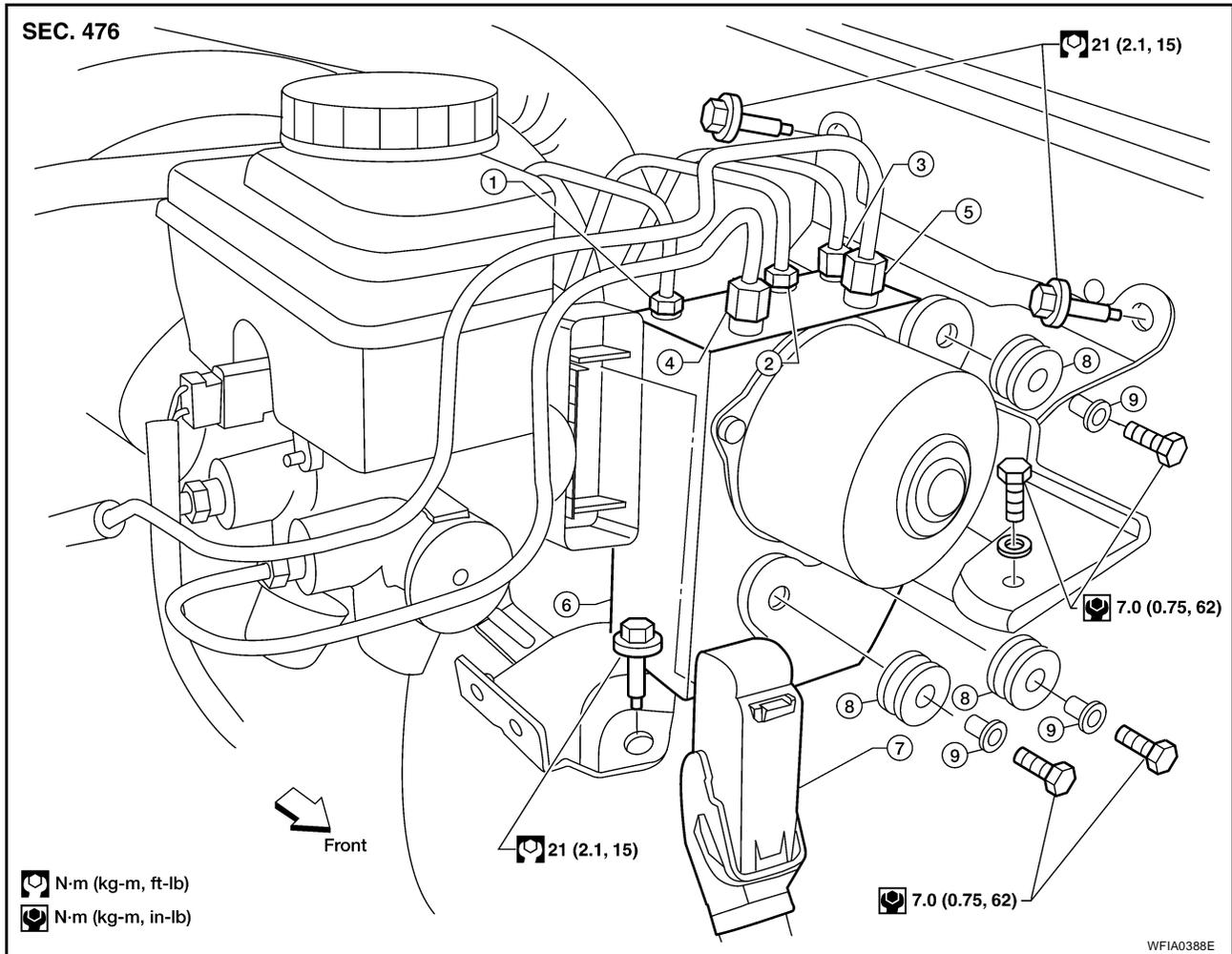
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ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

PFP:47660

Removal and Installation

EFS0059P



- | | | |
|--|--|--|
| 1. To rear | 2. To front left | 3. To front right |
| 4. From the master cylinder secondary side | 5. From the master cylinder primary side | 6. ABS actuator and electric unit (control unit) |
| 7. Harness connector | 8. Grommet | 9. Collar |

REMOVAL

1. Disconnect the negative battery terminal.
2. Drain the brake fluid. Refer to [BR-9, "Drain and Refill"](#).
3. Disconnect the actuator harness from the ABS actuator and electric unit (control unit).

CAUTION:

- To remove the brake tubes, use a flare nut wrench to prevent the flare nuts and brake tubes from being damaged.
- Be careful not to splash brake fluid on painted areas.

4. Disconnect the brake tubes.
5. Remove the three bolts and remove the ABS actuator and electric unit (control unit).

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

To install, use a flare nut wrench (commercial service tool).

- Always tighten brake tubes to specification when installing. Refer to [BR-11, "Hydraulic Circuit"](#) .
- Never reuse drained brake fluid.
- After installation of the ABS actuator and electric unit (control unit), refill brake system with new brake fluid. Then bleed the air from the system. Refer to [BR-10, "Bleeding Brake System"](#) .

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PRECAUTIONS

PFP:00001

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

EFS005SL

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:

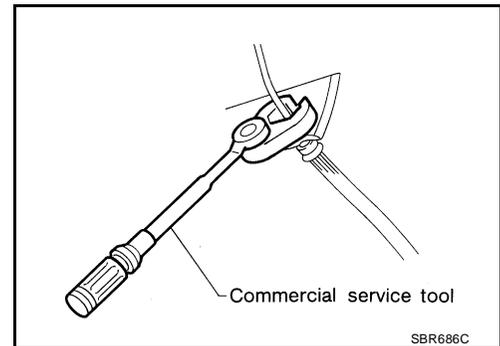
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation 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 Brake System

EFS0059R

CAUTION:

- Refer to [MA-11. "RECOMMENDED FLUIDS AND LUBRICANTS"](#) for recommended brake fluid.
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.
- To clean or wash all parts of master cylinder and disc brake caliper, use clean brake fluid.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use flare nut wrench when removing and installing brake tube.
- If a brake fluid leak is found, the part must be disassembled without fail. Then it has to be replaced with a new one if a defect exists.
- Turn the ignition switch OFF and remove the connector of the ABS actuator and electric unit (control unit) or the battery terminal before performing the work.
- Always torque brake lines when installing.
- Burnish the brake contact surfaces after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.



SBR686C

Refer to [BR-27. "BRAKE BURNISHING PROCEDURE"](#) (front disc brake) or [BR-32. "BRAKE BURNISHING PROCEDURE"](#) (rear disc brake).

WARNING:

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

Precautions When Using CONSULT-II

EFS0059S

When connecting CONSULT-II to data link connector, connect them through CONSULT-II CONVERTER.

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 carries out CAN communication.

CHECK POINTS FOR USING CONSULT-II

1. Has CONSULT-II been used without connecting CONSULT-II CONVERTER on this vehicle?
 - If YES, GO TO 2.

- If NO, GO TO 5.
- 2. Is there any indication other than indications relating to CAN communication system in the self-diagnosis results?
 - If YES, GO TO 3.
 - If NO, GO TO 4.
- 3. Based on self-diagnosis results unrelated to CAN communication, carry out the inspection.
- 4. Malfunctions may be detected in self-diagnosis depending on control units carrying out CAN communication. Therefore, erase the self-diagnosis results.
- 5. Diagnose CAN communication system. Refer to [LAN-22, "CAN COMMUNICATION"](#).

Precautions for Brake Control

EFS0059T

- During ABS operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting vehicle, the brake pedal may vibrate or a motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.
- 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 diagnosis. Besides electrical system inspection, check brake booster operation, brake fluid level, and fluid leaks.
- If incorrect tire sizes or types are installed on the vehicle or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- If there is a radio, antenna or related wiring near control module, ABS function may have a malfunction or error.
- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits or improper wiring.

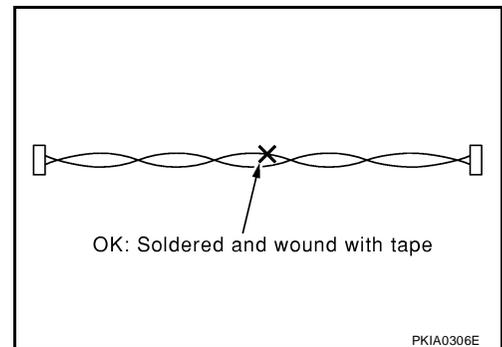
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Precautions for CAN System

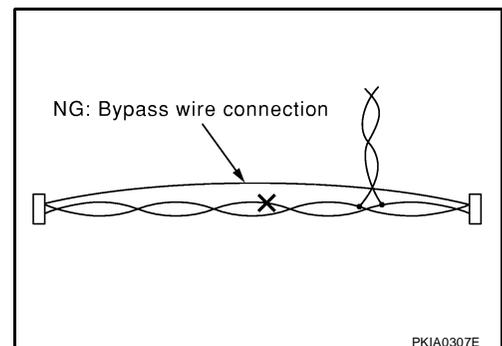
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- Do not apply voltage of 7.0V or higher to terminal to be measured.
- Maximum open terminal voltage of tester in use must be less than 7.0V.
- Before checking harnesses, turn ignition switch OFF and disconnect battery negative cable.
- Area to be repaired must be soldered and wrapped with tape. Make sure that fraying of twisted wire is within 110 mm (4.33 in).

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- Do not make a bypass connection to repaired area. (If the circuit is bypassed, characteristics of twisted wire will be lost.)



Wiring Diagrams and Trouble Diagnosis

When you read wiring diagrams, refer to the following:

- [GI-17, "How to Read Wiring Diagrams"](#).
- [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).

When you perform trouble diagnosis, refer to the following:

- [GI-13, "HOW TO FOLLOW TEST GROUPS IN TROUBLE DIAGNOSES"](#).
- [GI-29, "How to Perform Efficient Diagnosis for an Electrical Incident"](#).

PREPARATION

[ABLS/ABS]

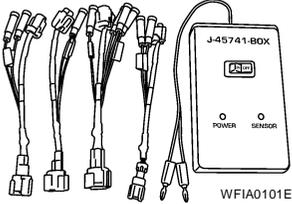
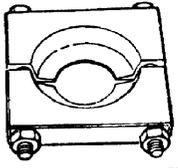
PREPARATION

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Special Service Tool

EFS0052X

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
— (J-45741) ABS active wheel sensor tester	 Checking operation of ABS active wheel sensors
205-D002 (—) Bearing splitter	 Removing axle shaft bearing

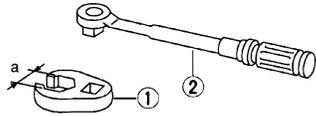
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Commercial Service Tools

EFS0052Y

Tool name	Description
1. Flare nut crowfoot 2. Torque wrench	 Removing and installing brake piping a: 10mm (0.39 in)/12mm (0.47 in)

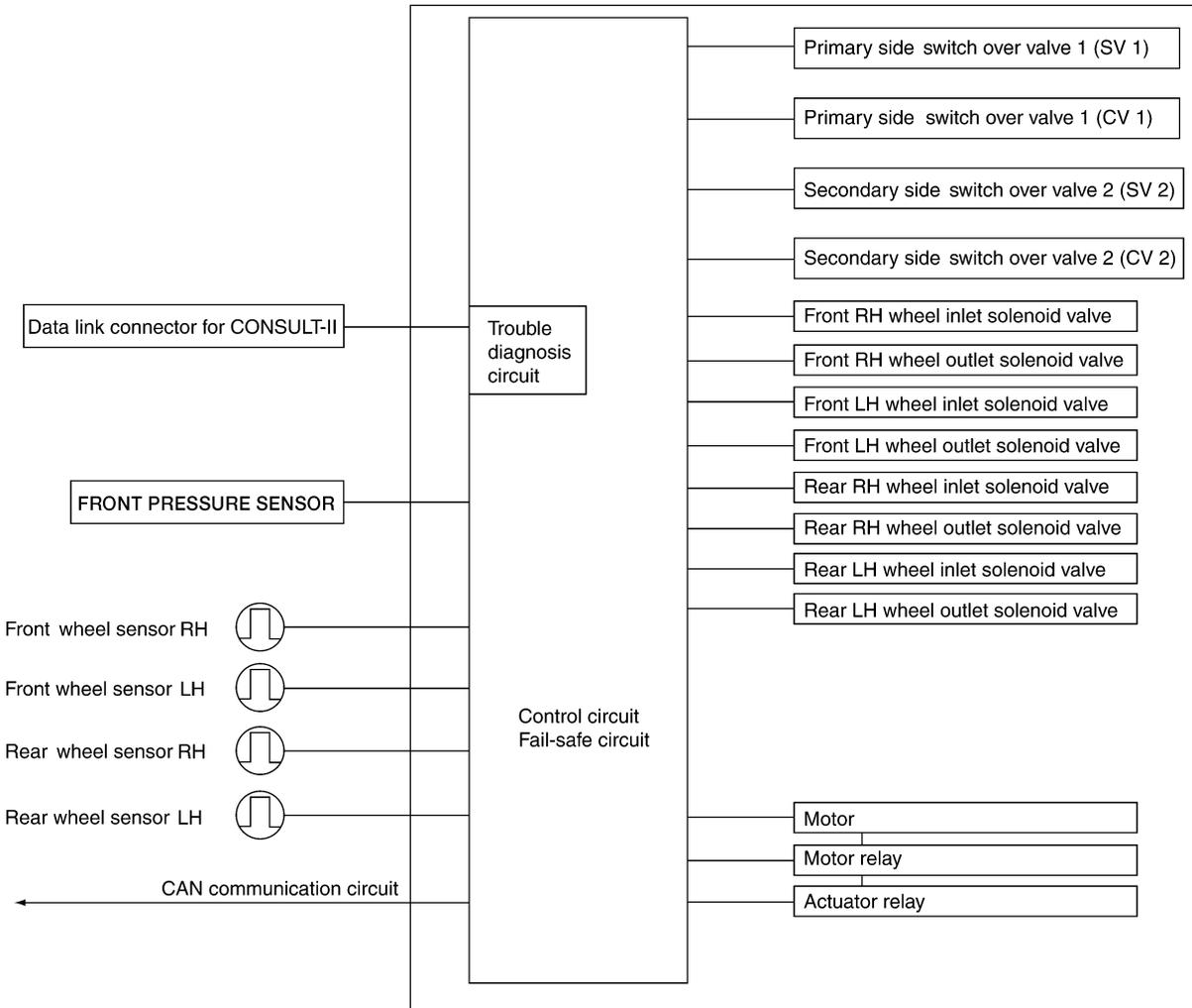
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SYSTEM DESCRIPTION

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System Components

EFS0052Z



ABS actuator and electric unit (control unit)

ABS Function

EFS00530

- The Anti-Lock Brake System detects wheel revolution while braking and improves handling stability during sudden braking by electrically preventing wheel lockup. Maneuverability is also improved for avoiding obstacles.
- If the electrical system malfunctions, the Fail-Safe function is activated, the ABS becomes inoperative and the ABS warning lamp turns on.
- The electrical system can be diagnosed using CONSULT-II.
- During ABS operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting the vehicle, the brake pedal may vibrate or a motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.

EBD Function

EFS00531

- Electronic Brake Distribution is a function that detects subtle slippages between the front and rear wheels during braking, and it improves handling stability by electronically controlling the brake fluid pressure which results in reduced rear wheel slippage.
- If the electrical system malfunctions, the Fail-Safe function is activated, the EBD and ABS become inoperative, and the ABS warning lamp and brake warning lamp are turned on.
- The electrical system can be diagnosed using CONSULT-II.
- During EBD operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting the vehicle, the brake pedal may vibrate or a motor operating noise may be heard from engine compartment. This is a normal status of operation check.

ABLS Function

EFS00532

- Active brake limited slip is a function to improve vehicle traction. Spinning of the drive wheels is detected by the ABS actuator and electric unit (control unit) using inputs from the wheel speed sensors. If wheel spin occurs, the ABLS system brakes the spinning wheel which distributes the driving power to the other drive wheel.
- The SLIP indicator lamp flashes to inform the driver of ABLS operation.
- During ABLS operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.

Fail-Safe Function

EFS00533

CAUTION:

If the Fail-Safe function is activated, perform the Self Diagnosis for ABS/ABLS system.

ABS/EBD SYSTEM

In case of an electrical malfunction with the ABS, the ABS warning lamp will turn on. In case of an electrical malfunction with the EBD system, the brake warning lamp and ABS warning lamp will turn on. The system will revert to one of the following conditions of the Fail-Safe function.

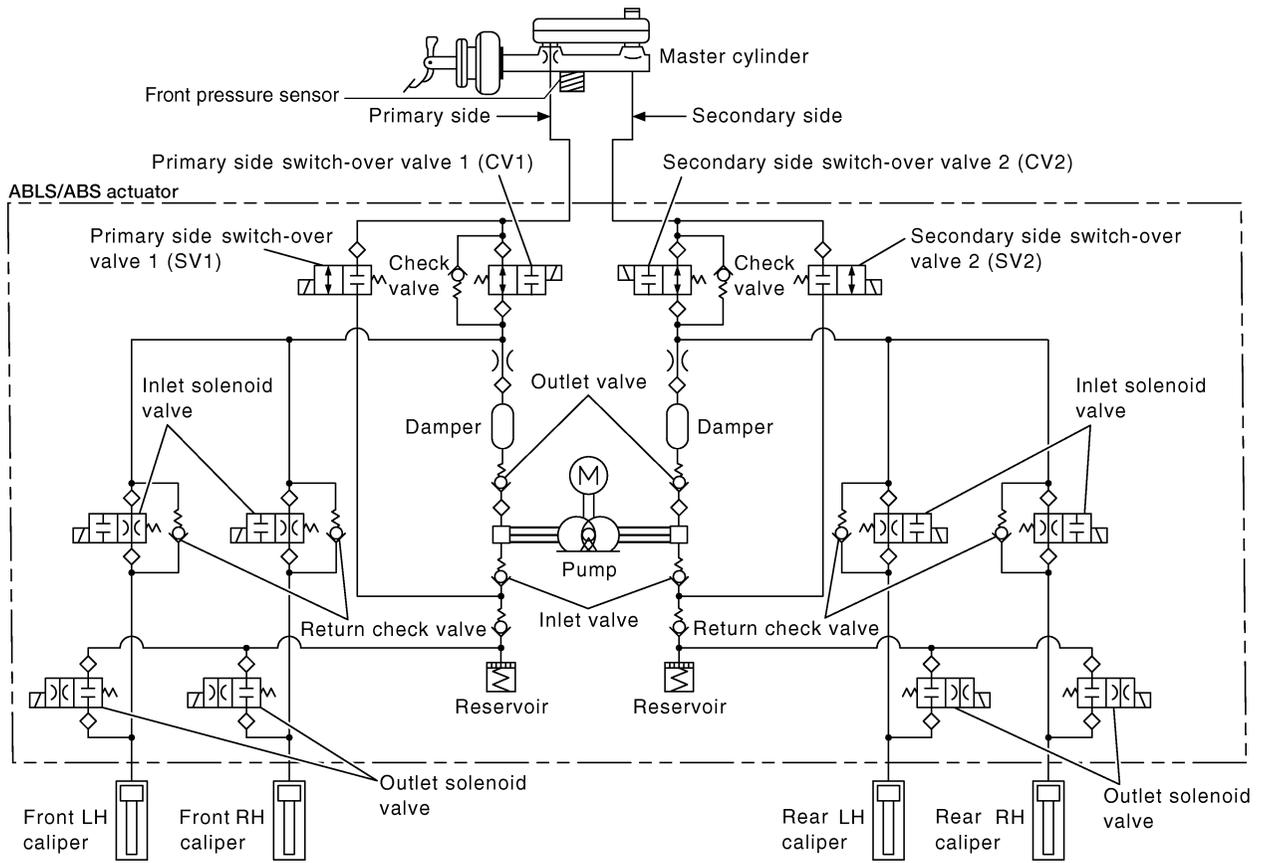
1. For ABS malfunction, only the EBD is operative and the condition of the vehicle is the same condition of vehicles without ABS/ABLS system.
2. For EBD malfunction, the EBD and ABS become inoperative, and the condition of the vehicle is the same as the condition of vehicles without ABS/ABLS or EBD system.

ABLS SYSTEM

In case of an ABLS system malfunction, the SLIP indicator lamp will turn on. The condition of the vehicle is the same as the condition of vehicles without ABS/ABLS system.

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Hydraulic Circuit Diagram



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CAN COMMUNICATION

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System Description

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Refer to [LAN-22, "CAN COMMUNICATION"](#) .

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TROUBLE DIAGNOSIS

How to Perform Trouble Diagnoses for Quick and Accurate Repair INTRODUCTION

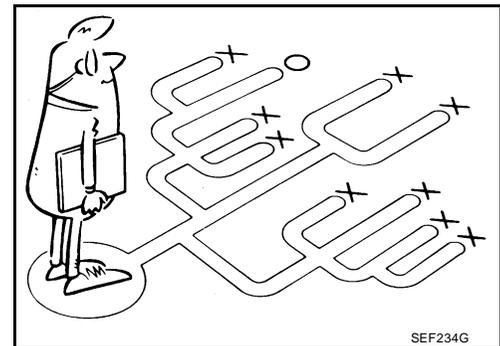
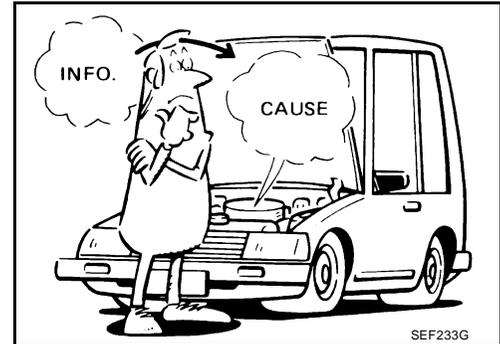
The ABS/ABLS system has an electronic control unit to control major functions. The control unit accepts input signals from sensors and controls actuator operation. It is also important to check for air leaks in the booster or lines, lack of brake fluid, or other malfunctions in the brake system.

It is much more difficult to diagnose a malfunction that occurs intermittently rather than continuously. Most intermittent conditions are caused by poor electrical connections or damaged wiring. In this case, careful checking of suspicious circuits may help prevent the replacement of good parts.

A visual check only may not find the cause of the malfunction, so a road test should be performed.

Before undertaking actual checks, take just a few minutes to talk with a customer who approaches with an ABS/ABLS complaint. The customer is a very good source of information, especially for intermittent conditions. Through the talks with the customer, find out what symptoms are present and under what conditions they occur.

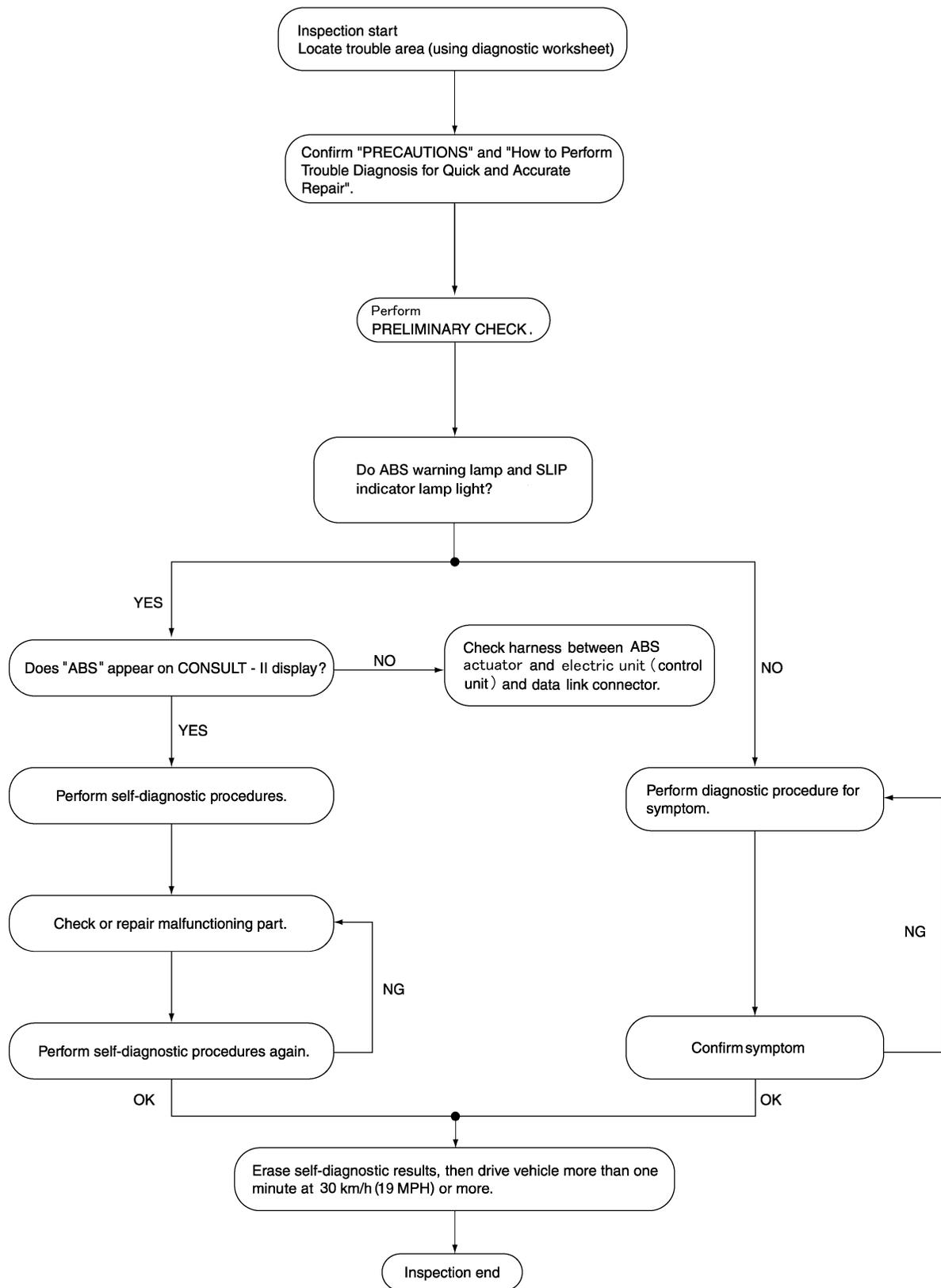
Start your diagnosis by looking for "conventional" malfunctions first. This is one of the best ways to troubleshoot brake malfunctions on an ABS/ABLS equipped vehicle. Also check related Service Bulletins for information.



TROUBLE DIAGNOSIS

[ABLS/ABS]

WORK FLOW



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TROUBLE DIAGNOSIS

[ABLS/ABS]

CLARIFY CONCERN

- A customer's description of a vehicle concern may vary depending on the individual. It is important to clarify the customer's concern.
- Ask the customer about what symptoms are present under what conditions. Use this information to reproduce the symptom while driving.
- It is also important to use the diagnosis sheet to understand what type of symptoms the customer is experiencing.

KEY POINTS

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

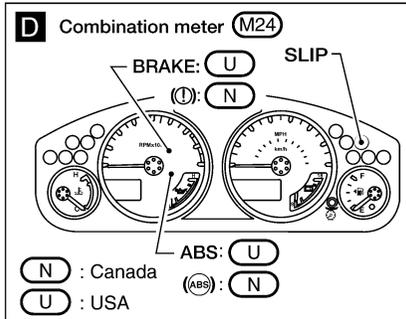
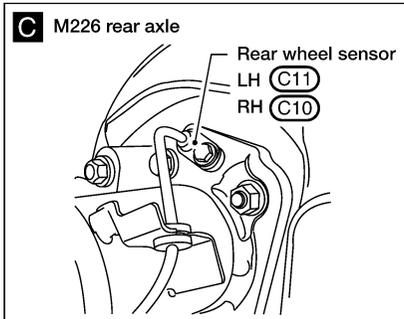
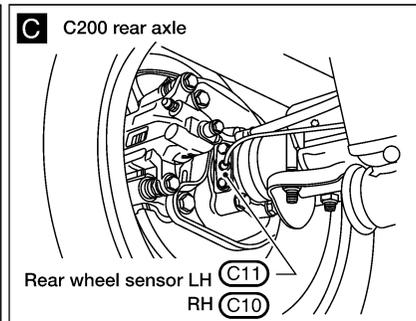
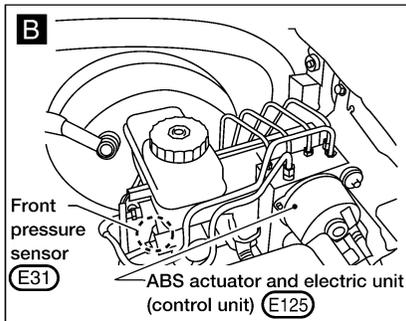
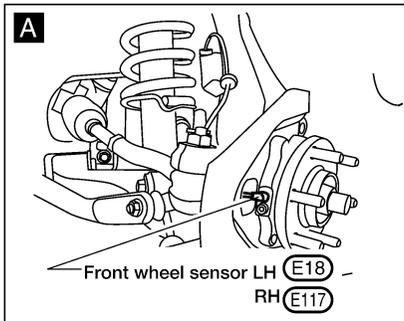
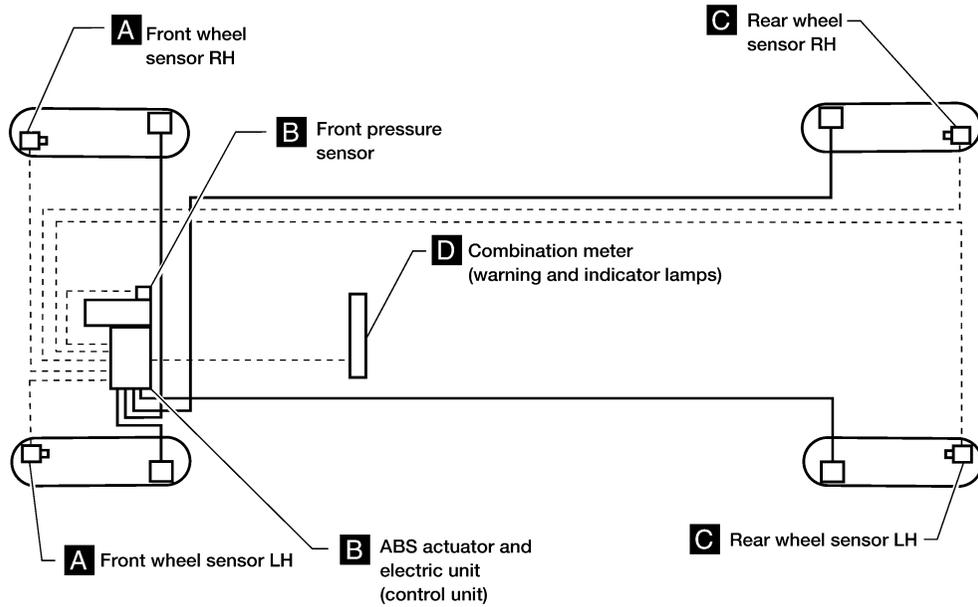
SBR339B

EXAMPLE OF DIAGNOSIS SHEET

Customer name	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"/> ABS warning lamp activates	<input type="checkbox"/> Pedal operation
	<input type="checkbox"/> Noise and vibration (from axle)	<input type="checkbox"/> SLIP indicator lamp activates	<input type="checkbox"/> Large stroke pedal operation
	<input type="checkbox"/> ABLS does not work (drive wheels slip when accelerating)	<input type="checkbox"/> ABS does not work (wheels slip when braking)	<input type="checkbox"/> Firm pedal
	<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		

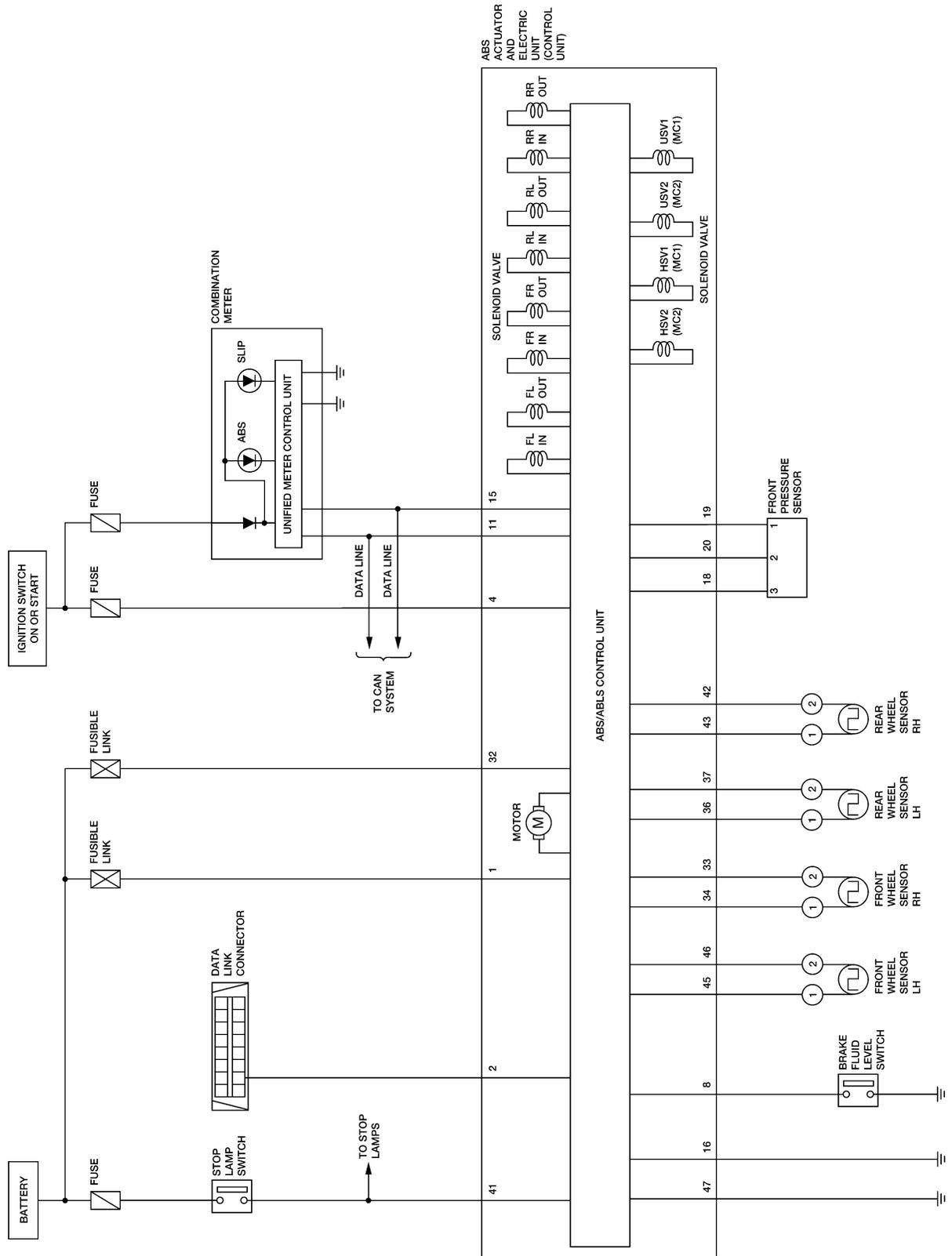
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Component Parts and Harness Connector Location



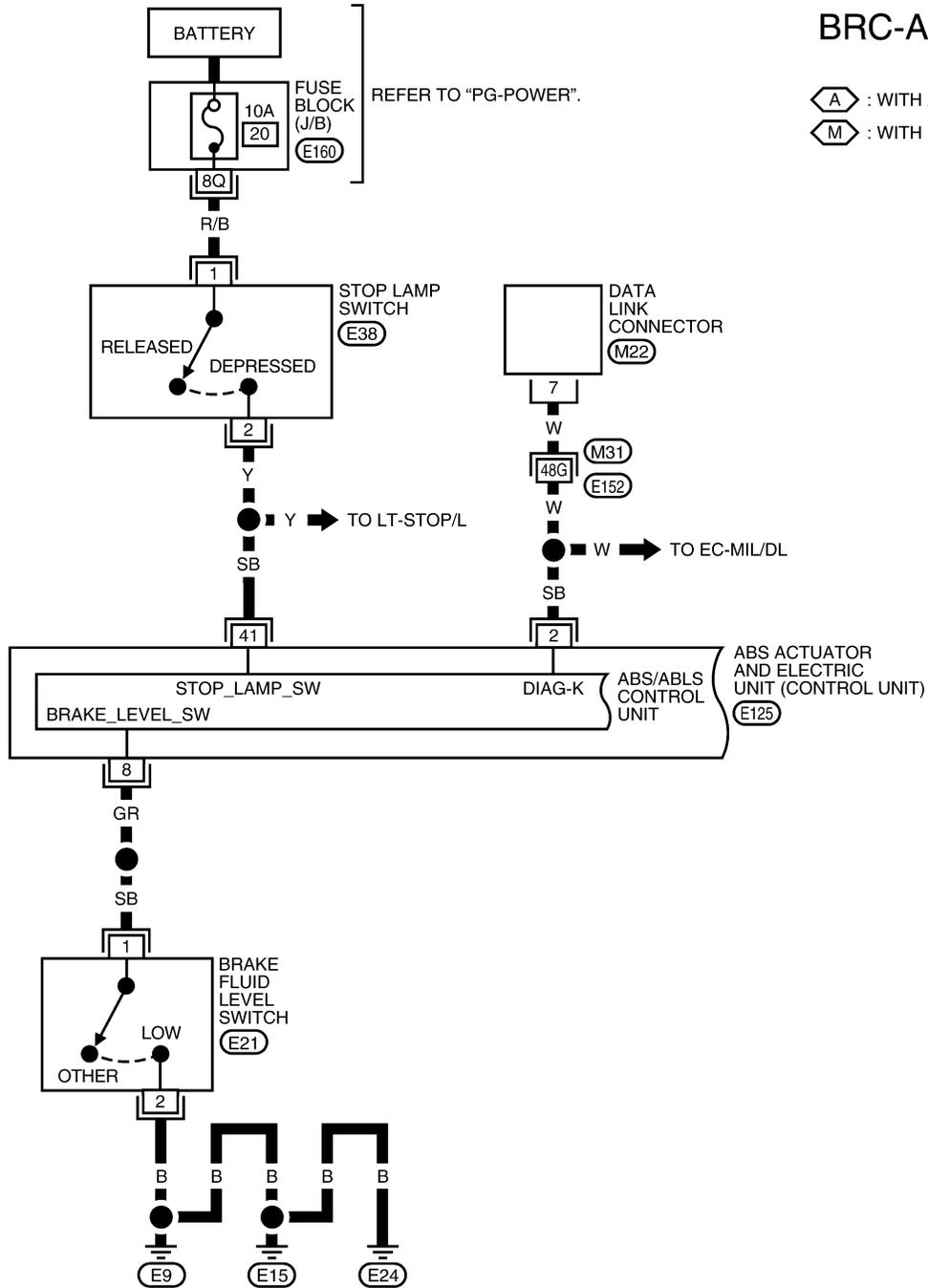
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Schematic



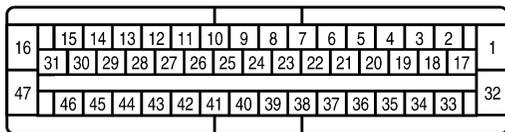
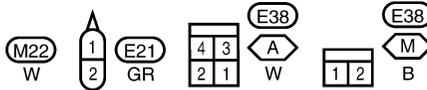
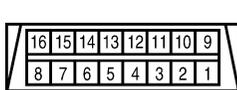
Wiring Diagram — ABL5 —

BRC-ABLS-01



⬡ : WITH A/T
⬡ : WITH M/T

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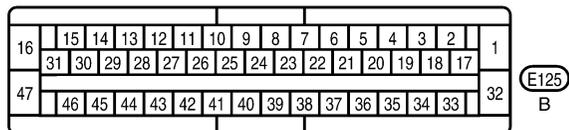
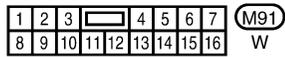
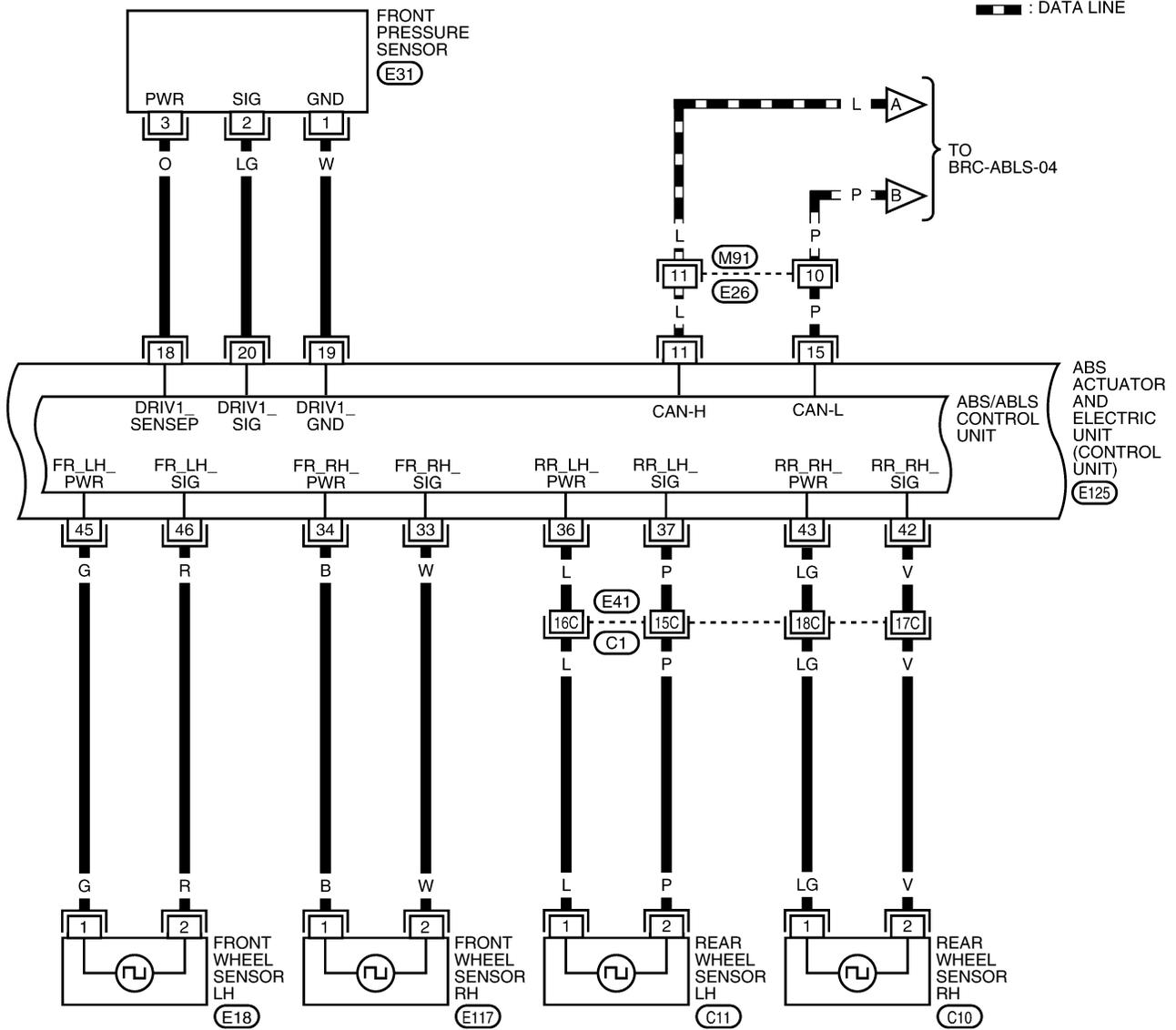


REFER TO THE FOLLOWING.
⬡ - SUPER MULTIPLE JUNCTION (SMJ)

TROUBLE DIAGNOSIS

[ABLS/ABS]

BRC-ABLS-02



REFER TO THE FOLLOWING.
(C1) - SUPER MULTIPLE JUNCTION (SMJ)

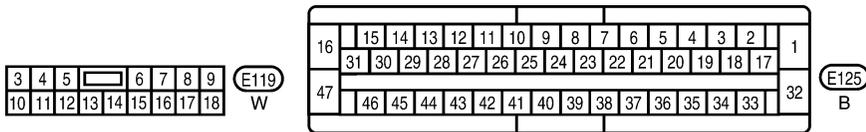
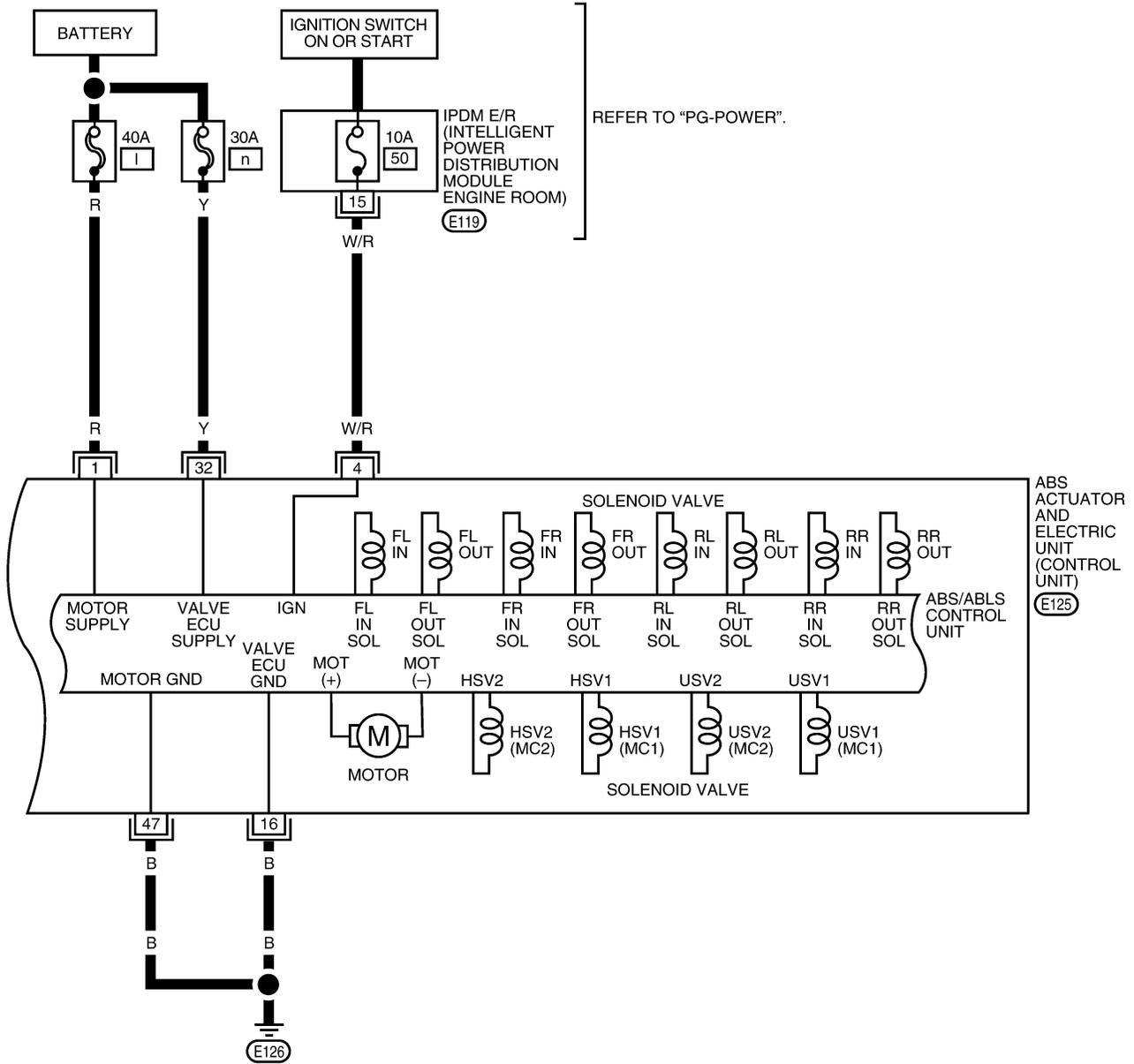
WFWA0171E

TROUBLE DIAGNOSIS

[ABLS/ABS]

BRC-ABLS-03

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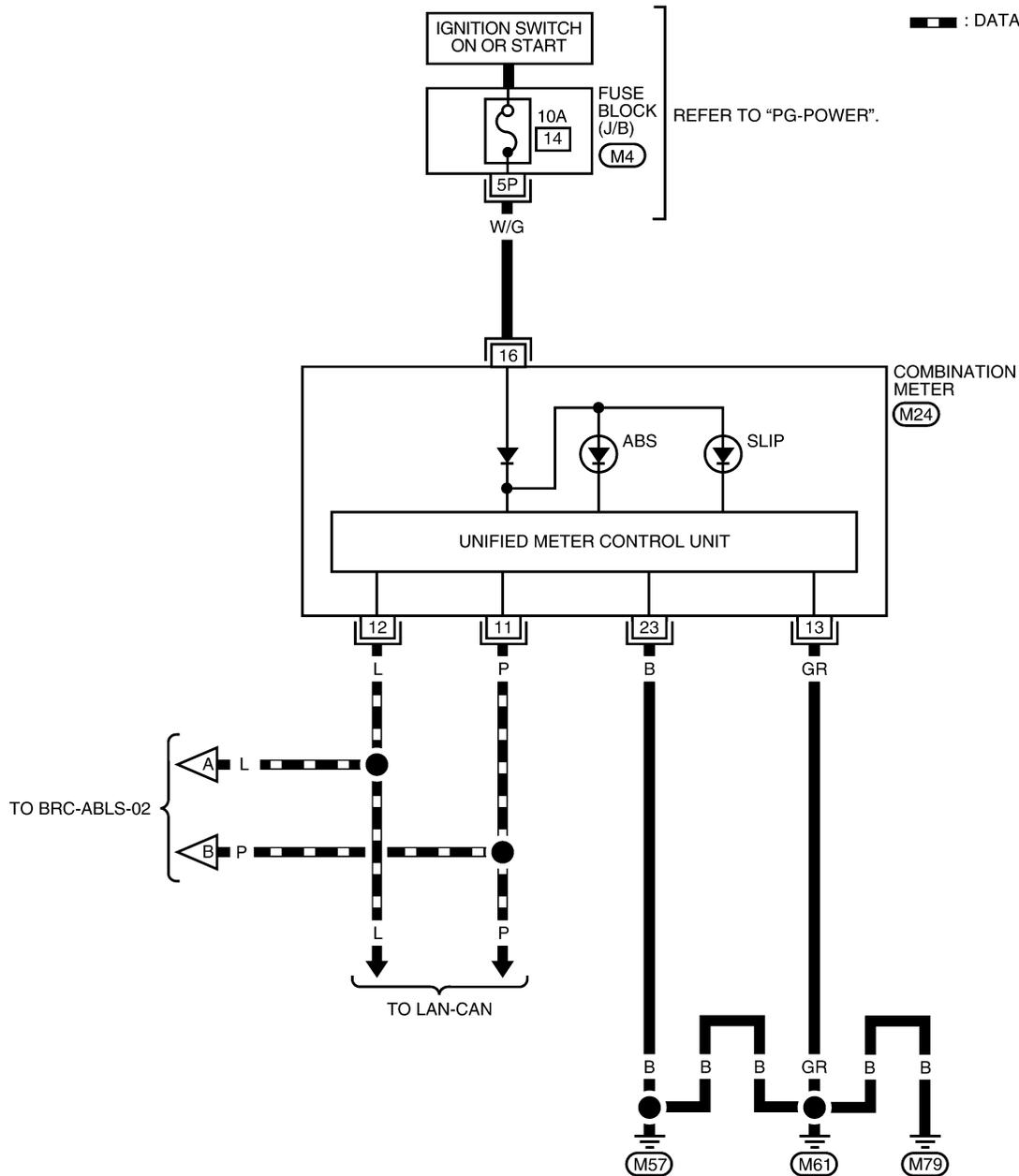
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TROUBLE DIAGNOSIS

[ABLS/ABS]

BRC-ABLS-04

▬ : DATA LINE



1P	2P	3P	4P	5P	6P	7P	(M4)		
8P	9P	10P	11P	12P	13P	14P	15P	16P	W

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	(M24)
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	W

WFWA0173E

Basic Inspection**BRAKE FLUID LEVEL, FLUID LEAK, AND BRAKE PAD INSPECTION**

1. Check fluid level in the brake fluid reservoir. If fluid level is low, add fluid.
2. Check the brake piping and around the ABS actuator and electric unit (control unit) for leaks. If there is leaking or seeping fluid, check the following items.
 - If ABS actuator and electric unit (control unit) connection is loose, tighten the piping to the specified torque and recheck for leaks.
 - If there is damage to the connection flare nut or ABS actuator and electric unit (control unit) threads, replace the damaged part and recheck for leaks.
 - When there is fluid leaking or seeping from a fluid connection, use a clean cloth to wipe off the fluid and recheck for leaks. If fluid is still seeping out, replace the damaged part. If the fluid is leaking at the ABS actuator and electric unit (control unit), replace the ABS actuator and electric unit (control unit) assembly.

CAUTION:

The ABS actuator and electric unit (control unit) cannot be disassembled and must be replaced as an assembly.

3. Check the brake pads for excessive wear.

POWER SYSTEM TERMINAL LOOSENESS AND BATTERY INSPECTION

Make sure the battery positive cable, negative cable and ground connection are not loose. In addition, make sure the battery is sufficiently charged.

ABS WARNING LAMP AND SLIP INDICATOR LAMP INSPECTION

1. Make sure ABS warning lamp and SLIP indicator lamp turn on for approximately 2 seconds when the ignition switch is turned ON. If they do not, check CAN communications. If there are no errors with CAN communication system, check combination meter. Refer to [DI-5, "COMBINATION METERS"](#).
2. Make sure the lamps turn off approximately 2 seconds after the ignition switch is turned ON. If the lamps do not turn off, conduct self-diagnosis.
3. Make sure ABS warning lamp turns off approximately 2 seconds after the engine is started. If ABS warning lamp has not turned off 10 seconds after the engine has been started, conduct self-diagnosis of the ABS actuator and electric unit (control unit).
4. After conducting the self-diagnosis, be sure to erase the error memory. Refer to [BRC-63, "CONSULT-II Function \(ABS\)"](#).

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TROUBLE DIAGNOSIS

[ABLS/ABS]

EFS0053B

Warning Lamp and Indicator Timing

Condition	ABS warning lamp	SLIP indicator lamp	Remarks
When the ignition switch is OFF	—	—	—
After the ignition switch is turned ON for approx. 1 second	X	X	—
After the ignition switch is turned ON for approx. 2 seconds	—	—	Lamp goes off approx. 2 seconds after the engine is started.
ABS/ABLS malfunction	X	X	When the ABS actuator and electric unit (control unit) is malfunctioning (power supply or ground malfunction).
ABLS malfunction	—	X	Only ABLS is malfunctioning (ABS still functioning).

X: ON

—: OFF

Control Unit Input/Output Signal Standard REFERENCE VALUE FROM CONSULT-II

EFS0053C

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.

Monitor item	Display content	Data monitor		Note: Error inspection checklist	
		Condition	Reference value in normal operation		
N POSI SIG	PNP switch signal ON/OFF condition	A/T shift position = N position	ON	BRC-79, "CAN Communication System Inspection"	
		A/T shift position = other than N position	OFF		
P POSI SIG	PNP switch signal ON/OFF condition	A/T shift position P position	ON		
		A/T shift position = other than P position	OFF		
R POSI SIG	PNP switch signal ON/OFF condition	A/T shift position R position	ON		
		A/T shift position = other than R position	OFF		
SLCT LVR POSI	PNP switch signal ON/OFF condition	A/T shift position = N or P position	ON		
		A/T shift position = other than N or P positions	OFF		
GEAR	A/T gear position	1st gear	1		—
		2nd gear	2		
		3rd gear	3		
		4th gear	4		
		5th gear	5		
FR RH SENSOR FR LH SENSOR RR RH SENSOR RR LH SENSOR	Wheel speed	Vehicle stopped	0 [km/h (MPH)]	BRC-71, "Wheel Sensor System Inspection"	
		Vehicle running (Note 1)	Almost in accordance with speedometer display (within ±10%)		
ACCEL POS SIG	Open/close condition of throttle valve (linked with accelerator pedal).	Accelerator pedal not depressed (ignition switch is ON)	0%	BRC-79, "CAN Communication System Inspection"	
		Depress accelerator pedal (ignition switch is ON)	0 to 100%		

TROUBLE DIAGNOSIS

[ABLS/ABS]

Monitor item	Display content	Data monitor		Note: Error inspection checklist	
		Condition	Reference value in normal operation		
2WD/4WD	Drive axle	2WD model	2WD	—	A
		4WD model	4WD		B
ENGINE SPEED	With engine running	With engine stopped	0 rpm	BRC-72, "Engine System Inspection"	C
		Engine running	Almost in accordance with tachometer display		
BATTERY VOLT	Battery voltage supplied to ABS actuator and electric unit (control unit)	Ignition switch ON	10 to 16V	BRC-76, "ABS/ABLS Control Unit Power and Ground Systems Inspection"	D
CRANKING SIG	Cranking status	Cranking	ON	—	E
		Not cranking	OFF		
STOP LAMP SW	Stop lamp switch operation	Brake pedal depressed	ON	BRC-75, "Stop Lamp Switch System Inspection"	BRC
		Brake pedal not depressed	OFF		
ABS WARN LAMP	ABS warning lamp ON condition (Note 2)	ABS warning lamp ON	ON	—	G
		ABS warning lamp OFF	OFF		
MOTOR RELAY	Operation status of motor and motor relay	Ignition switch ON or running (ABS not activated)	OFF	BRC-74, "Actuator Motor, Motor Relay, and Circuit Inspection"	H
		Ignition switch ON or engine running (ABS activated)	ON		
ACTUATOR RLY	Actuator relay operation status	Vehicle stopped (Ignition switch ON)	OFF		I
		Vehicle stopped (Engine running)	ON		J
SLIP LAMP	SLIP indicator lamp status (Note 3)	When SLIP indicator lamp is ON	ON	BRC-79, "CAN Communication System Inspection"	K
		When SLIP indicator lamp is OFF	OFF		
EBD WARN LAMP	EBD warning lamp status	When EBD warning lamp is ON	ON		L
		When EBD warning lamp is OFF	OFF		
FR LH IN SOL FR LH OUT SOL FR RH IN SOL FR RH OUT SOL RR RH IN SOL RR RH OUT SOL RR LH IN SOL RR LH OUT SOL	Solenoid valve operation	Actuator (solenoid) is active ("ACTIVE TEST" with CONSULT-II) or actuator relay is inactive (in fail-safe mode).	ON	BRC-73, "Solenoid and Change-Over Valve System Inspection"	M
		When actuator (solenoid) is not active and actuator relay is active (ignition switch ON).	OFF		
CV1 CV2 SV1 SV2	Switch-over valve status	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		
DECEL G-SEN	Longitudinal acceleration detected by Decel G-Sensor	Vehicle stopped	Approx. 0 G	—	
		Vehicle running	-1.7 to 1.7 G		

TROUBLE DIAGNOSIS

[ABLS/ABS]

Monitor item	Display content	Data monitor		Note: Error inspection checklist
		Condition	Reference value in normal operation	
PRESS SENSOR	Brake fluid pressure detected by pressure sensor	Do not step on the Brake pedal (When ignition switch is ON)	Approx. 0 bar	—
		Step on the Brake pedal (When ignition switch is ON)	-40 to 300 bar	
FLUID LEV SW	ON/OFF status of brake fluid level switch	When brake fluid level switch ON	ON	BRC-77, "Brake Fluid Level Switch System Inspection"
		When brake fluid level switch OFF	OFF	
ABS SIGNAL EBD SIGNAL TCS SIGNAL	Signal status	ABS active EBD active TCS active	ON	ABS system EBD system TCS system
		ABS not active EBD not active TCS not active	OFF	
ABS FAIL SIG EBD FAIL SIG TCS FAIL SIG	Fail signal status	ABS fail EBD fail TCS fail	ON	ABS system EBD system TCS system
		ABS normal EBD normal TCS normal	OFF	

Note 1: Confirm tire pressure is normal.

Note 2: ON/OFF timing of ABS warning lamp

ON: For approximately 2 seconds after ignition switch is turned ON, or when a malfunction is detected.

OFF: Approximately 2 seconds after ignition switch is turned ON (when system is in normal operation) and ABLS/ABS function is not activated.

Note 3: SLIP indicator lamp ON/OFF timing

ON: For approximately 2 seconds after ignition switch is turned ON, or when ABLS function is activated while driving.

OFF: Approximately 2 seconds after ignition switch is turned ON (when system is in normal operation) and ABLS function is not activated.

CONSULT-II Function (ABS)

CONSULT-II can display each diagnostic item using the diagnostic test modes shown following.

ABS diagnostic mode	Description
WORK SUPPORT	Supports inspection and adjustments. Commands are transmitted to the ABS actuator and electric unit (control unit) for setting the status suitable for required operation, input/output signals are received from the ABS actuator and electric unit (control unit) and received data is displayed.
SELF-DIAG RESULTS	Displays ABS actuator and electric unit (control unit) self-diagnosis results.
DATA MONITOR	Displays ABS actuator and electric unit (control unit) input/output data in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ACTIVE TEST	Operation of electrical loads can be checked by sending drive signal to them.
FUNCTION TEST	Conducted by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".
ECU PART NUMBER	ABS actuator and electric unit (control unit) part number can be read.

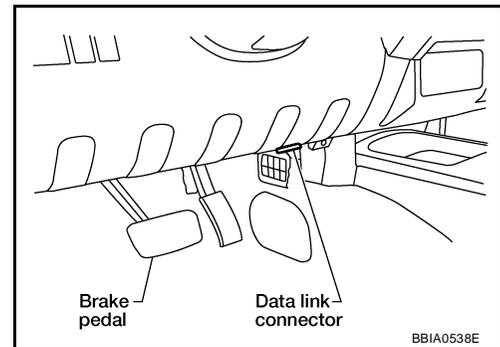
CONSULT-II BASIC OPERATION PROCEDURE

1. Turn ignition switch OFF.
2. Connect CONSULT-II and CONSULT-II CONVERTER to the data link connector.

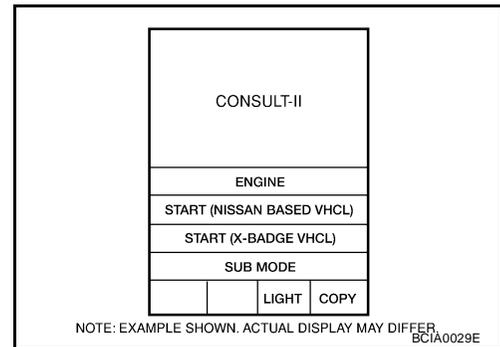
CAUTION:

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

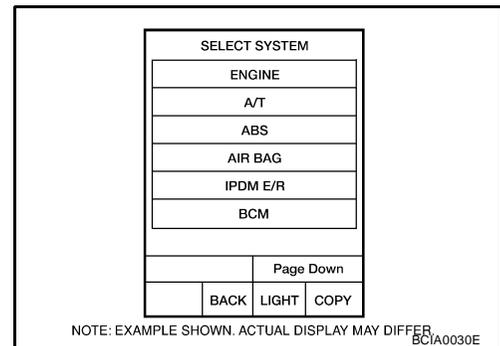
3. Turn ignition switch ON.



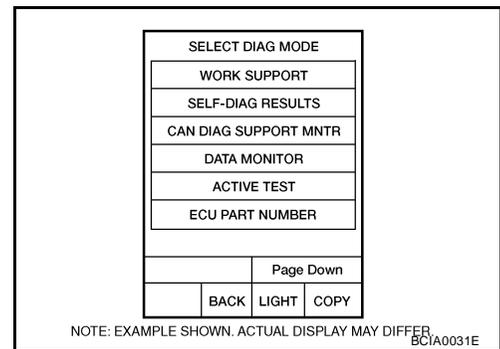
4. Touch "START (NISSAN BASED VHCL)".



5. Touch "ABS" in the "SELECT SYSTEM" screen. If "ABS" is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).



6. Select the required diagnostic location from the “SELECT DIAG MODE” screen.
For further information, see the CONSULT-II Operation Manual.



SELF-DIAGNOSIS

Description

If an error is detected in the system, the ABS warning lamp will turn on. In this case, perform self-diagnosis as follows:

Operation Procedure

1. Turn ignition switch OFF.
2. Connect CONSULT-II and CONSULT-II CONVERTER to the data link connector.

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 carries out **CAN** communication.

3. Turn ignition switch ON.
4. Start engine and drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute.
5. After stopping the 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 the 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. (If necessary, the self-diagnostic results can be printed out by touching “PRINT”.)
 - When “**NO DTC IS DETECTED**” is displayed, check the ABS warning lamp.
7. Conduct the appropriate inspection from the display item list, and repair or replace the malfunctioning component.
8. Start engine and drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute.

CAUTION:

● When a wheel sensor “**short-circuit**” is detected, if the vehicle is not driven at 30 km/h (19 MPH) for at least 1 minute, the **ABS** warning lamp will not turn off even if the malfunction is repaired.

9. Turn ignition switch OFF to prepare for erasing the memory.
10. Start the engine and touch “START (NISSAN BASED VHCL)”, “ABS”, “SELF-DIAG RESULTS”, “ERASE” in order on the CONSULT-II screen to erase the error memory.

If “**ABS**” is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

CAUTION:

If the error memory is not erased, re-conduct the operation from step 5.

11. For the final inspection, drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute and confirm that the ABS warning lamp is off.

TROUBLE DIAGNOSIS

[ABLS/ABS]

Display Item List

Self-diagnostic item	Malfunction detecting condition	Check system
FR LH SENSOR 1 [C1104]	Circuit of front LH wheel sensor is open, shorted or sensor power voltage is unusual.	BRC-71, "Wheel Sensor System Inspection" (Note 1)
RR RH SENSOR 1 [C1101]	Circuit of rear RH wheel sensor is open, shorted or sensor power voltage is unusual.	
FR RH SENSOR 1 [C1103]	Circuit of front RH wheel sensor is open, shorted or sensor power voltage is unusual.	
RR LH SENSOR 1 [C1102]	Circuit of rear LH wheel sensor is open, shorted or sensor power voltage is unusual.	
FR LH SENSOR 2 [C1108]	ABS actuator and electric unit (control unit) cannot identify sensor pulses, because of large gap between wheel sensor and sensor rotor.	
RR RH SENSOR 2 [C1105]	ABS actuator and electric unit (control unit) cannot identify sensor pulses, because of large gap between wheel sensor and sensor rotor.	
FR RH SENSOR 2 [C1107]	ABS actuator and electric unit (control unit) cannot identify sensor pulses, because of large gap between wheel sensor and sensor rotor.	
RR LH SENSOR 2 [C1106]	ABS actuator and electric unit (control unit) cannot identify sensor pulses, because of large gap between wheel sensor and sensor rotor.	
ABS SENSOR [C1115]	Wheel sensor input is abnormal.	
STOP LAMP SW [C1116]	Stop lamp switch or circuit malfunction.	
DECEL G SEN SET [C1160]	ABS decel sensor adjustment is incomplete.	BRC-73, "ABS/ABLS Control Unit Inspection"

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TROUBLE DIAGNOSIS

[ABLS/ABS]

Self-diagnostic item	Malfunction detecting condition	Check system	
FR LH IN ABS SOL [C1120]	Circuit of front LH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	BRC-73, "Solenoid and Change-Over Valve System Inspection"	
FR LH OUT ABS SOL [C1121]	Circuit of front LH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.		
RR RH IN ABS SOL [C1126]	Circuit of rear RH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.		
RR RH OUT ABS SOL [C1127]	Circuit of rear RH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.		
FR RH IN ABS SOL [C1122]	Circuit of front RH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.		
FR RH OUT ABS SOL [C1123]	Circuit of front RH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.		
RR LH IN ABS SOL [C1124]	Circuit of rear LH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.		
RR LH OUT ABS SOL [C1125]	Circuit of rear LH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.		
CV1 [C1164]	Front side switch-over solenoid valve (cut valve) is open or shorted, or control line is open or shorted to power supply or ground.		
CV2 [C1165]	Rear side switch-over solenoid valve (cut valve) is open or shorted, or control line is open or shorted to power supply or ground.		
SV1 [C1166]	Front side switch-over solenoid valve (suction valve) is open or shorted, or control line is open or shorted to power supply or ground.	BRC-74, "Actuator Motor, Motor Relay, and Circuit Inspection"	
SV2 [C1167]	Rear side switch-over solenoid valve (suction valve) is open or shorted, or control line is open or shorted to power supply or ground.		
PUMP MOTOR (Note 3) [C1111]	During actuator motor operation with ON, when actuator motor turns OFF or when control line for actuator motor relay is open. During actuator motor operation with OFF, when actuator motor turns ON or when control line for relay is shorted to ground.		
BATTERY VOLTAGE [ABNORMAL] [C1109]	ABS actuator and electric unit (control unit) power voltage is too low.		BRC-76, "ABS/ABLS Control Unit Power and Ground Systems Inspection"
G-SENSOR [C1113]	Longitudinal G-sensor is malfunctioning, or signal line of longitudinal G-sensor is open or shorted.		BRC-73, "ABS/ABLS Control Unit Inspection"
CONTROLLER FAILURE [C1110]	Internal malfunction of ABS actuator and electric unit (control unit)		BRC-73, "ABS/ABLS Control Unit Inspection"
BR FLUID LEVEL LOW [C1155]	Brake fluid level drops or circuit between ABS actuator and electric unit (control unit) and brake fluid level switch is open or shorted.		BRC-77, "Brake Fluid Level Switch System Inspection"
ENGINE SIGNAL 1 [C1130]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine fuel cut system is malfunctioning.		BRC-72, "Engine System Inspection"
ENGINE SIGNAL 2 [C1131]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine fuel cut system is malfunctioning.		
ENGINE SIGNAL 6 [C1136]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine fuel cut system is malfunctioning.		
ACTUATOR RLY [C1140]	ABS actuator relay or circuit malfunction.		

TROUBLE DIAGNOSIS

[ABLS/ABS]

Self-diagnostic item	Malfunction detecting condition	Check system
PRESS SEN CIRCUIT [C1142]	ABS pressure sense circuit malfunction.	BRC-78, "Pressure Sensor System Inspection"
VARIANT CODING [C1170]	V coding is not malfunctioning.	BRC-73, "ABS/ABLS Control Unit Inspection"
ABS DIFLOCK CONTROLLER NG [C1187]	Differential lock controller malfunction.	BRC-79, "CAN Communication System Inspection"
CAN COMM CIRCUIT [U1000]	<ul style="list-style-type: none"> ● CAN communication line is open or shorted. ● ABS actuator and electric unit (control unit) internal malfunction ● Battery voltage for ECM is suddenly interrupted for approximately 0.5 second or more. 	BRC-79, "CAN Communication System Inspection" (Note 2)

Note 1: If wheel sensor 2 for each wheel is indicated, check ABS actuator and electric unit (control unit) power supply voltage in addition to wheel sensor circuit check.

Note 2: If multiple malfunctions are detected including CAN communication line [U1000], perform diagnosis for CAN communication line first.

DATA MONITOR

Operation Procedure

- After turning OFF the ignition switch, connect CONSULT-II and the CONSULT-II CONVERTER to the data link connector.

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 carries out CAN communication.

- Touch "START (NISSAN BASED VHCL)", "ABS", "DATA MONITOR" in order on the CONSULT-II screen. If "ABS" is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

CAUTION:

When "START (NISSAN BASED VHCL)" is touched immediately after starting the 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 2.

- Return to the SELECT MONITOR ITEM screen, and touch "ECU INPUT SIGNALS", "MAIN SIGNALS", or "SELECTION FROM MENU". Refer to the following information.
- When "START" is touched, the data monitor screen is displayed.

Display Item List

Item (Unit)	Data monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
GEAR	×	×	×	Gear position judged by PNP switch signal is displayed.
FR RH SENSOR (km/h, MPH)	×	×	×	Wheel speed calculated by front RH wheel sensor signal is displayed.
FR LH SENSOR (km/h, MPH)	×	×	×	Wheel speed calculated by front LH wheel sensor signal is displayed.
RR RH SENSOR (km/h, MPH)	×	×	×	Wheel speed calculated by rear RH wheel sensor signal is displayed.
RR LH SENSOR (km/h, MPH)	×	×	×	Wheel speed calculated by rear LH wheel sensor signal is displayed.
BATTERY VOLT (V)	×	×	×	Voltage supplied to ABS actuator and electric unit (control unit) is displayed.
N POSI SIG	—	—	×	Shift position judged by PNP switch signal.

TROUBLE DIAGNOSIS

[ABLS/ABS]

Item (Unit)	Data monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
P POSI SIG	-	-	×	Shift position judged by PNP switch signal.
ACCEL POS SIG (%)	×	-	×	Throttle valve open/close status judged by CAN communication signal is displayed.
ENGINE SPEED (rpm)	×	×	×	Engine speed judged by CAN communication signal is displayed.
STOP LAMP SW (ON/OFF)	×	×	×	Stop lamp switch (ON/OFF) status is displayed.
ABS WARN LAMP (ON/OFF)	-	×	×	ABS warning lamp (ON/OFF) status is displayed.
SLIP LAMP (ON/OFF)	-	×	×	SLIP indicator lamp (ON/OFF) status is displayed.
FR LH IN SOL (ON/OFF)	-	×	×	Front LH IN ABS solenoid (ON/OFF) status is displayed.
FR LH OUT SOL (ON/OFF)	-	×	×	Front LH OUT ABS solenoid (ON/OFF) status is displayed.
RR RH IN SOL (ON/OFF)	-	×	×	Rear RH IN ABS solenoid (ON/OFF) status is displayed.
RR RH OUT SOL (ON/OFF)	-	×	×	Rear RH OUT ABS solenoid (ON/OFF) status is displayed.
FR RH IN SOL (ON/OFF)	-	×	×	Front RH IN ABS solenoid (ON/OFF) status is displayed.
FR RH OUT SOL (ON/OFF)	-	×	×	Front RH OUT ABS solenoid (ON/OFF) status is displayed.
RR LH IN SOL (ON/OFF)	-	×	×	Rear LH IN ABS solenoid (ON/OFF) status is displayed.
RR LH OUT SOL (ON/OFF)	-	×	×	Rear LH OUT ABS solenoid (ON/OFF) status is displayed.
MOTOR RELAY (ON/OFF)	-	×	×	ABS motor relay signal (ON/OFF) status is displayed.
ACTUATOR RLY (ON/OFF)	-	×	×	ABS actuator relay signal (ON/OFF) status is displayed.
CV1 (ON/OFF)	-	-	×	Front side switch-over solenoid valve (cut valve) (ON/OFF) status is displayed.
CV2 (ON/OFF)	-	-	×	Rear side switch-over solenoid valve (cut-valve) (ON/OFF) status is displayed.
SV1 (ON/OFF)	-	-	×	Front side switch-over solenoid valve (suction valve) (ON/OFF) status is displayed.
SV2 (ON/OFF)	-	-	×	Rear side switch-over solenoid valve (suction valve) (ON/OFF) status is displayed.
TCS FAIL SIG (ON/OFF)	-	-	×	TCS fail signal (ON/OFF) status is displayed.
ABS FAIL SIG (ON/OFF)	-	-	×	ABS fail signal (ON/OFF) status is displayed.
EBD FAIL SIG (ON/OFF)	-	-	×	EBD fail signal (ON/OFF) status is displayed.

TROUBLE DIAGNOSIS

[ABLS/ABS]

Item (Unit)	Data monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
FLUID LEV SW (ON/OFF)	×	–	×	Brake fluid level switch (ON/OFF) status is displayed.
EBD SIGNAL (ON/OFF)	–	–	×	EBD operation (ON/OFF) status is displayed.
ABS SIGNAL (ON/OFF)	–	–	×	ABS operation (ON/OFF) status is displayed.
TCS SIGNAL (ON/OFF)	–	–	×	TCS operation (ON/OFF) status is displayed.
EBD WARN LAMP	–	–	×	Brake warning lamp (ON/OFF) status is displayed.
SLCT LVR POSI	×	×	×	Shift position judged by PNP switch signal.
R POSI SIG	–	–	×	Shift position judged by PNP switch signal.
2WD/4WD	–	–	×	It recognizes on software whether it is 2WD and whether it is in 4WD state.
PRESS SENSOR	×	–	×	Brake pressure detected by pressure sensor is displayed.
CRANKING SIG	–	–	×	The input state of the key SW START position signal is displayed.
DECEL G-SEN	×	×	×	Longitudinal acceleration detected by decel G-sensor is displayed.

×: Applicable

–: Not applicable

ACTIVE TEST

CAUTION:

- Do not perform active test while driving.
- Make sure to completely bleed air from the brake system.
- The ABS and brake warning lamps turn on during the active test.

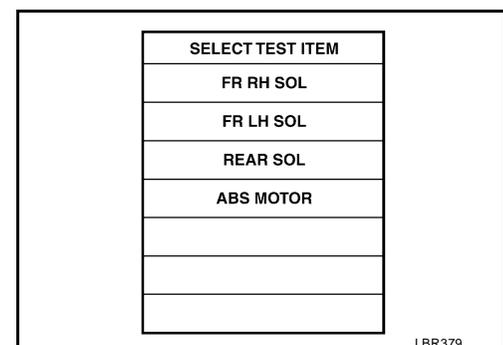
Operation Procedure

1. Connect the CONSULT-II and CONSULT-II CONVERTER to the data link connector and start the engine.

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 carries out CAN communication.

2. Touch "START (NISSAN BASED VHCL)" on the display screen.
3. Touch "ABS".
If "ABS" is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).
4. Touch "ACTIVE TEST".
5. The SELECT TEST ITEM screen is displayed.
6. Touch necessary test item.



LBR379

TROUBLE DIAGNOSIS

[ABLS/ABS]

7. With the "MAIN SIGNALS" display selected, touch "START".
8. The Active Test screen will be displayed, so conduct the following test.

Solenoid Valve Operation Chart

Operation		ABS solenoid valve			ABS solenoid valve (ACT)		
		UP	KEEP	DOWN	UP	ACTUA-TOR UP	ACTUA-TOR KEEP
FR RH SOL FR RH ABS SOLE- NOID (ACT)	FR RH IN SOL	OFF	ON	ON	OFF	OFF	OFF
	FR RH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
FR LH SOL FR LH ABS SOLE- NOID (ACT)	FR LH IN SOL	OFF	ON	ON	OFF	OFF	OFF
	FR LH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
RR RH SOL RR RH ABS SOLE- NOID (ACT)	RR RH IN SOL	OFF	ON	ON	OFF	OFF	OFF
	RR RH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
RR LH SOL RR LH ABS SOLE- NOID (ACT)	RR LH IN SOL	OFF	ON	ON	OFF	OFF	OFF
	RR LH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
REAR SOL	RR RH IN SOL	OFF	ON	ON	OFF	OFF	OFF
	RR RH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
	RR LH IN SOL	OFF	ON	ON	OFF	OFF	OFF
	RR LH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF

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

NOTE:

- If active test is performed with brake pedal depressed, pedal stroke may change. This is normal.
- "TEST IS STOPPED" is displayed approximately 10 seconds after operation starts.
- After "TEST IS STOPPED" is displayed, to perform test again, repeat Step 6.

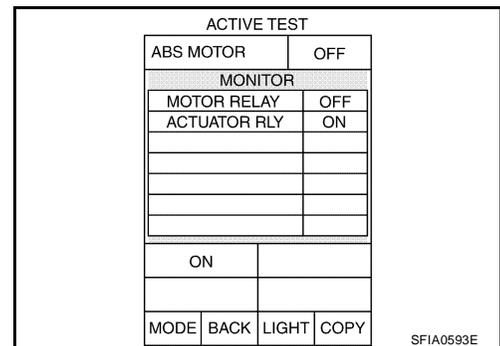
ABS Motor

Touch "ON" and "OFF" on the screen. Check that ABS motor relay operates as shown in table below.

Operation	ON	OFF
ABS actuator relay	ON	ON
ABS motor relay	ON	OFF

NOTE:

- If active test is performed with brake pedal depressed, pedal stroke may change. This is normal.
- "TEST IS STOPPED" is displayed approximately 10 seconds after operation starts.



TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

PFP:00000

Wheel Sensor System Inspection

EFS0053E

INSPECTION PROCEDURE

1. CONNECTOR INSPECTION

Disconnect the ABS actuator and electric unit (control unit) connector E125 and wheel sensor of malfunctioning code.

Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

2. CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.

2. Turn on the ABS active wheel sensor tester power switch.

NOTE:

The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.

3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.

NOTE:

If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 3.

NO >> Replace the wheel sensor. Refer to [BRC-84, "Removal and Installation"](#).

3. CHECK TIRES

Check for inflation pressure, wear and size of each tire. Refer to [WT-31, "SERVICE DATA AND SPECIFICATIONS \(SDS\)"](#).

Are tire pressure and size correct and is tire wear within specifications?

YES >> GO TO 4.

NO >> Adjust tire pressure or replace tire(s).

4. CHECK WHEEL BEARINGS

Check wheel bearing axial end play. Refer to [FAX-5, "WHEEL BEARING INSPECTION"](#), [RAX-6, "Rear Axle Bearing"](#) (C200) or [RAX-18, "Rear Axle Bearing"](#) (M226).

OK or NG

OK >> GO TO 5.

NG >> Repair or replace as necessary. Refer to [FAX-5, "Removal and Installation"](#), [RAX-12, "Removal and Installation"](#) (C200) or [RAX-23, "Removal and Installation"](#) (M226).

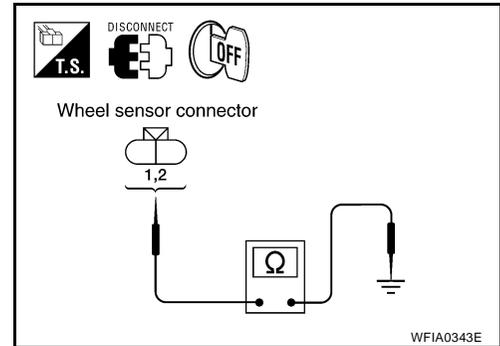
5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunction code No.
2. Check resistance between wheel sensor harness connector terminals and ground.

Continuity should not exist.

OK or NG

- OK >> GO TO 6.
- NG >> Repair the circuit.



6. CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector E125 and the malfunctioning wheel sensor harness connector E18, E117, C10, or C11.

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
	Connector	Terminals	Connector	Terminals	
Front LH	E125	45	E18	1	Yes
		46		2	
Front RH		34	E117	1	
		33		2	
Rear LH		37	C11	2	
		36		1	
Rear RH		42	C10	2	
		43		1	

Continuity should exist.

OK or NG

- OK >> Replace the ABS actuator and electric unit (control unit). Refer to [BRC-86, "Removal and Installation"](#).
- NG >> Repair the circuit.

Engine System Inspection

EFS0053F

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

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

Is the above displayed in the self-diagnosis display items?

- YES >> GO TO 2.
- NO >> Inspection End.

2. ENGINE SYSTEM INSPECTION

1. Perform ECM self-diagnosis and repair as necessary.
2. Perform ABS actuator and electric unit (control unit) self-diagnosis again.

OK or NG

- OK >> Inspection End.
 NG >> Repair or replace as necessary.

ABS/ABLS Control Unit Inspection

EFS0053G

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

Self-diagnosis results
CONTROLLER FAILURE
DECEL G SEN SET
G-SENSOR
VARIANT CODING

Is the above displayed in the self-diagnosis display items?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-86, "Removal and Installation"](#)
 NO >> Inspection End.

Solenoid and Change-Over Valve System Inspection

EFS0053H

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

Self-diagnosis results
FR LH IN ABS SOL
FR LH OUT ABS SOL
RR RH IN ABS SOL
RR RH OUT ABS SOL
FR RH IN ABS SOL
FR RH OUT ABS SOL
RR LH IN ABS SOL
RR LH OUT ABS SOL
CV 1
CV 2
SV 1
SV 2

Is the above displayed in the self-diagnosis display items?

- YES >> GO TO 2.
 NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector E125.
2. Check the terminals for deformation, disconnection, looseness or damage.

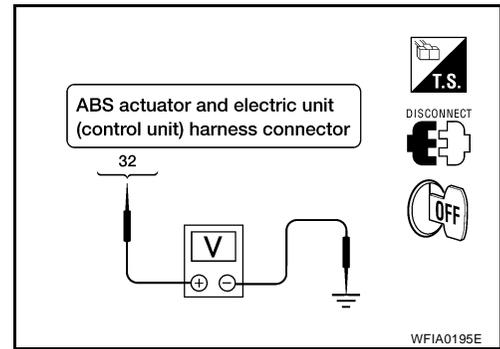
OK or NG

- OK >> GO TO 3.
- NG >> Repair or replace as necessary.

3. CHECKING SOLENOID POWER AND GROUND

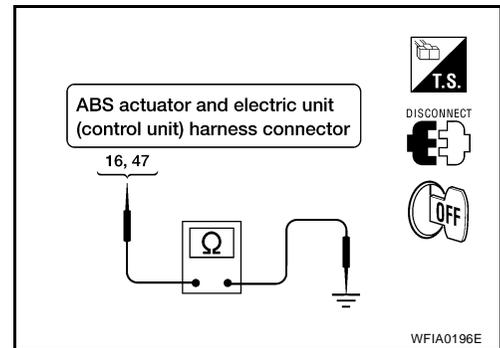
1. Check voltage between ABS actuator and electric unit (control unit) harness connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value (Approx.)
32	—	12V



2. Check resistance between ABS actuator and electric unit (control unit) harness connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value Ω (Approx.)
16	—	0Ω
47	—	0Ω



OK or NG

- OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-86, "Removal and Installation"](#).
- NG >> Repair the circuit.

Actuator Motor, Motor Relay, and Circuit Inspection

EFS0053I

INSPECTION PROCEDURE

1. CHECKING SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
PUMP MOTOR
ACTUATOR RLY

Is the above displayed in the self-diagnosis display items?

- YES >> GO TO 2.
- NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector E125.
2. Check the terminals for deformation, disconnection, looseness or damage.

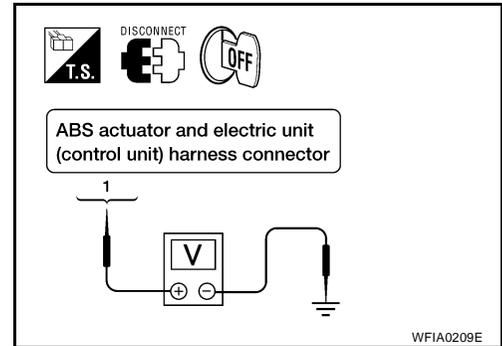
OK or NG

- OK >> GO TO 3.
- NG >> Repair or replace as necessary.

3. CHECKING ABS MOTOR AND MOTOR RELAY POWER SYSTEM

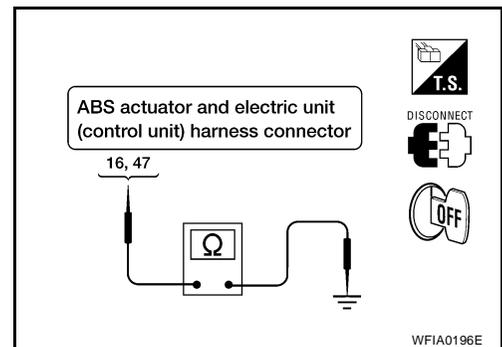
1. Check voltage between ABS actuator and electric unit (control unit) harness connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value (Approx.)
1	—	12V



2. Check resistance between ABS actuator and electric unit (control unit) connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value Ω (Approx.)
16	—	0Ω
47	—	0Ω



OK or NG

- OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-86, "Removal and Installation"](#).
- NG >> Repair the circuit.

Stop Lamp Switch System Inspection

EFS0053J

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

Self-diagnosis results
STOP LAMP SW

Is the above displayed in the self-diagnosis display items?

- YES >> GO TO 2.
- NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect the ABS actuator and electric unit (control unit) connector E125 and stop lamp switch connector E38.
2. Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

- OK >> GO TO 3.
- NG >> Repair or replace as necessary.

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3. STOP LAMP SWITCH INSPECTION

Check the voltage between the ABS actuator and electric unit (control unit) harness connector E125 terminal 41 and body ground.

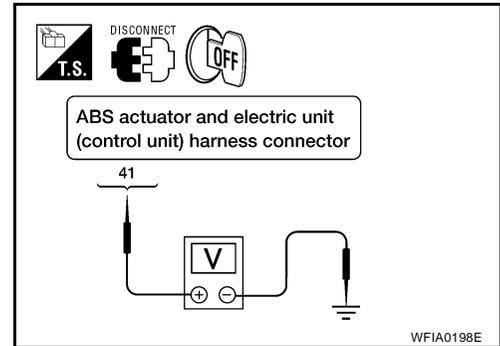
Brake pedal depressed : Battery voltage (approx. 12V)

Brake pedal not depressed : Approx. 0V

OK or NG

OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-86, "Removal and Installation"](#).

NG >> Refer to [LT-97, "STOP LAMP"](#).



ABS/ABLS Control Unit Power and Ground Systems Inspection

EFS0053K

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

Self-diagnosis results
BATTERY VOLTAGE

Is the above displayed in the self-diagnosis display items?

YES >> GO TO 2.

NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect the ABS actuator and electric unit (control unit) connector E125.
2. Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace as necessary.

3. ABS/ABLS CONTROL UNIT POWER AND GROUND CIRCUIT INSPECTION

Measure the voltage and continuity between the ABS actuator and electric unit (control unit) harness connector E125 and body ground.

Signal name	ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value
Power supply	1	—	Battery voltage (Approx. 12V)
	32		
Ground	16	—	Continuity should exist.
	47		

OK or NG

OK >> Check the battery for loose terminals, low voltage, etc. Repair as necessary.

NG >> Repair the circuit.

Brake Fluid Level Switch System Inspection

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

1. Check the brake reservoir tank fluid level. If the level is low, add brake fluid.
2. Erase the self-diagnosis results and check the self-diagnosis results.

Self-diagnosis results

BR FLUID LEVEL LOW

Is the above displayed in the self-diagnosis display items?

- YES >> GO TO 2.
 NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect the ABS actuator and electric unit (control unit) connector E125 and brake fluid level switch connector E21.
2. Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

- OK >> GO TO 3.
 NG >> Repair or replace as necessary.

3. CHECK THE HARNESS BETWEEN THE BRAKE FLUID LEVEL SWITCH AND THE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Check the continuity between the brake fluid level switch harness connector E21 and the ABS actuator and electric unit (control unit) harness connector E125.

ABS actuator and electric unit (control unit) harness connector E125	Brake fluid level switch harness connector E21	Continuity
8	1	Yes
8	Ground	No
Ground	2	Yes

OK or NG

- OK >> GO TO 4.
 NG >> Repair the circuit.

4. CHECK BRAKE FLUID LEVEL SWITCH

Check continuity between brake fluid level switch terminals 1 and 2.

Continuity should not exist.

OK or NG

- OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-86, "Removal and Installation"](#) .
 NG >> Replace brake fluid level switch.

Pressure Sensor System Inspection

INSPECTION PROCEDURE

1. DISPLAY SELF DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
PRESS SEN CIRCUIT

Is the above displayed in the self-diagnosis display items?

YES or NO

YES >> GO TO 2.

NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the front pressure sensor connector E31 and ABS actuator and electric unit (control unit) connector E125 and inspect the terminals for deformation, disconnection, looseness, or damage.

OK or NG

OK >> GO TO 3.

NG >> Repair connector.

3. FRONT PRESSURE SENSOR CIRCUIT INSPECTION

1. Measure the continuity between the ABS actuator and electric unit (control unit) harness connector E125 and front pressure sensor harness connector E31.

ABS actuator and electric unit (control unit) harness connector E125	Front pressure sensor har- ness connector E31	Continuity
18	3	Yes
19	1	
20	2	

2. Measure the continuity between the ABS actuator and electric unit (control unit) harness connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Continuity
18	—	No
19		
20		

OK or NG

OK >> GO TO 4.

NG >> Repair or replace harness or connector.

4. FRONT PRESSURE SENSOR INSPECTION

1. Reconnect the front pressure sensor and ABS actuator and electric unit (control unit) connectors.
2. Use "DATA MONITOR" to check if the status of "PRESS SENSOR" is normal.

Condition	Data monitor display (Approx.)
	PRESS SENSOR
When brake pedal is depressed	Positive value
When brake pedal is released	0 bar

OK or NG

- OK >> Inspection End.
- NG >> Replace front pressure sensor.

CAN Communication System Inspection

EFS0053N

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

Is "CAN COMM CIRCUIT" displayed in self-diagnosis display items?

- YES >> Print out the self-diagnostic results, and refer to [LAN-22, "CAN COMMUNICATION"](#).
- NO >> Connector terminal is loose, damaged, open, or shorted.

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TROUBLE DIAGNOSES FOR SYMPTOMS

ABS Works Frequently

1. CHECK WARNING LAMP ACTIVATION

Make sure warning lamp remains off while driving.

OK or NG

OK >> GO TO 2.

NG >> Carry out self-diagnosis. Refer to [BRC-64, "SELF-DIAGNOSIS"](#) .

2. CHECK WHEEL SENSORS

Check the following.

- Wheel sensor mounting for looseness
- Wheel sensors for physical damage
- Wheel sensor connectors for terminal damage or loose connections
- Sensor rotor and mount for physical damage (rear only)

OK or NG

OK >> GO TO 3.

NG >> Repair or replace as necessary.

3. CHECK FRONT AND REAR AXLES

Check front and rear axles for excessive looseness. Refer to [FAX-5, "WHEEL BEARING INSPECTION"](#) , [RAX-6, "Rear Axle Bearing"](#) (C200) or [RAX-18, "Rear Axle Bearing"](#) (M226).

OK or NG

OK >> GO TO 4.

NG >> Repair as necessary.

4. CHECK BRAKE FLUID PRESSURE

Check brake fluid pressure distribution.

Refer to [BRC-59, "Basic Inspection"](#) .

Is brake fluid pressure distribution normal?

YES >> Inspection End.

NO >> Perform Basic Inspection. Refer to [BRC-59, "Basic Inspection"](#) .

Unexpected Pedal Action**1. CHECK WARNING LAMP ACTIVATION**

Make sure warning lamp remains off while driving.

OK or NG

OK >> GO TO 2.

NG >> Carry out self-diagnosis. Refer to [BRC-64, "SELF-DIAGNOSIS"](#) .

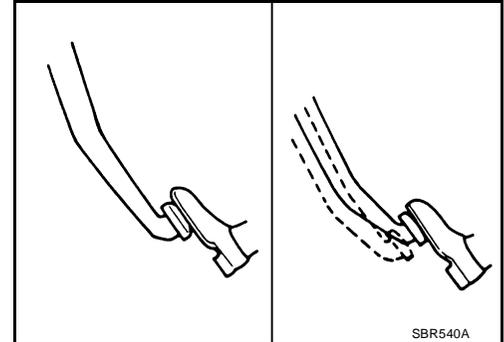
2. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke.

Is pedal stroke excessive?

YES >> Perform Basic Inspection. Refer to [BRC-59, "Basic Inspection"](#) .

NO >> GO TO 3.

**3. CHECK CONNECTOR AND BRAKING PERFORMANCE**

1. Disable ABS by disconnecting ABS actuator and electric unit (control unit) connector.

2. Drive vehicle and check brake operation.

NOTE:

- Stopping distance may be longer than vehicles without ABS when road condition is slippery.
- Driving the vehicle with the ABS actuator and electric unit (control unit) disconnected may induce DTCs in electrical control units using CAN communication. After the inspection, clear all DTCs. Refer to [LAN-22, "CAN COMMUNICATION"](#) .

OK or NG

OK >> GO TO 4.

NG >> Perform Basic Inspection. Refer to [BRC-59, "Basic Inspection"](#) .

4. CHECK WHEEL SENSORS

Check the following.

- Wheel sensor mounting for looseness
- Wheel sensors for physical damage
- Wheel sensor connectors for terminal damage or loose connections

OK or NG

OK >> Check ABS actuator and electric unit (control unit) connector terminals for deformation, disconnection, looseness or damage. Reconnect ABS actuator and electric unit (control unit) harness connector. Then retest.

NG >> Repair or replace as necessary.

Long Stopping Distance

1. CHECK BASE BRAKING SYSTEM PERFORMANCE

1. Disable ABS by disconnecting ABS actuator and electric unit (control unit) connector.
2. Drive vehicle and check brake operation.

NOTE:

- Stopping distance may be longer than vehicles without ABS when road condition is slippery.
- Driving the vehicle with the ABS actuator and electric unit (control unit) disconnected may induce DTCs in electrical control units using CAN communication. After the inspection, clear all DTCs. Refer to [LAN-22, "CAN COMMUNICATION"](#).

OK or NG

- OK >> Go to [BRC-80, "ABS Works Frequently"](#).
- NG >> Perform Basic Inspection. Refer to [BRC-59, "Basic Inspection"](#).

ABS Does Not Work

CAUTION:

The ABS does not operate when the vehicle speed is 10 km/h (6 MPH) or less.

1. CHECK WARNING LAMP ACTIVATION

Turn ignition switch ON and check for warning lamp activation.

- Warning lamp should activate for approximately 2 seconds after turning the ignition switch ON.

OK or NG

- OK >> Carry out self-diagnosis. Refer to [BRC-64, "SELF-DIAGNOSIS"](#).
- NG >> Go to [BRC-83, "ABS Warning Lamp Does Not Come On When Ignition Switch Is Turned On"](#).

Pedal Vibration or ABS Operation Noise

NOTE:

During ABS activation, pedal vibration may be felt and a noise may be heard. This is normal and does not indicate a malfunction.

1. CHECK SYMPTOM

1. Apply brake.
2. Start engine.

Does the symptom occur only when engine is started?

- YES >> Carry out self-diagnosis. Refer to [BRC-64, "SELF-DIAGNOSIS"](#).
- NO >> GO TO 2.

2. RECHECK SYMPTOM

Does the symptom occur only when electrical equipment switches (such as headlamps) are turned on?

- YES >> Check for radio, antenna or related wiring that is routed too close to the ABS actuator and electric unit (control unit) and reroute as necessary.
- NO >> Go to [BRC-80, "ABS Works Frequently"](#).

ABS Warning Lamp Does Not Come On When Ignition Switch Is Turned On EFS005FC

1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) FUSES

Check 30A fusible link **n** and 40A fusible link **I** for ABS actuator and electric unit (control unit). For fusible link layout, refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .

OK or NG

OK >> GO TO 2.

NG >> If fusible link is blown, be sure to eliminate cause of problem before replacing.

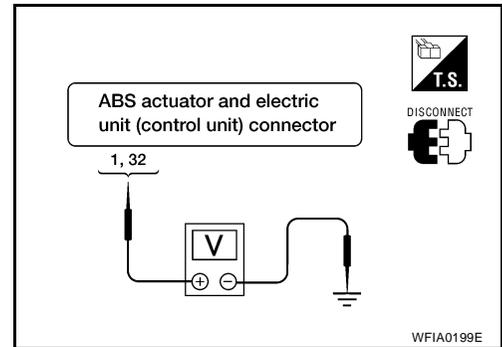
2. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY CIRCUITS

1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Check voltage between ABS actuator and electric unit (control unit) connector terminal 1 and ground and terminal 32 and ground.

Does battery voltage exist?

YES >> GO TO 3.

NO >> Repair harness or connectors between fusible link and ABS actuator and electric unit (control unit).



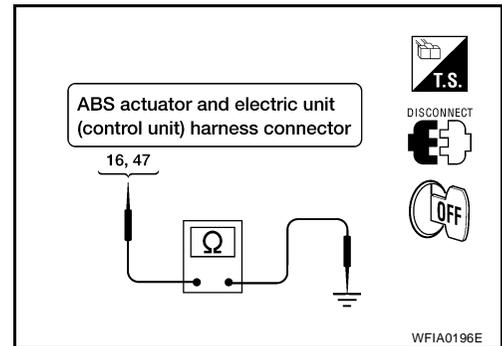
3. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector terminal 16 and ground and terminal 47 and ground.

Does continuity exist?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-86, "Removal and Installation"](#) .

NO >> Repair harness or connectors between ABS actuator and electric unit (control unit) and ground.



ABS Warning Lamp Stays On When Ignition Switch Is Turned On EFS005FD

1. CARRY OUT SELF-DIAGNOSIS

Carry out self-diagnosis. Refer to [BRC-64, "SELF-DIAGNOSIS"](#) .

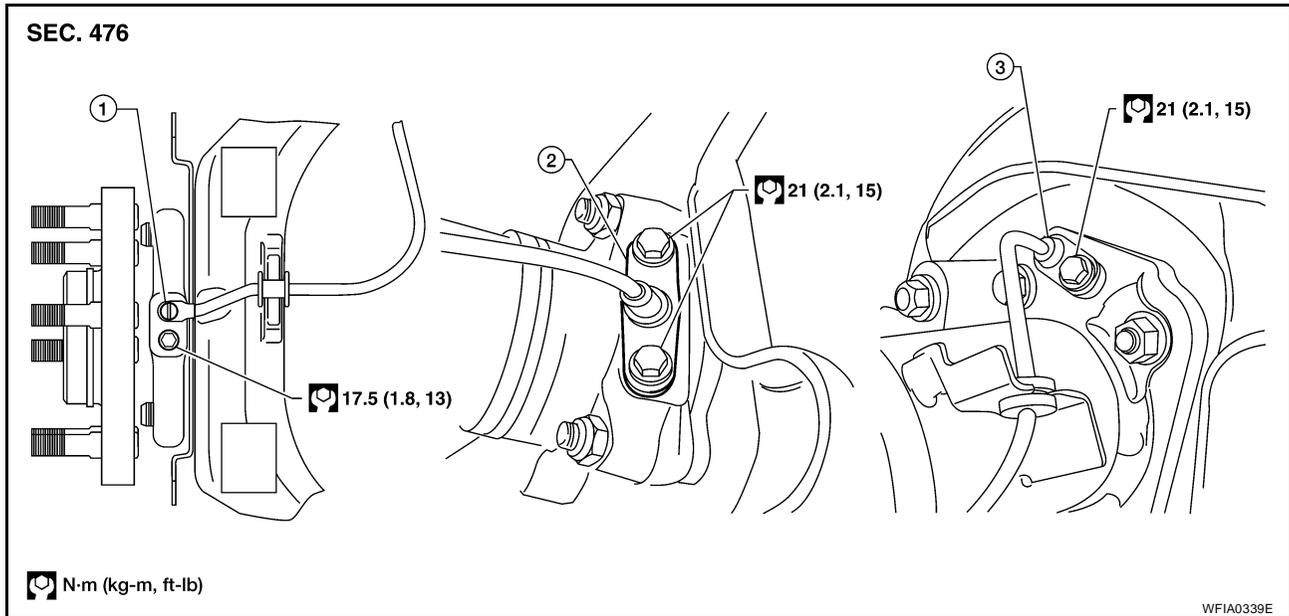
Are malfunctions detected in self-diagnosis?

YES >> Refer to [BRC-65, "Display Item List"](#) .

NO >> Refer to [DI-34, "WARNING LAMPS"](#) .

WHEEL SENSORS

Removal and Installation



1. Front wheel sensor

2. Rear wheel sensor (C200)

3. Rear wheel sensor (M226)

REMOVAL

1. Remove wheel sensor mounting screw(s).
 - When removing the front wheel sensor, first remove the disc rotor to gain access to the front wheel sensor. Refer to [BR-23, "Removal and Installation of Brake Caliper Assembly and Disc Rotor"](#).
2. Pull out the sensor, being careful to turn it as little as possible.

CAUTION:

- Be careful not to damage sensor edge and sensor rotor teeth.
- Do not pull on the sensor harness.

3. Disconnect wheel sensor harness electrical connector, then remove harness from mounts.

INSTALLATION

- Before installing wheel sensors,
 - Inspect and replace sensor assembly if damaged.
 - Clean wheel sensor hole and mounting surface with brake cleaner and a lint-free shop rag. Be careful that dirt and debris do not enter the axle.
 - Replace wheel sensor O-ring, then apply a coat of suitable grease to the O-ring and mounting hole.
- Installation is in the reverse order of removal.

SENSOR ROTOR

PFP:47970

Removal and Installation FRONT

EFS0053W

The wheel sensor rotors are built into the wheel hubs and are not removable. If damaged, replace wheel hub and bearing assembly. Refer to [FAX-5, "Removal and Installation"](#) .

REAR (C200)

Removal and Installation

It is necessary to disassemble the rear axle to replace the sensor rotor. Perform the axle shaft assembly removal procedure to replace sensor rotor. Refer to [RAX-7, "Removal and Installation"](#) .

REAR (M226)

Removal

1. Remove axle shaft assembly. Refer to [RAX-19, "Removal and Installation"](#) .

NOTE:

It is necessary to disassemble the rear axle to replace the sensor rotor.

2. Pull the sensor rotor of off the axle shaft using Tool and a press.

Tool number : 205-D002 (—)

Installation

1. Install new sensor rotor on axle shaft using a suitable length steel tube and a press. Make sure sensor rotor is fully seated.

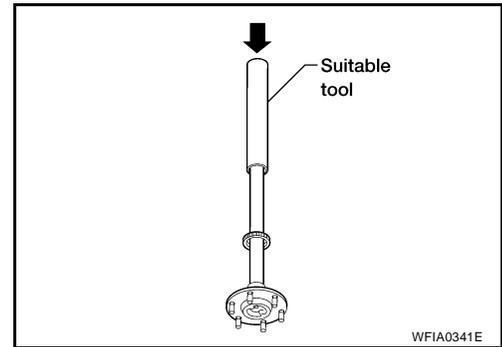
CAUTION:

Do not reuse the old sensor rotor.

2. Install axle shaft assembly. Refer to [RAX-19, "Removal and Installation"](#) .

CAUTION:

Do not reuse the axle oil seal. The axle oil seal must be replaced every time the axle shaft assembly is removed from the axle shaft housing.



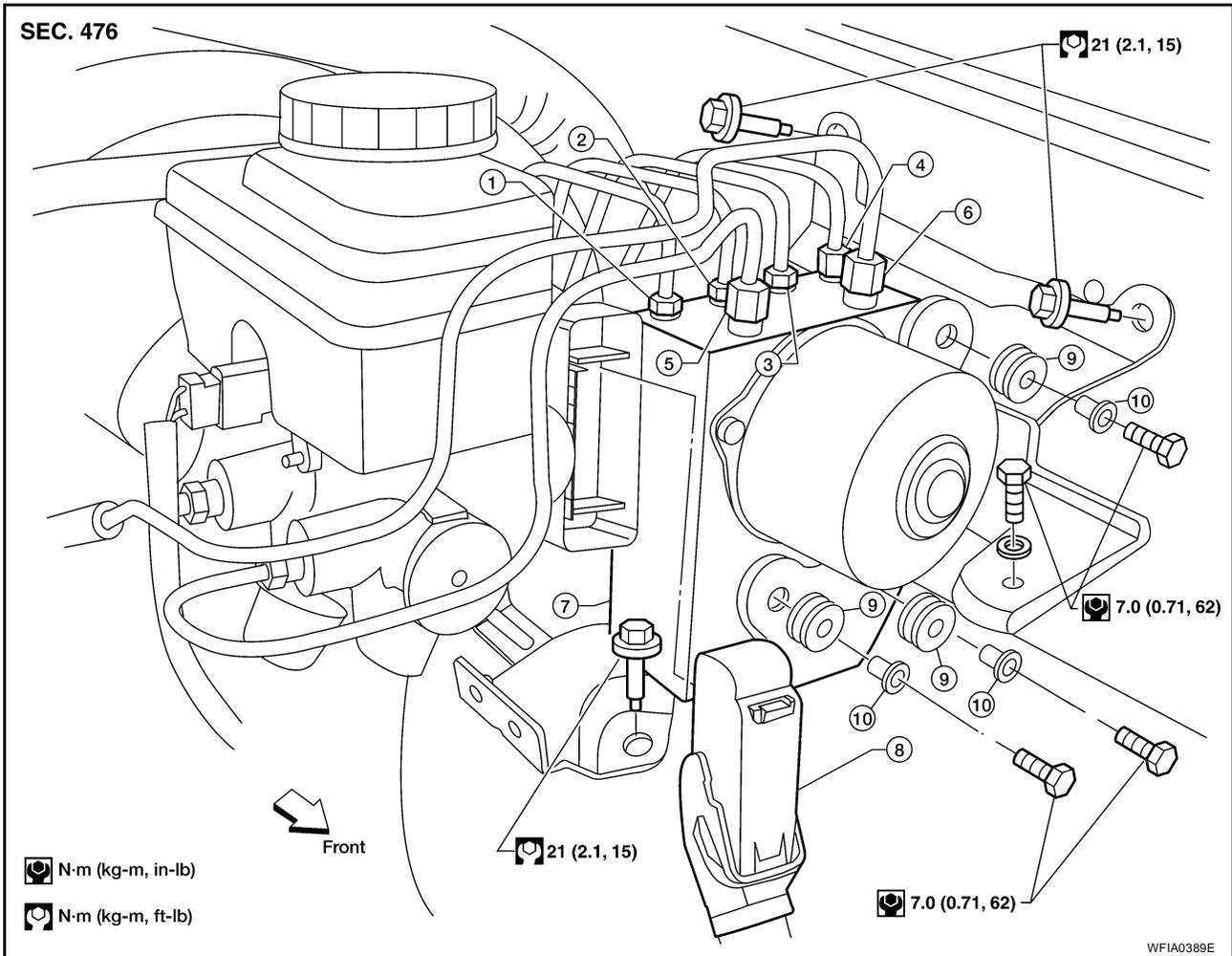
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ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

PFP:47660

Removal and Installation

EFS0059W



- | | | |
|--|--|--|
| 1. To rear left | 2. To rear right | 3. To front left |
| 4. To front right | 5. From the master cylinder secondary side | 6. From the master cylinder primary side |
| 7. ABS actuator and electric unit (control unit) | 8. Harness connector | 9. Grommet |
| 10. Collar | | |

REMOVAL

1. Disconnect the negative battery terminal.
2. Drain the brake fluid. Refer to [BR-9, "Drain and Refill"](#).
3. Disconnect the actuator harness from the ABS actuator and electric unit (control unit).

CAUTION:

- To remove the brake tubes, use a flare nut wrench to prevent the flare nuts and brake tubes from being damaged.
- Be careful not to splash brake fluid on painted areas.

4. Disconnect the brake tubes.
5. Remove the three bolts and remove the ABS actuator and electric unit (control unit).

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

To install, use a flare nut wrench (commercial service tool).

- Always tighten brake tubes to specification when installing. Refer to [BR-11, "Hydraulic Circuit"](#) .
- Never reuse drained brake fluid.
- After installation of the ABS actuator and electric unit (control unit), refill brake system with new brake fluid. Then bleed the air from the system. Refer to [BR-10, "Bleeding Brake System"](#) .

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BRC

PRECAUTIONS

PF:00001

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

EFS005SM

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:

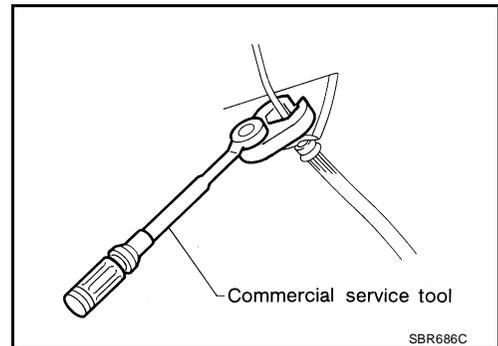
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation 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 Brake System

EFS005DB

CAUTION:

- Refer to [MA-11. "RECOMMENDED FLUIDS AND LUBRICANTS"](#) for recommended brake fluid.
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.
- To clean or wash all parts of master cylinder and disc brake caliper, use clean brake fluid.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use flare nut wrench when removing and installing brake tube.
- If a brake fluid leak is found, the part must be disassembled without fail. Then it has to be replaced with a new one if a defect exists.
- Turn the ignition switch OFF and remove the connector of the ABS actuator and electric unit (control unit) or the battery terminal before performing the work.
- Always torque brake lines when installing.
- Burnish the brake contact surfaces after refinishing or replacing rotors, after replacing pads, or if a soft pedal occurs at very low mileage.



Refer to [BR-27. "BRAKE BURNISHING PROCEDURE"](#) (front disc brake) or [BR-32. "BRAKE BURNISHING PROCEDURE"](#) (rear disc brake).

WARNING:

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

Precautions When Using CONSULT-II

EFS005DC

When connecting CONSULT-II to data link connector, connect them through CONSULT-II CONVERTER.

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 carries out CAN communication.

CHECK POINTS FOR USING CONSULT-II

1. Has CONSULT-II been used without connecting CONSULT-II CONVERTER on this vehicle?
 - If YES, GO TO 2.

PRECAUTIONS

[HDC/HSA/VDC/TCS/ABS]

- If NO, GO TO 5.
2. Is there any indication other than indications relating to CAN communication system in the self-diagnosis results?
 - If YES, GO TO 3.
 - If NO, GO TO 4.
3. Based on self-diagnosis results unrelated to CAN communication, carry out the inspection.
4. Malfunctions may be detected in self-diagnosis depending on control units carrying out CAN communication. Therefore, erase the self-diagnosis results.
5. Diagnose CAN communication system. Refer to [LAN-22, "CAN COMMUNICATION"](#).

Precautions for Brake Control

EFS005DD

- During ABS operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- During HDC operation, a mechanical noise may be heard. This is normal.
- Just after starting vehicle, the brake pedal may vibrate or a motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.
- 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 diagnosis. Besides electrical system inspection, check brake booster operation, brake fluid level, and fluid leaks.
- If incorrect tire sizes or types are installed on the vehicle or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- If there is a radio, antenna or related wiring near control module, ABS function may have a malfunction or error.
- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits or improper wiring.
- If the following components are replaced with non-genuine components or modified, the VDC OFF indicator lamp and SLIP indicator lamp may turn on or the VDC system may not operate properly. Components related to suspension (shock absorbers, struts, springs, bushings, etc.), tires, wheels (exclude specified size), components related to brake system (pads, rotors, calipers, etc.), components related to engine (muffler, ECM, etc.), components related to body reinforcement (roll bar, tower bar, etc.).
- Driving with broken or excessively worn suspension components, tires or brake system components may cause the VDC OFF indicator lamp and the SLIP indicator lamp to turn on, and the VDC system may not operate properly.
- When the TCS or VDC is activated by sudden acceleration or sudden turn, some noise may occur. The noise is a result of the normal operation of the TCS and VDC.
- When driving on roads which have extreme slopes (such as mountainous roads) or high banks (such as sharp curves on a freeway), the VDC may not operate normally, or the VDC warning lamp and the SLIP indicator lamp may turn on. This is not a problem if normal operation can be resumed after restarting the engine.
- Sudden turns (such as spin turns, acceleration turns), drifting, etc. with VDC turned off may cause the yaw rate/side G sensor to indicate a problem. This is not a problem if normal operation can be resumed after restarting the engine.
- If battery is removed or steering angle sensor is disconnected, power to steering angle sensor is lost and the steering angle sensor goes into safe mode.
- When screen goes into steering angle sensor safe mode, perform "Adjustment of Steering Angle Sensor Neutral Position" with CONSULT-II and check that VDC OFF indicator turns off. Additionally, perform self-diagnosis, check that only "Steering Angle Sensor Safe Mode" is shown for self-diagnostic result, and then delete the memory. (If the self-diagnostic result shows an indication other than "Steering Angle Sensor Safe Mode", repair the relevant part and restart self-diagnosis.) The steering angle sensor is released and returns to normal condition by performing the above operation.
- When checking, if only "Steering Angle Sensor Safe Mode" is shown in the self-diagnostic result and VDC OFF indicator is off, delete history of malfunction. This happens when battery power supply is lost and the screen goes into Steering Angle Sensor Safe Mode, and then screen returns to normal mode automati-

PRECAUTIONS

[HDC/HSA/VDC/TCS/ABS]

cally by driving the vehicle in a straight forward direction [for approximately 30 seconds at 20 km/h (12 MPH) or more] after power is supplied again.

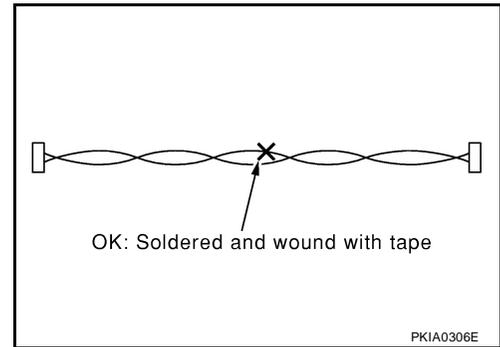
NOTE:

VDC OFF indicator lamp is on when VDC OFF switch is on.

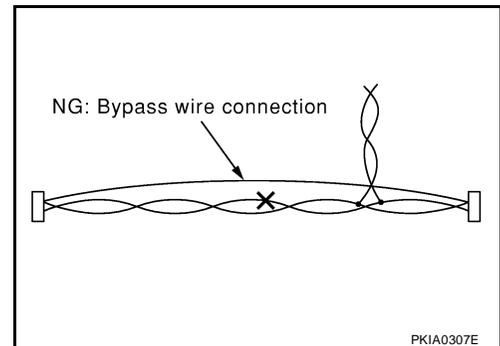
Precautions for CAN System

EFS005DE

- Do not apply voltage of 7.0V or higher to terminal to be measured.
- Maximum open terminal voltage of tester in use must be less than 7.0V.
- Before checking harnesses, turn ignition switch OFF and disconnect battery negative cable.
- Area to be repaired must be soldered and wrapped with tape. Make sure that fraying of twisted wire is within 110 mm (4.33 in).



- Do not make a bypass connection to repaired area. (If the circuit is bypassed, characteristics of twisted wire will be lost.)



Wiring Diagrams and Trouble Diagnosis

EFS005DF

When you read wiring diagrams, refer to the following:

- [GI-17, "How to Read Wiring Diagrams"](#).
- [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).

When you perform trouble diagnosis, refer to the following:

- [GI-13, "HOW TO FOLLOW TEST GROUPS IN TROUBLE DIAGNOSES"](#).
- [GI-29, "How to Perform Efficient Diagnosis for an Electrical Incident"](#).

PREPARATION

[HDC/HSA/VDC/TCS/ABS]

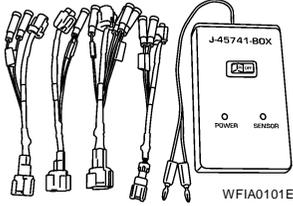
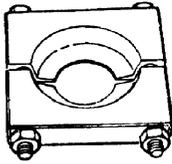
PREPARATION

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Special Service Tool

EFS005DG

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
— (J-45741) ABS active wheel sensor tester	 Checking operation of ABS active wheel sensors WFIA0101E
205-D002 (—) Bearing splitter	 Removing sensor rotor ZZA0700D

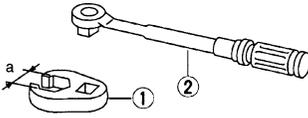
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Commercial Service Tools

EFS005DH

Tool name	Description
1. Flare nut crowfoot 2. Torque wrench	 Removing and installing brake piping a: 10 mm (0.39 in)/12 mm (0.47 in) S-NT360

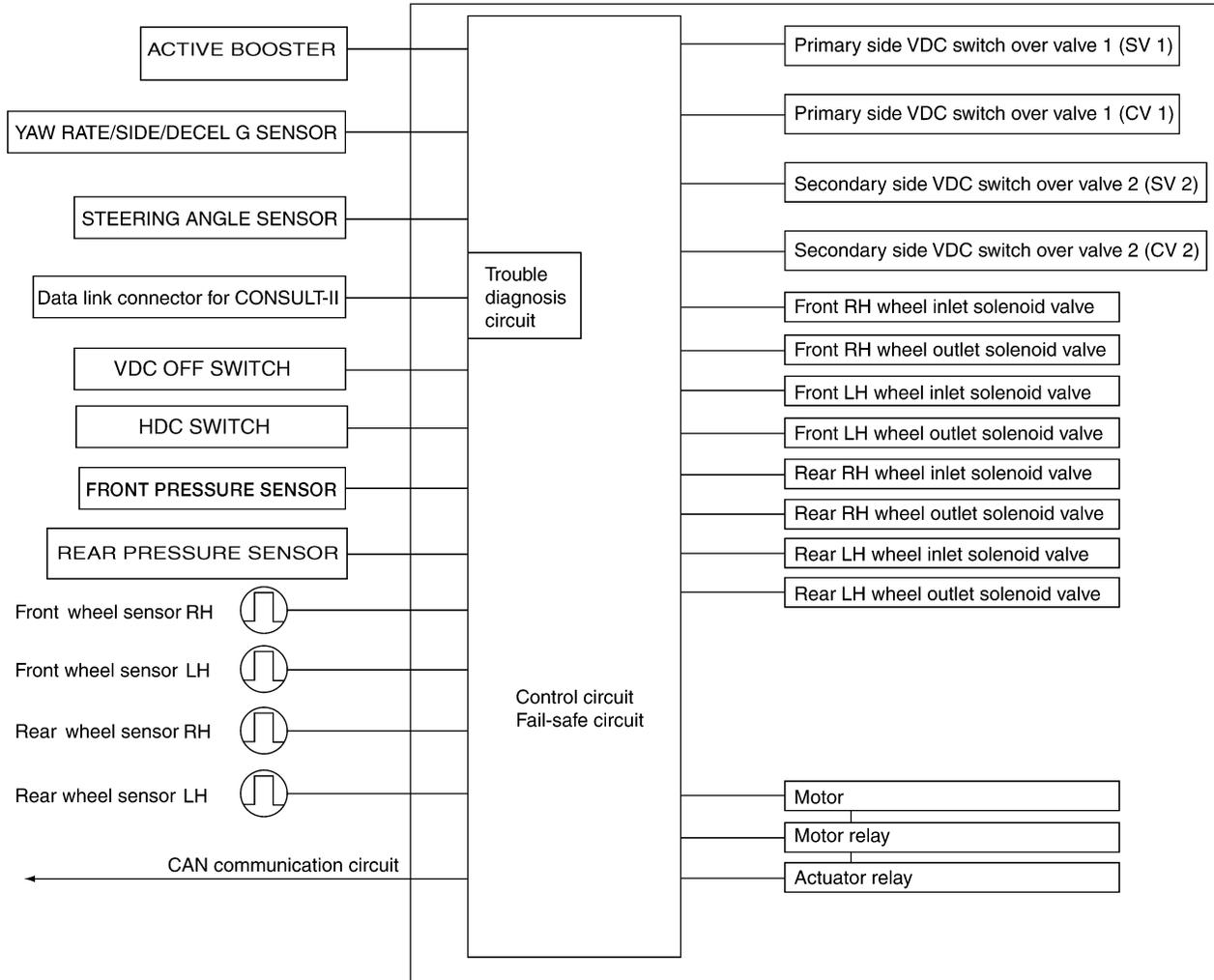
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SYSTEM DESCRIPTION

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System Components

EFS005DI



ABS actuator and electric unit (control unit)

ABS Function

EFS005DJ

- The Anti-Lock Brake System detects wheel revolution while braking and improves handling stability during sudden braking by electrically preventing wheel lockup. Maneuverability is also improved for avoiding obstacles.
- If the electrical system malfunctions, the Fail-Safe function is activated, the ABS becomes inoperative and the ABS warning lamp turns on.
- The electrical system can be diagnosed using CONSULT-II.
- During ABS operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting the vehicle, the brake pedal may vibrate or a motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.

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EBD Function

EFS005DK

- Electronic Brake Distribution is a function that detects subtle slippages between the front and rear wheels during braking, and it improves handling stability by electronically controlling the brake fluid pressure which results in reduced rear wheel slippage.
- If the electrical system malfunctions, the Fail-Safe function is activated, the EBD and ABS become inoperative, and the ABS warning lamp and brake warning lamp are turned on.
- The electrical system can be diagnosed using CONSULT-II.
- During EBD operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting the vehicle, the brake pedal may vibrate or a motor operating noise may be heard from engine compartment. This is a normal status of operation check.

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TCS Function

EFS005DL

- Spinning of the drive wheels is detected by the ABS actuator and electric unit (control unit) using inputs from the wheel speed sensors. If wheel spin occurs, the drive wheel right and left brake fluid pressure control and engine fuel cut are activated while the throttle value is restricted to reduce the engine torque and decrease the amount of wheel spin. In addition, the throttle opening is controlled to achieve the optimum engine torque.
- Depending on road condition, the vehicle may have a sluggish feel. This is normal, because optimum traction has the highest priority during TCS operation.
- TCS may be activated during sudden vehicle acceleration, wide open throttle acceleration, sudden transmission shifts or when the vehicle is driven on a road with a varying surface friction coefficient.
- The SLIP indicator lamp flashes to inform the driver of TCS operation.

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VDC Function

EFS005DM

- In addition to the ABS/TCS function, the driver steering amount and brake operation amount are detected from the steering angle sensor and pressure sensors, and the vehicle's driving status (amount of under steering/over steering) is determined using inputs from the yaw rate sensor/side G sensor, wheel speed sensors, etc. and this information is used to improve vehicle stability by controlling the braking and engine torque application to the wheels.
- The SLIP indicator lamp flashes to inform the driver of VDC operation.
- During VDC operation, the vehicle body and brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- The ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp may turn on when the vehicle is subject to strong shaking or large vibration, such as when the vehicle is on a turntable or a ship while the engine is running or on a steep slope. In this case, restart the engine on a normal road and if the ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp turn off, there is no problem.

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HDC Function

EFS005DN

- The hill descent control system will help maintain vehicle speed when driving under 25-35 km/h (15-21 MPH) on steeper downhill grades. HDC will provide braking allowing the driver to concentrate on steering while reducing the burden of brake and accelerator operation.

SYSTEM DESCRIPTION

[HDC/HSA/VDC/TCS/ABS]

- To operate the system, set the 4WD switch to 4H or 4LO and push the HDC switch. The HDC indicator in the combination meter will turn on. While HDC is operating, the stop/tail lamps will illuminate.
- If the accelerator or brake pedal is depressed while the HDC system is on, the system will stop operating.
- During HDC operation, a mechanical noise may be heard. This is normal.

HSA Function

EFS005D0

- The hill start assist system will assist the driver by applying the brake automatically and preventing the vehicle from rolling backward when starting on an uphill.
- The maximum holding time is 2 seconds. After 2 seconds, the vehicle will begin to roll back gradually and then HSA will stop operating completely.

Fail-Safe Function

EFS005DP

CAUTION:

If the Fail-Safe function is activated, perform the Self Diagnosis for ABS/TCS/VDC system.

ABS/EBD SYSTEM

In case of an electrical malfunction with the ABS, the ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp will turn on. In case of an electrical malfunction with the EBD system, the BRAKE warning lamp, ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp will turn on.

The system will revert to one of the following conditions of the Fail-Safe function.

1. For ABS malfunction, only the EBD is operative and the condition of the vehicle is the same condition of vehicles without ABS/TCS/VDC system.
2. For EBD malfunction, the EBD and ABS become inoperative, and the condition of the vehicle is the same as the condition of vehicles without ABS/TCS/VDC or EBD system.

HDC/HSA SYSTEM

- In case of HDC system malfunction, the HDC indicator lamp will remain off even though the HDC switch is operated and the condition of the vehicle is the same as the condition of vehicles without HDC system.
- In case of HSA system malfunction, the VDC OFF and SLIP indicator lamps are turned on and the condition of the vehicle is the same as the condition of vehicles without HSA system.

VDC/TCS SYSTEM

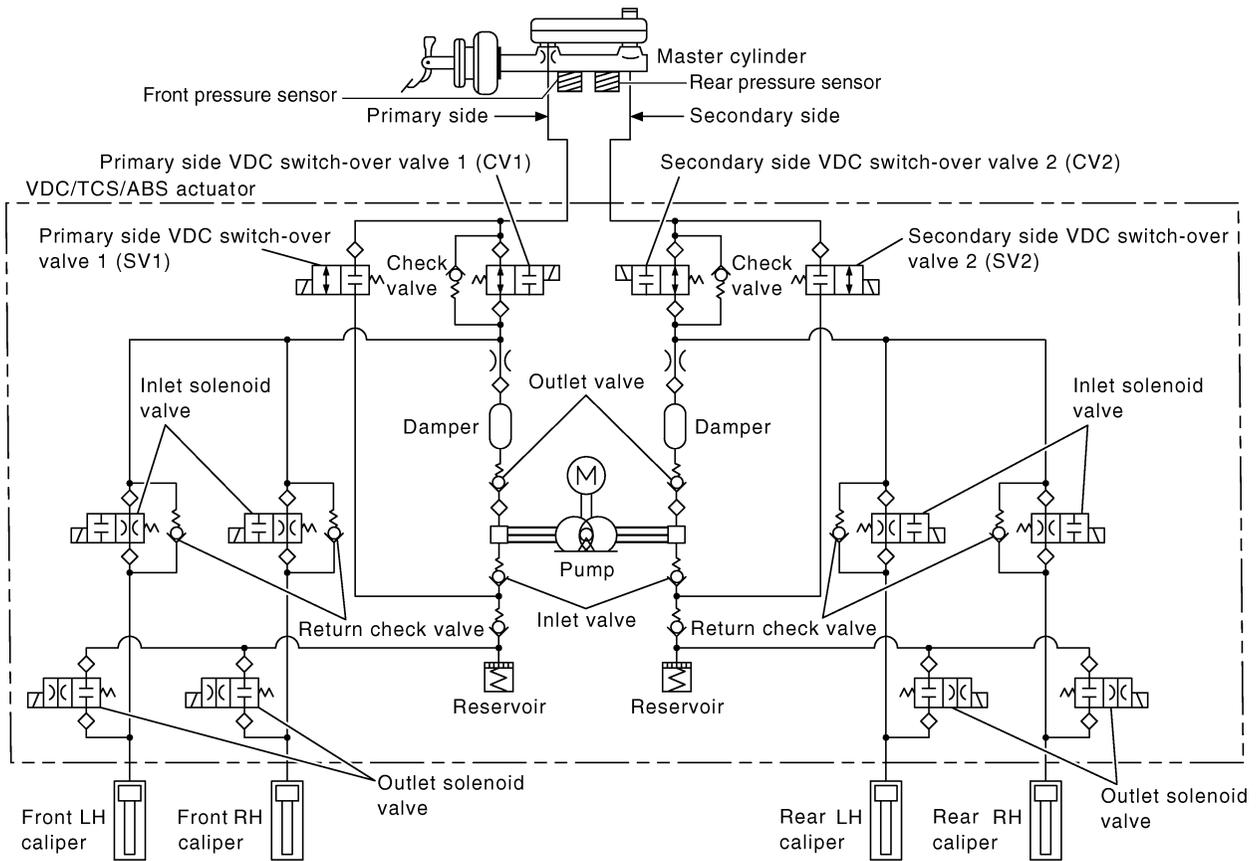
In case of TCS/VDC system malfunction, the VDC OFF indicator lamp and SLIP indicator lamp are turned on and the condition of the vehicle is the same as the condition of vehicles without TCS/VDC system. In case of an electrical malfunction with the TCS/VDC system, the ABS control continues to operate normally without TCS/VDC control.

SYSTEM DESCRIPTION

[HDC/HSA/VDC/TCS/ABS]

Hydraulic Circuit Diagram

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CAN COMMUNICATION

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System Description

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Refer to [LAN-22, "CAN COMMUNICATION"](#) .

TROUBLE DIAGNOSIS

PFP:00000

How to Perform Trouble Diagnoses for Quick and Accurate Repair

EF5005DS

INTRODUCTION

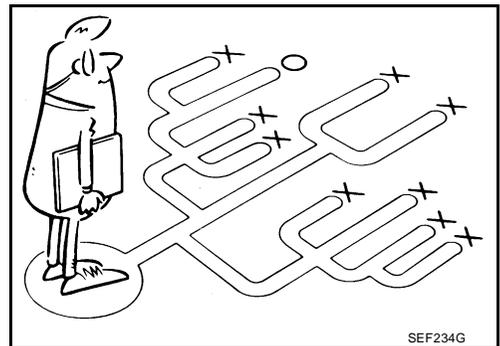
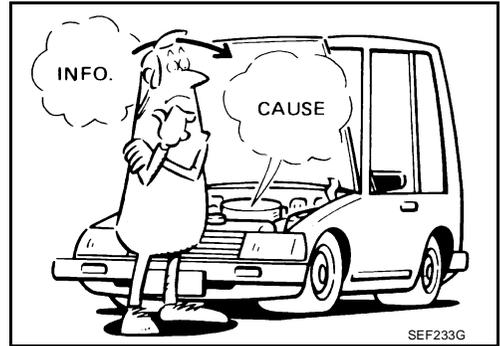
The ABS/TCS/VDC/HDC/HSA system has an electronic control unit to control major functions. The control unit accepts input signals from sensors and controls actuator operation. It is also important to check for air leaks in the booster or lines, lack of brake fluid, or other malfunctions in the brake system.

It is much more difficult to diagnose a malfunction that occurs intermittently rather than continuously. Most intermittent conditions are caused by poor electrical connections or damaged wiring. In this case, careful checking of suspicious circuits may help prevent the replacement of good parts.

A visual check only may not find the cause of the malfunction, so a road test should be performed.

Before undertaking actual checks, take just a few minutes to talk with a customer who approaches with an ABS/TCS/VDC/HDC/HSA complaint. The customer is a very good source of information, especially for intermittent conditions. Through the talks with the customer, find out what symptoms are present and under what conditions they occur.

Start your diagnosis by looking for “conventional” malfunctions first. This is one of the best ways to troubleshoot brake malfunctions on an ABS/TCS/VDC/HDC/HSA equipped vehicle. Also check related Service Bulletins for information.

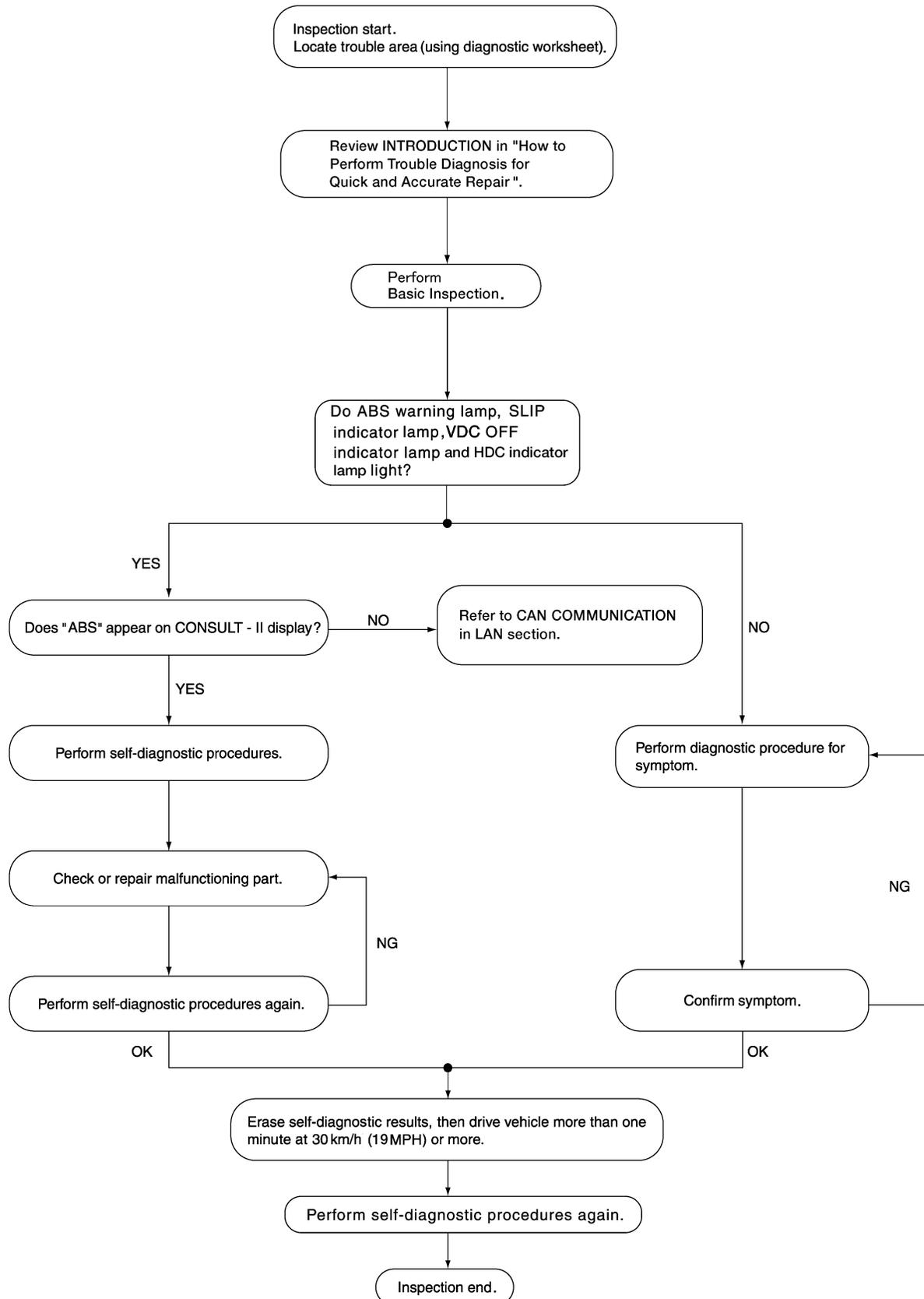


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TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

WORK FLOW



WFIA0337E

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

CLARIFY CONCERN

- A customer's description of a vehicle concern may vary depending on the individual. It is important to clarify the customer's concern.
- Ask the customer about what symptoms are present under what conditions. Use this information to reproduce the symptom while driving.
- It is also important to use the diagnosis sheet to understand what type of symptoms the customer is experiencing.

KEY POINTS

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

SBR339B

EXAMPLE OF DIAGNOSIS SHEET

Customer name	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"/> ABS warning lamp activates	<input type="checkbox"/> Pedal operation
	<input type="checkbox"/> Noise and vibration (from axle)	<input type="checkbox"/> SLIP warning lamp activates	<input type="checkbox"/> Large stroke pedal operation
	<input type="checkbox"/> TCS does not work (drive wheels slip when accelerating)	<input type="checkbox"/> ABS does not work (wheels slip when braking)	<input type="checkbox"/> Firm pedal
	<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		

WFIA0097E

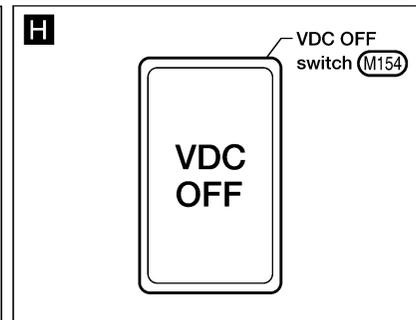
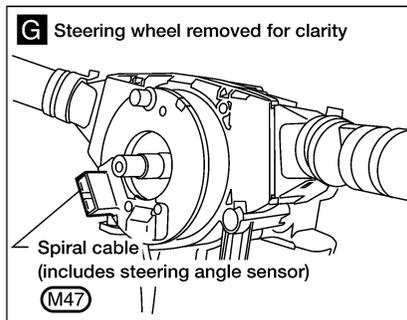
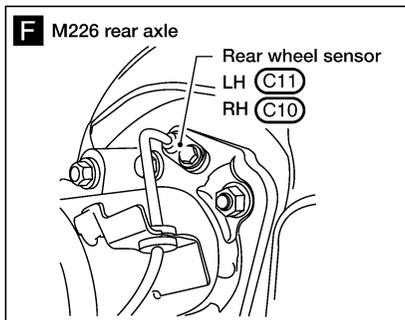
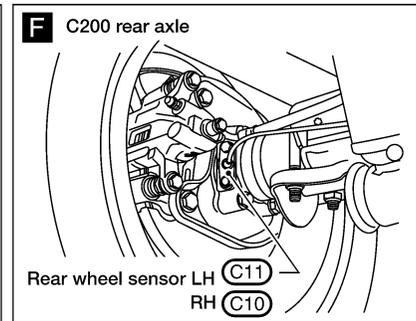
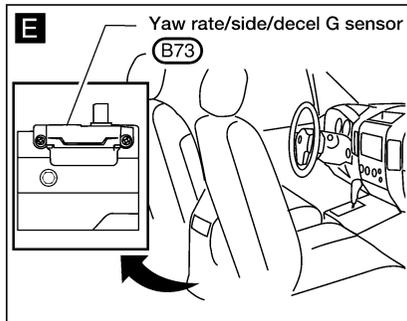
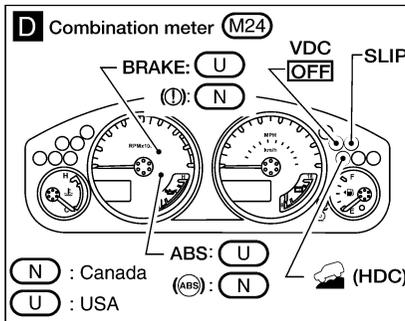
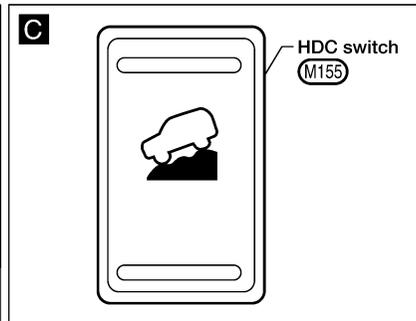
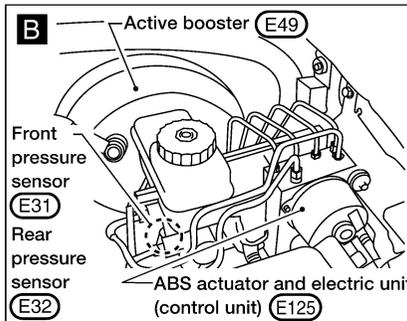
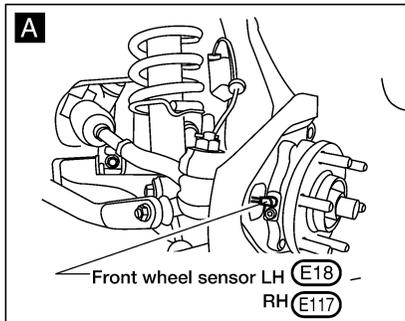
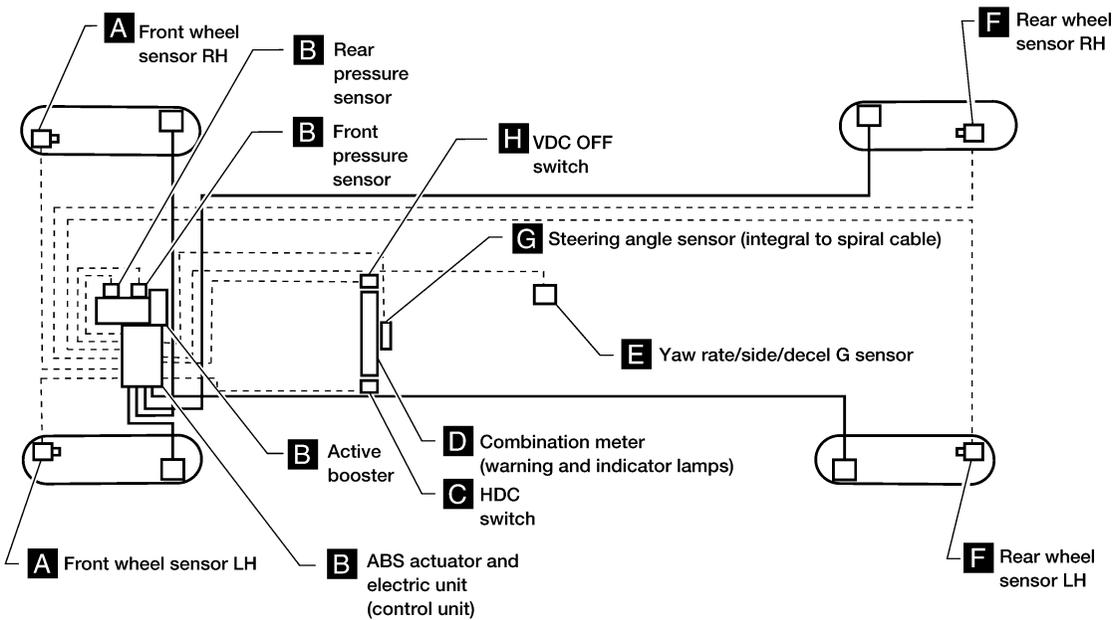
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TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Component Parts and Harness Connector Location

EFS005DT



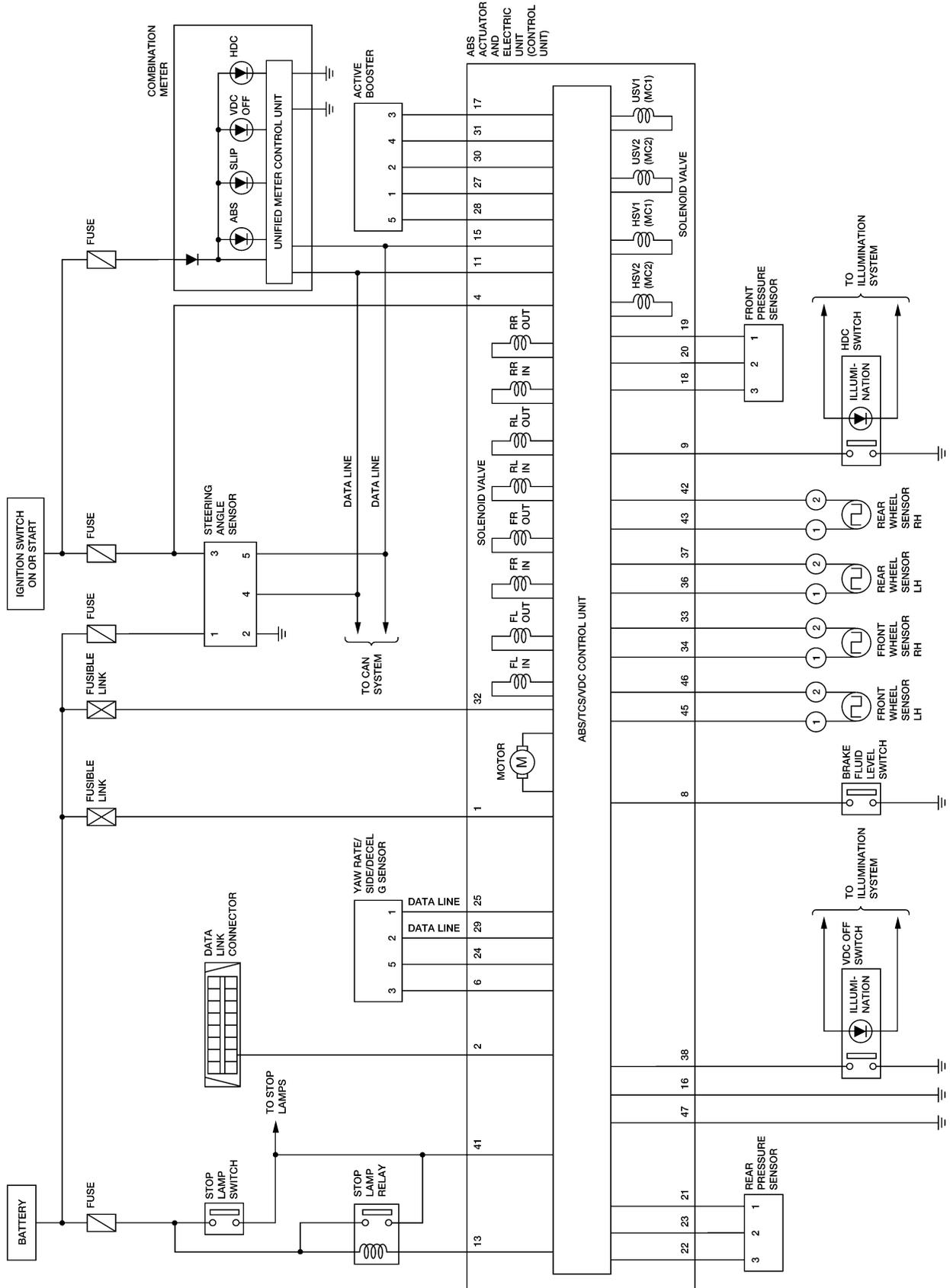
WFIA0368E

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Schematic

EFS005DU



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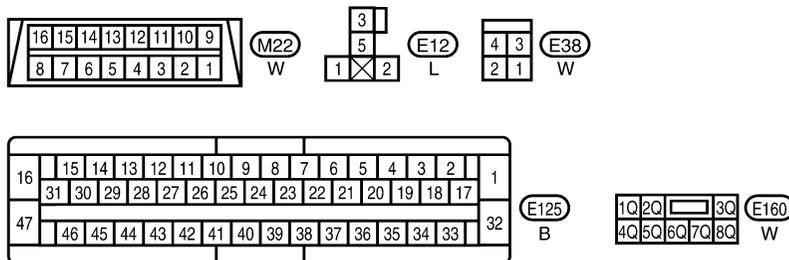
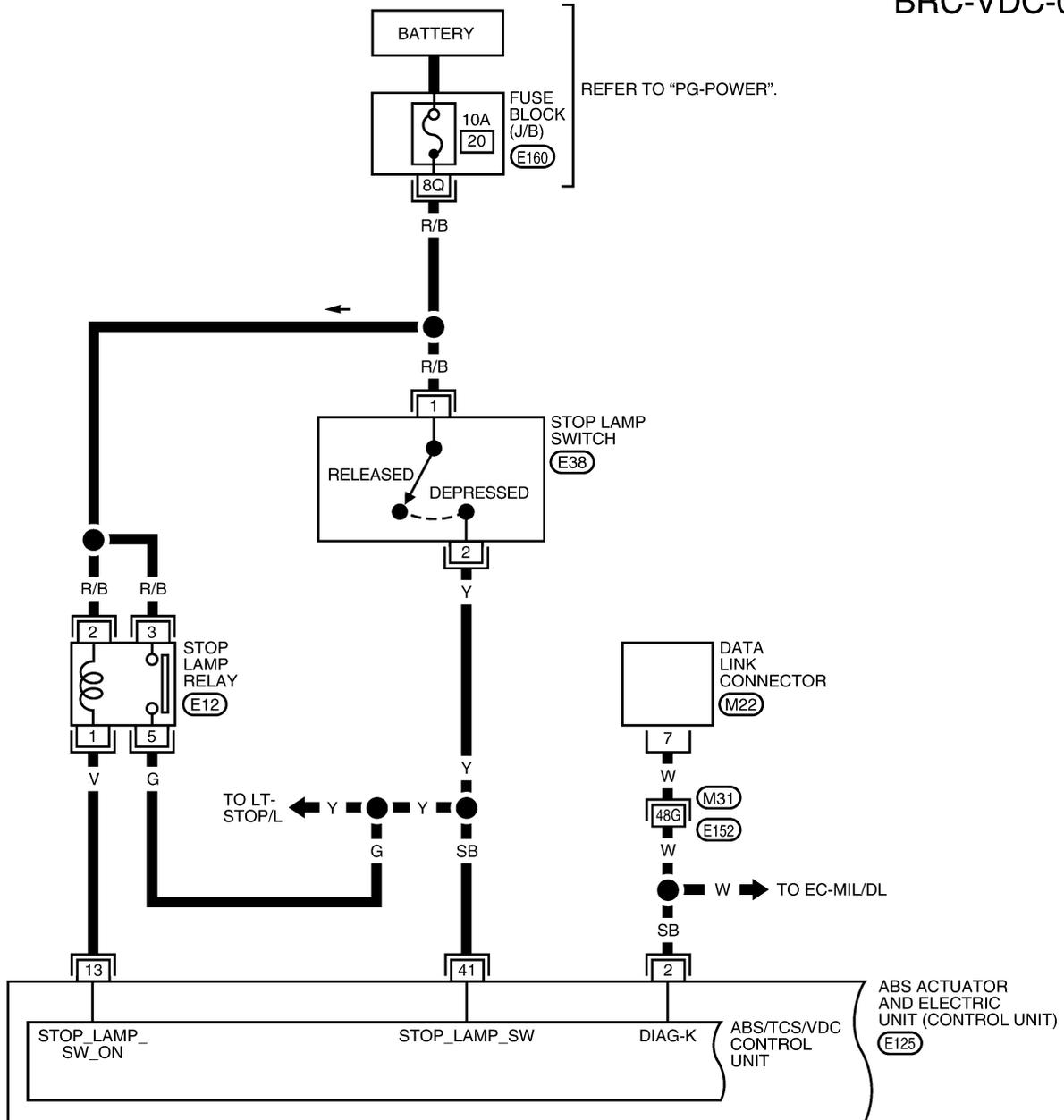
TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Wiring Diagram — VDC —

EFS005DV

BRC-VDC-01



REFER TO THE FOLLOWING.
(M31) - SUPER MULTIPLE JUNCTION (SMJ)

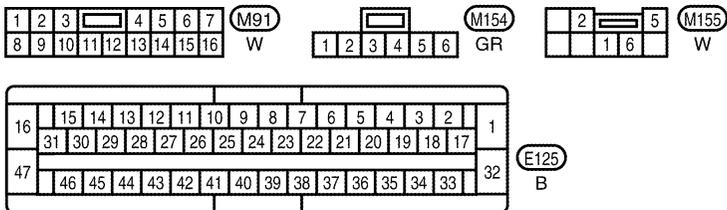
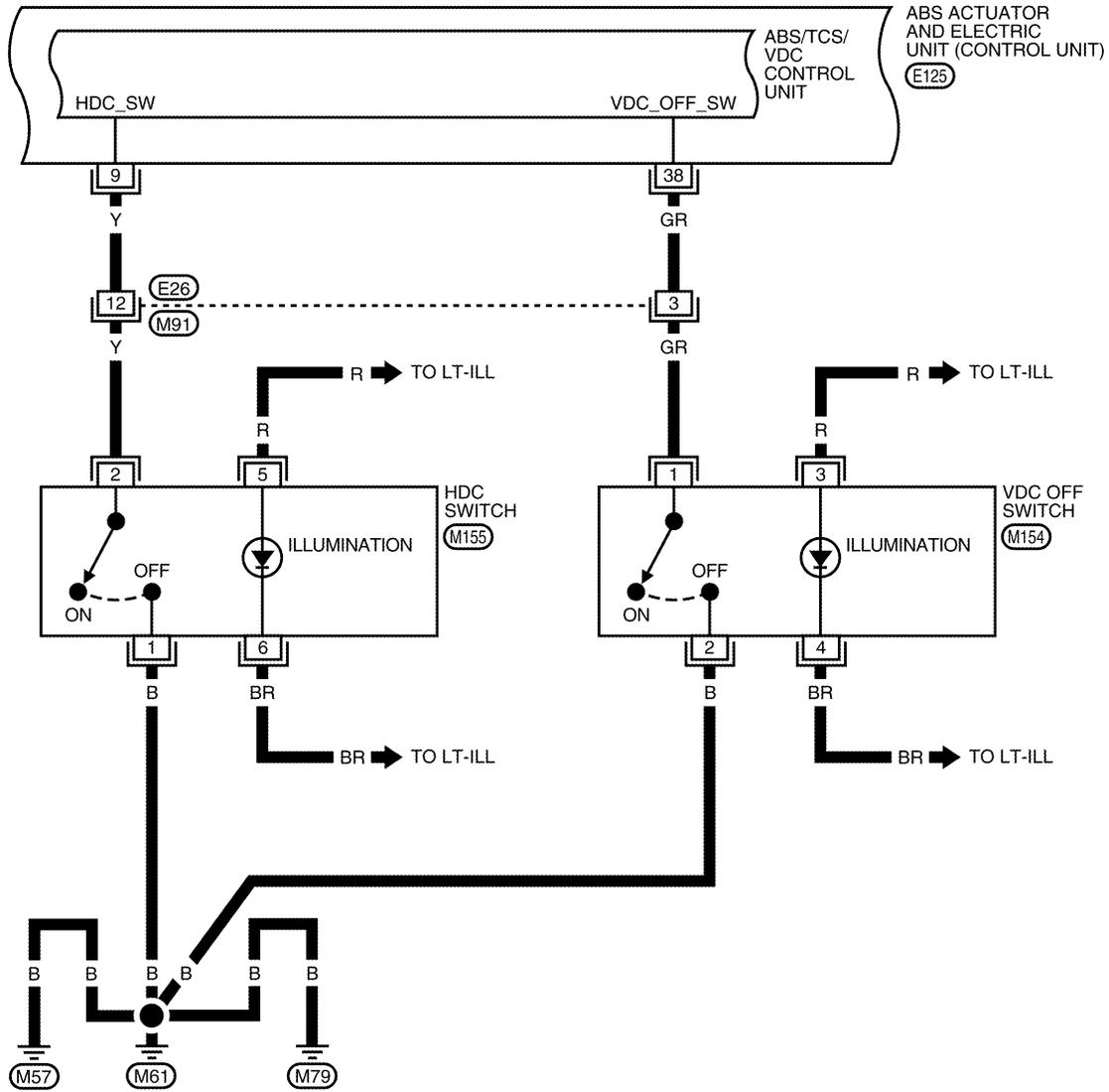
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TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

BRC-VDC-02

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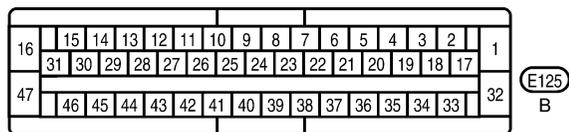
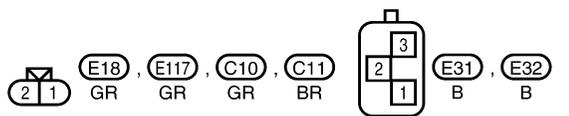
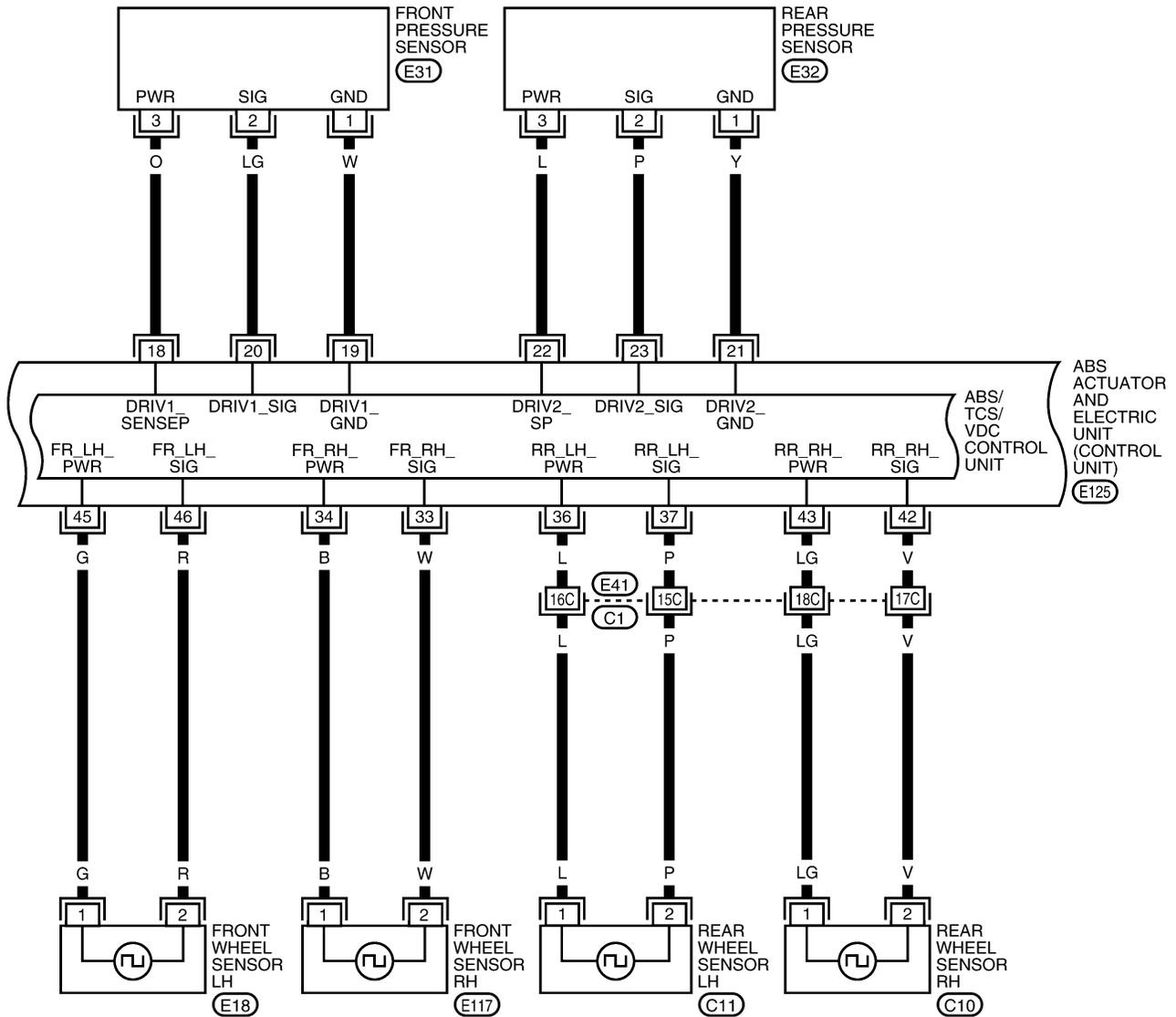


WFWA0176E

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

BRC-VDC-03



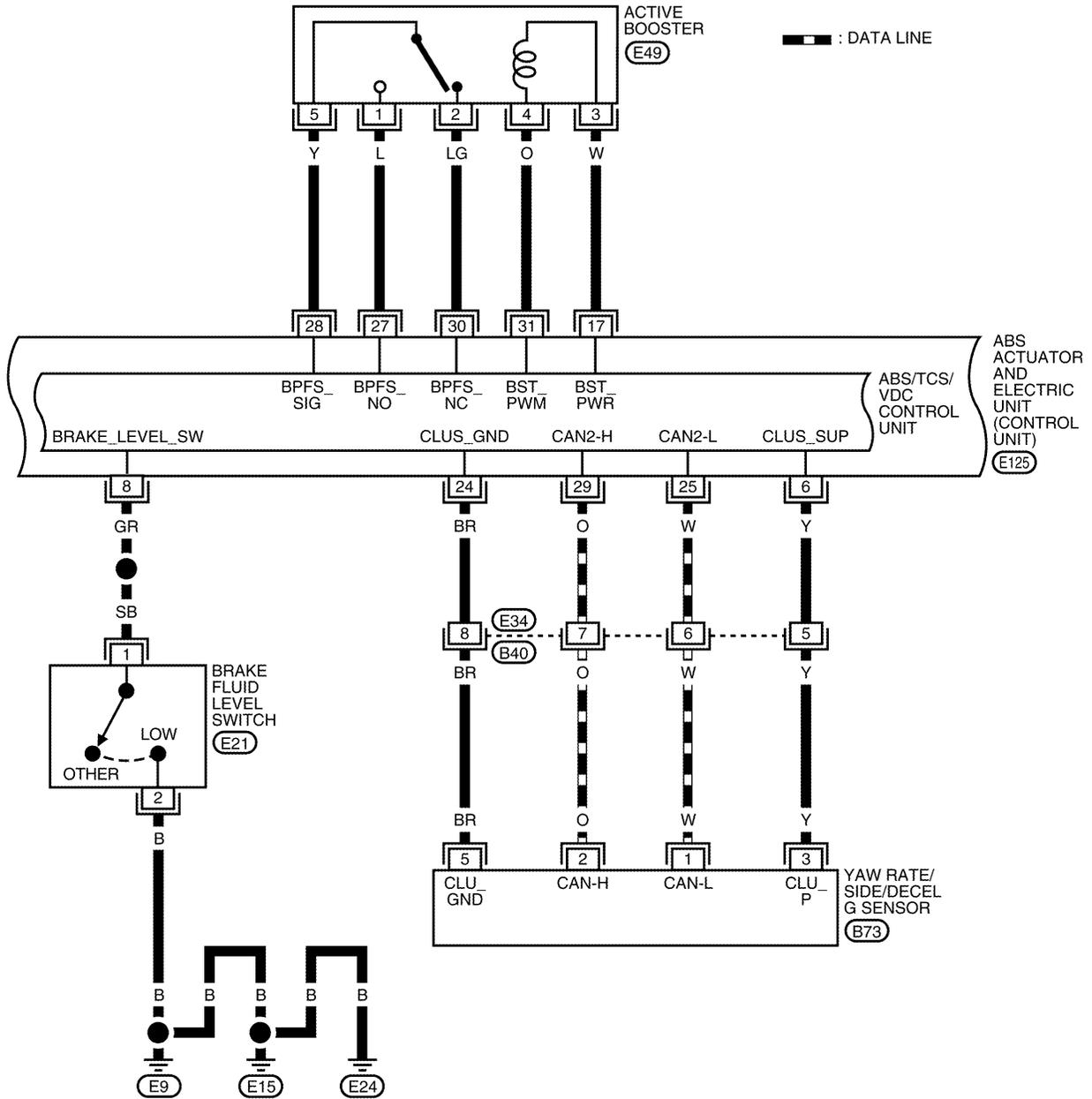
REFER TO THE FOLLOWING.
 (C1) - SUPER MULTIPLE JUNCTION (SMJ)

WFWA0177E

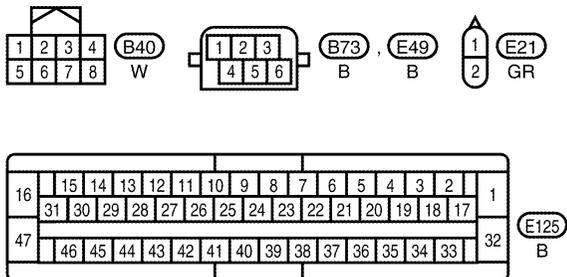
TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

BRC-VDC-04



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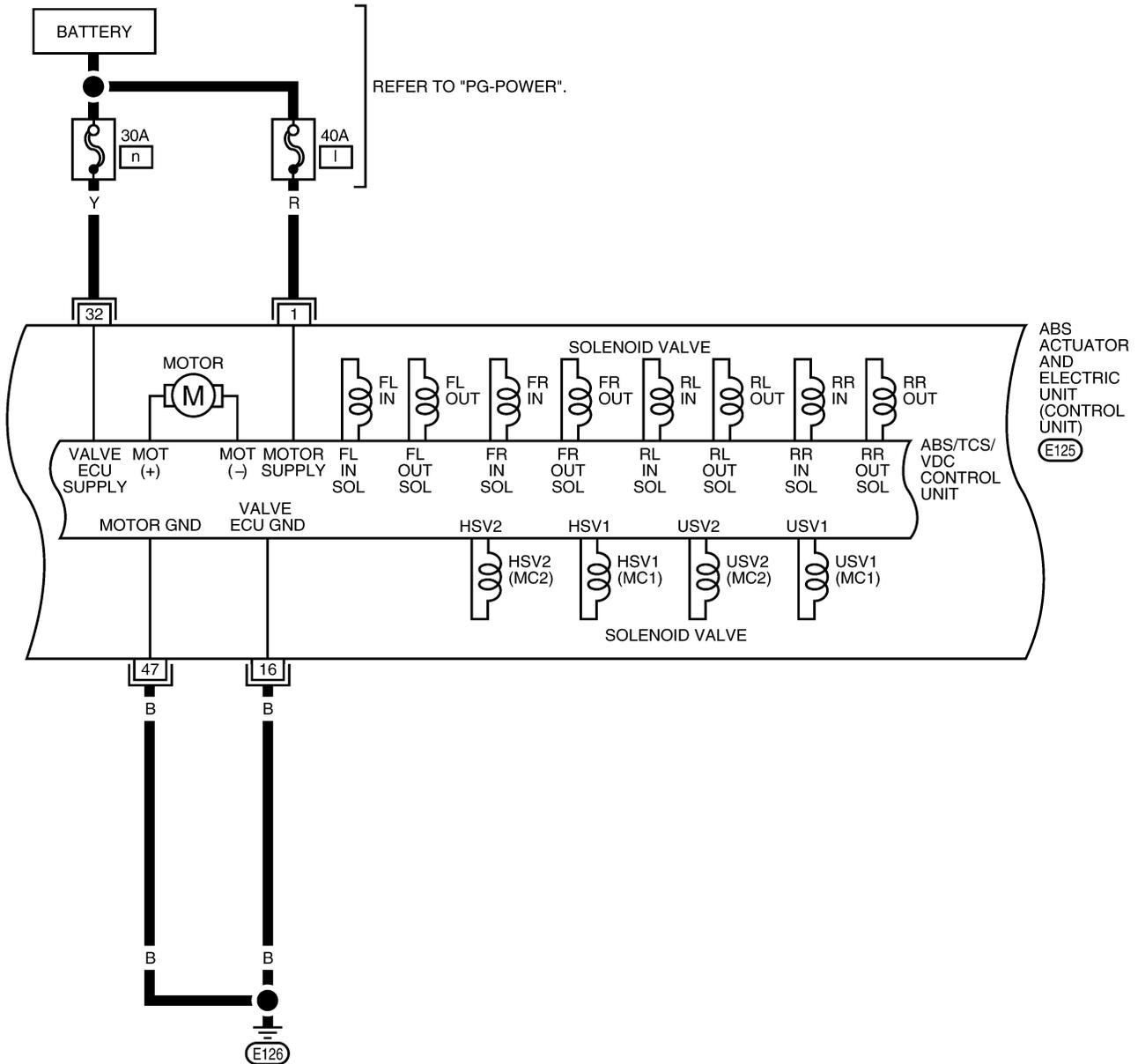


WFWA0178E

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

BRC-VDC-05



16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	
47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32

(E125)
B

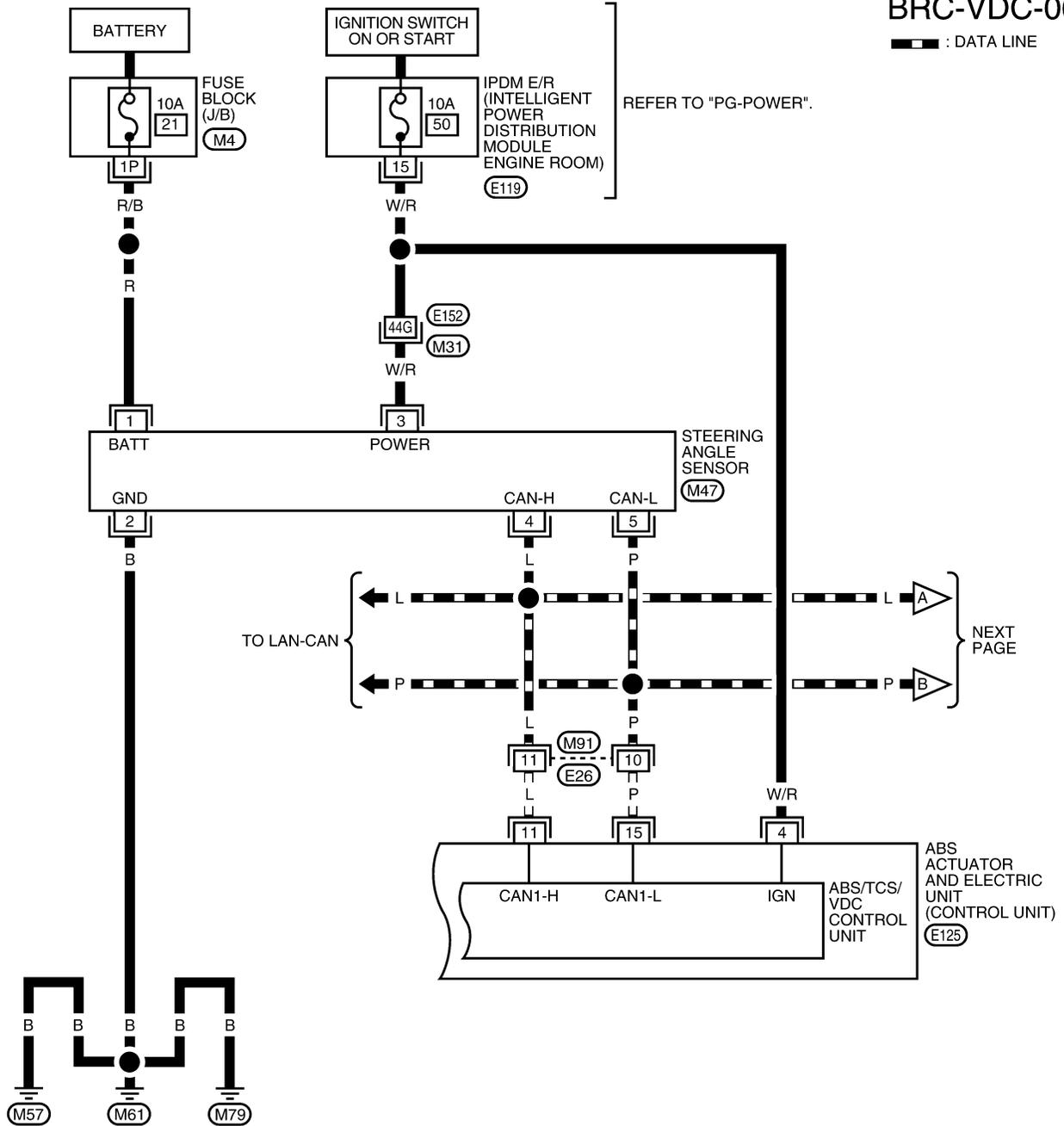
WFWA0179E

TROUBLE DIAGNOSIS

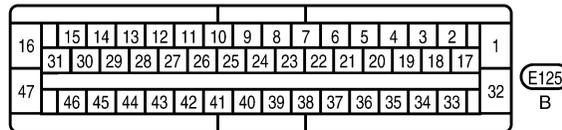
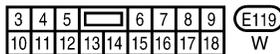
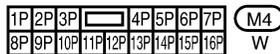
[HDC/HSA/VDC/TCS/ABS]

BRC-VDC-06

— : DATA LINE



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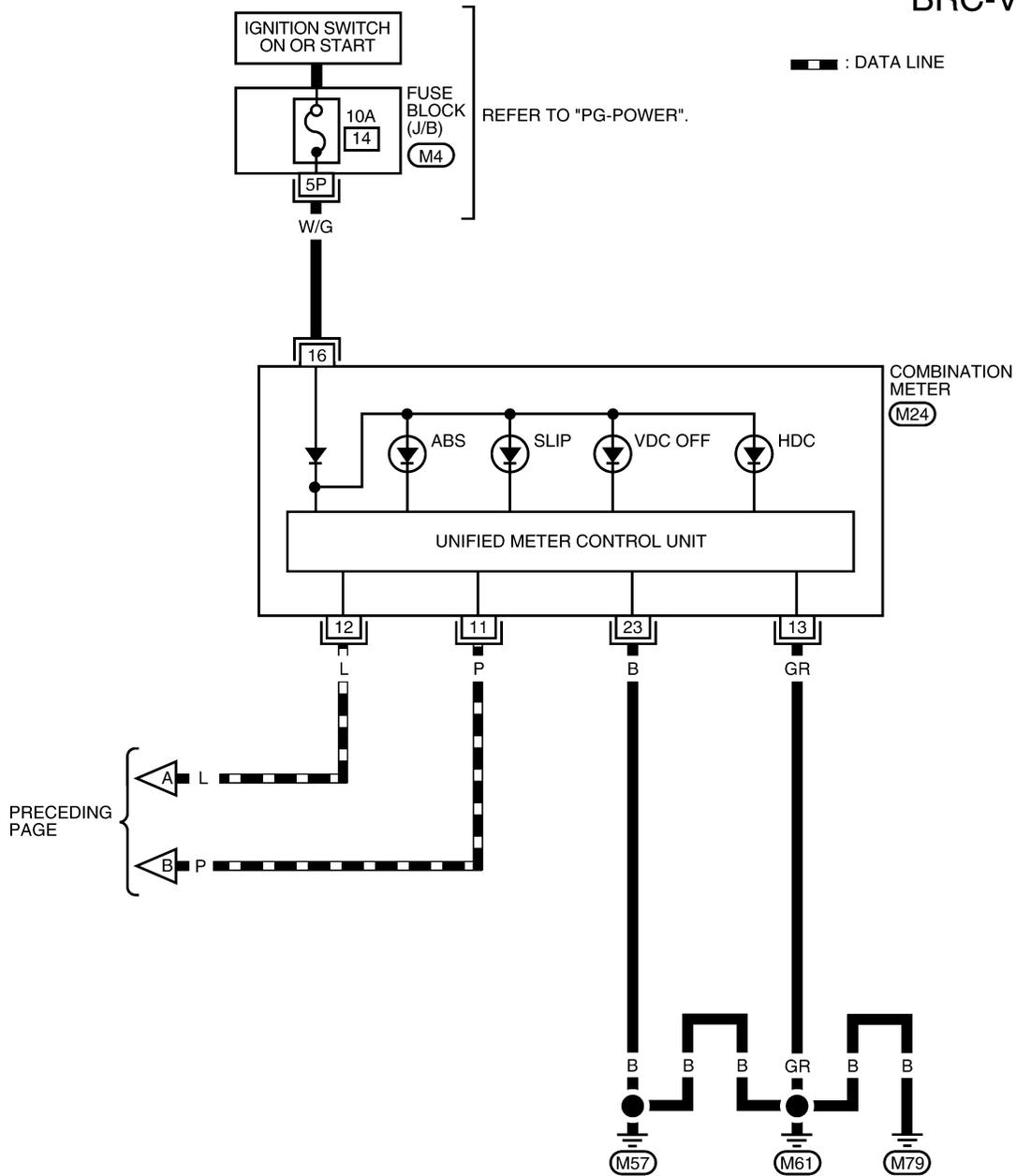
REFER TO THE FOLLOWING.
(M31) - SUPER MULTIPLE JUNCTION (SMJ)

WFWA0268E

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

BRC-VDC-07



1P	2P	3P	4P	5P	6P	7P	(M4)		
8P	9P	10P	11P	12P	13P	14P	15P	16P	W

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	(M24)
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	W

WFWA0181E

Basic Inspection**BRAKE FLUID LEVEL, FLUID LEAK, AND BRAKE PAD INSPECTION**

1. Check fluid level in the brake fluid reservoir. If fluid level is low, add fluid.
2. Check the brake piping and around the ABS actuator and electric unit (control unit) for leaks. If there is leaking or seeping fluid, check the following items.
 - If ABS actuator and electric unit (control unit) connection is loose, tighten the piping to the specified torque and recheck for leaks.
 - If there is damage to the connection flare nut or ABS actuator and electric unit (control unit) threads, replace the damaged part and recheck for leaks.
 - When there is fluid leaking or seeping from a fluid connection, use a clean cloth to wipe off the fluid and recheck for leaks. If fluid is still seeping out, replace the damaged part. If the fluid is leaking at the ABS actuator and electric unit (control unit), replace the ABS actuator and electric unit (control unit) assembly.

CAUTION:

The ABS actuator and electric unit (control unit) cannot be disassembled and must be replaced as an assembly.

3. Check the brake pads for excessive wear.

POWER SYSTEM TERMINAL LOOSENESS AND BATTERY INSPECTION

Make sure the battery positive cable, negative cable and ground connection are not loose. In addition, make sure the battery is sufficiently charged.

ABS WARNING LAMP, SLIP INDICATOR LAMP, VDC OFF INDICATOR LAMP AND HDC INDICATOR LAMP INSPECTION

1. Make sure ABS warning lamp, SLIP indicator lamp, VDC OFF indicator lamp (when VDC OFF switch is off) and HDC indicator lamp (when HDC switch is off), turn on for approximately 2 seconds when the ignition switch is turned ON. If they do not, check the ABS warning lamp, SLIP indicator lamp, VDC OFF indicator lamp and HDC indicator lamp. Check CAN communications. If there are no errors with the CAN communication system, check combination meter. Refer to [DI-5, "COMBINATION METERS"](#).
2. Make sure the lamps turn off approximately 2 seconds after the ignition switch is turned ON. If the lamp does not turn off, conduct self-diagnosis.

NOTE:

- On 4WD vehicles, when the transfer case is placed in 4LO, the VDC system is disabled and the VDC OFF indicator will turn on.
 - If the battery has been disconnected, the TCS/VDC system is initialized and the SLIP and VDC OFF indicator lamps may not turn off after 2 seconds when the ignition switch is turned ON. In this case, refer to [BRC-116, "SELF-DIAGNOSIS"](#).
3. With the engine running, make sure the VDC OFF indicator lamp turns on and off when the VDC OFF switch is turned on and off. If the indicator lamp status does not correspond to switch operation, check the VDC OFF switch. Refer to [BRC-142, "VDC OFF SWITCH"](#).
 4. Turn HDC switch on to confirm that HDC indicator lamp turns on. If HDC indicator lamp does not turn on, perform self-diagnosis. Refer to [BRC-116, "SELF-DIAGNOSIS"](#).
 5. Make sure ABS warning lamp, SLIP indicator lamp, VDC OFF indicator lamp and HDC indicator lamp turn off approximately 2 seconds after the ignition switch is turned ON. If ABS warning lamp, SLIP indicator lamp, VDC OFF indicator lamp and HDC indicator lamp have not turned off 2 seconds after the ignition switch is turned ON, conduct self-diagnosis of the ABS actuator and electric unit (control unit).
 6. After conducting the self-diagnosis, be sure to erase the error memory. Refer to [BRC-115, "CONSULT-II Function \(ABS\)"](#).

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

EFS005DX

For Fast and Accurate Diagnosis

PRECAUTIONS FOR DIAGNOSIS

- Before performing diagnosis, always read precautions. Refer to [BRC-88, "PRECAUTIONS"](#) .
- If ABS actuator and electric unit (control unit), steering angle sensor, steering system parts or suspension system parts have been replaced, or if alignment has been adjusted, be sure to adjust neutral position of steering angle sensor before driving. Refer to [BRC-150, "Adjustment of Steering Angle Sensor Neutral Position"](#) .
- After diagnosis is finished, be sure to erase memory. Refer to [BRC-116, "SELF-DIAGNOSIS"](#) .
- When checking continuity and voltage between units, be sure to check for disconnection, looseness, bend, or collapse of connector terminals. If any non-standard condition 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.
- To use CONSULT-II to perform self-diagnosis of ABS actuator and electric unit (control unit), active tests, or work support, first stop work, then connect CONSULT-II and select "ABS".
- CONSULT-II self-diagnosis results are displayed without regard to occurrence timing. In some cases later ones (timing value is small) appear on the next screen.
- When self-diagnostic results of CONSULT-II show a malfunction, if CONSULT-II active test is performed, an engine system error may be indicated. In this case, start engine to resume the normal screen.
- VDC/TCS/ABS system electronically controls brake operation and engine output. The following symptoms may be caused by normal operations:

Symptom	Symptom description	Result
Motor operation noise	This is noise of motor inside ABS actuator and electric unit (control unit). Slight noise may occur during VDC, TCS, and ABS operation.	Normal
	When the vehicle speed goes over 20 km/h (12.5 mph), the motor and valves operating noise may be heard. It happens only once after IGN (ignition) is ON. This is a normal status of the system operation check.	
System operation check noise	When the engine starts, slight "click" noise may be heard from engine compartment. This is normal and is part of system operation check.	Normal
VDC/TCS operation (SLIP indicator lamp blinking)	TCS may activate momentarily if wheel speed changes when driving over location where friction coefficient varies, when up/downshifting or when fully depressing accelerator pedal.	Normal Cancel the VDC/TCS function for the inspection on a chassis dynamometer.
	For inspection of speedometer or other instruments, press VDC OFF switch to turn VDC/TCS function off.	
	When accelerator pedal is depressed on a chassis dynamometer (fixed front-wheel type), vehicle speed will not increase. This is not normal. It is result of TCS being activated by stationary front wheels. Warning lamp may also illuminate to indicate "sensor system error". This is also normal, and is the result of the stationary front wheels being detected. To be certain, restart engine, and drive vehicle at 30 km/h (19 MPH) or more. Make sure warning lamp does not illuminate.	
ABS operation (Longer stopping distance)	On roads with low friction coefficients, 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 the 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

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Warning Lamp and Indicator Timing

EFS005DY

Condition	ABS warning lamp	VDC OFF indicator lamp	SLIP indicator lamp	HDC indicator lamp	Remarks
When the ignition switch is OFF	—	—	—	—	—
After the ignition switch is turned ON for approx. 1 second	×	×	×	×	—
After the ignition switch has been turned ON for approx. 2 seconds	—	—	—	—	—
When the VDC OFF switch is pressed (VDC function OFF)	—	×	—	—	—
ABS/TCS/VDC malfunction	×	×	×	—	—
When the VDC is malfunctioning	—	×	×	—	—
When HDC switch is pressed (HDC function ON)	—	—	—	×	4H/4L → ON, 2H → Blink

X: ON
—: OFF

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BRC

Control Unit Input/Output Signal Standard REFERENCE VALUE FROM CONSULT-II

EFS005DZ

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.

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Monitor item	Display content	Data monitor		Note: Error inspection checklist
		Condition	Reference value in normal operation	
N POSI SIG	PNP switch signal ON/OFF condition	A/T shift position = N position	ON	BRC-140. "CAN Communication System Inspection"
		A/T shift position = other than N positions	OFF	
P POSI SIG	PNP switch signal ON/OFF condition	A/T shift position P position	ON	
		A/T shift position = other than P positions	OFF	
R POSI SIG	PNP switch signal ON/OFF condition	A/T shift position R position	ON	
		A/T shift position = other than R position	OFF	
SLCT LVR POSI	PNP switch signal ON/OFF condition	A/T shift position = N or P position	ON	
		A/T shift position = other than N or P positions	OFF	
GEAR	A/T gear position	1st gear	1	—
		2nd gear	2	
		3rd gear	3	
		4th gear	4	
		5th gear	5	
FR RH SENSOR FR LH SENSOR RR RH SENSOR RR LH SENSOR	Wheel speed	Vehicle stopped	0 [km/h (MPH)]	BRC-125. "Wheel Sensor System Inspection"
		Vehicle running (Note 1)	Almost in accordance with speedometer display (within ±10%)	

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Monitor item	Display content	Data monitor		Note: Error inspection checklist
		Condition	Reference value in normal operation	
ACCEL POS SIG	Open/close condition of throttle valve (linked with accelerator pedal).	Accelerator pedal not depressed (ignition switch is ON)	0%	BRC-140, "CAN Communication System Inspection"
		Depress accelerator pedal (ignition switch is ON)	0 to 100%	
2WD/4WD	Drive axle	2WD model	2WD	—
		4WD model	4WD	
ENGINE SPEED	With engine running	With engine stopped	0 RPM	BRC-126, "Engine System Inspection"
		Engine running	Almost in accordance with tachometer display	
STR ANGLE SIG	Steering angle detected by steering angle sensor	Straight-ahead	Approx. 0 deg	BRC-127, "Steering Angle Sensor System"
		Steering wheel turned	-756 to 756 deg	
YAW RATE SEN	Yaw rate detected by yaw rate sensor	Vehicle stopped	Approx. 0 d/s	BRC-129, "Yaw Rate/Side/Decel G Sensor System Inspection"
		Vehicle running	-100 to 100 d/s	
SIDE G SENSOR	Transverse G detected by side G-sensor	Vehicle stopped	Approx. 0 m/s ²	BRC-129, "Yaw Rate/Side/Decel G Sensor System Inspection"
		Vehicle running	-16.7 to 16.7 m/s ²	
CRANKING SIG	Cranking status	Cranking	ON	—
		Not cranking	OFF	
BATTERY VOLT	Battery voltage supplied to ABS actuator and electric unit (control unit)	Ignition switch ON	10 to 16V	BRC-134, "ABS/TCS/VDC Control Unit Power and Ground Systems Inspection"
STOP LAMP SW	Stop lamp switch operation	Brake pedal depressed	ON	BRC-133, "Stop Lamp Switch System Inspection"
		Brake pedal not depressed	OFF	
OFF SW	VDC OFF switch ON/OFF status	VDC OFF switch ON (When VDC OFF indicator lamp is ON)	ON	BRC-142, "VDC OFF SWITCH"
		VDC OFF switch OFF (When VDC OFF indicator lamp is OFF)	OFF	
HDC SW	HDC switch ON/OFF status	HDC switch ON (When HDC indicator lamp is ON or blink)	ON	BRC-148, "HDC Switch Inspection"
		HDC switch OFF (When HDC indicator lamp is OFF)	OFF	
STOP LAMP ON RLY	Stop lamp on relay operation status	When HDC is operating	ON	BRC-148, "Stop Lamp Relay Inspection"
		When HDC is not operating	OFF	
ABS WARN LAMP	ABS warning lamp ON condition (Note 2)	ABS warning lamp ON	ON	—
		ABS warning lamp OFF	OFF	
MOTOR RELAY	Operation status of motor and motor relay	Ignition switch ON or running (ABS not activated)	OFF	BRC-132, "Actuator Motor, Motor Relay, and Circuit Inspection"
		Ignition switch ON or engine running (ABS activated)	ON	

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Monitor item	Display content	Data monitor		Note: Error inspection checklist	
		Condition	Reference value in normal operation		
ACTUATOR RLY	Actuator relay operation status	Vehicle stopped (Ignition switch ON)	OFF	BRC-132, "Actuator Motor, Motor Relay, and Circuit Inspection"	A
		Vehicle stopped (Engine running)	ON		B
OFF LAMP	VDC OFF indicator lamp status (Note 3)	When VDC OFF indicator lamp is ON	ON	BRC-140, "CAN Communication System Inspection"	C
		When VDC OFF indicator lamp is OFF	OFF		D
SLIP LAMP	SLIP indicator lamp status (Note 4)	When SLIP indicator lamp is ON	ON	BRC-140, "CAN Communication System Inspection"	E
		When SLIP indicator lamp is OFF	OFF		
EBD WARN LAMP	EBD warning lamp status	When EBD warning lamp is ON	ON	—	BRC
		When EBD warning lamp is OFF	OFF		
FR LH IN SOL FR LH OUT SOL FR RH IN SOL FR RH OUT SOL RR RH IN SOL RR RH OUT SOL RR LH IN SOL RR LH OUT SOL	Solenoid valve operation	Actuator (solenoid) is active ("ACTIVE TEST" with CONSULT-II) or actuator relay is inactive (in fail-safe mode).	ON	BRC-131, "Solenoid and VDC Change-Over Valve System Inspection"	G
		When actuator (solenoid) is not active and actuator relay is active (ignition switch ON).	OFF		H
CV1 CV2 SV1 SV2	VDC switch-over valve status	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-II) or actuator relay is inactive (when in fail-safe mode).	ON	BRC-131, "Solenoid and VDC Change-Over Valve System Inspection"	I
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON).	OFF		J
DECEL G-SEN	Longitudinal acceleration detected by Decel G-Sensor	Vehicle stopped	Approx. 0 G	BRC-129, "Yaw Rate/Side/Decel G Sensor System Inspection"	K
		Vehicle running	-1.7 to 1.7 G		L
PRESS SENSOR	Brake fluid pressure detected by pressure sensor	Do not step on the Brake pedal (When ignition switch is ON)	Approx. 0 bar	—	M
		Step on the Brake pedal (When ignition switch is ON)	-40 to 300 bar		
PRESS SEN 2	Brake fluid pressure detected by pressure sensor	Do not step on the Brake pedal (When ignition switch is ON)	Approx. 0 bar	—	
		Step on the Brake pedal (When ignition switch is ON)	-40 to 300 bar		
FLUID LEV SW	ON/OFF status of brake fluid level switch	When brake fluid level switch ON	ON	BRC-135, "Brake Fluid Level Switch System Inspection"	
		When brake fluid level switch OFF	OFF		

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Monitor item	Display content	Data monitor		Note: Error inspection checklist
		Condition	Reference value in normal operation	
VDC SIGNAL TCS SIGNAL ABS SIGNAL EBD SIGNAL HDC SIGNAL HSA SIGNAL	Signal status	VDC active TCS active ABS active EBD active HDC active HSA active	ON	VDC system TCS system ABS system EBD system HDC system HSA system
		VDC not active TCS not active ABS not active EBD not active HDC not active HSA not active	OFF	
VDC FAIL SIG TCS FAIL SIG ABS FAIL SIG EBD FAIL SIG	Fail signal status	VDC fail TCS fail ABS fail EBD fail	ON	VDC system TCS system ABS system EBD system
		VDC normal TCS normal ABS normal EBD normal	OFF	

Note 1: Confirm tire pressure is normal. Refer to [WT-31, "SERVICE DATA AND SPECIFICATIONS \(SDS\)"](#).

Note 2: ON/OFF timing of ABS warning lamp

ON: For approximately 2 seconds after ignition switch is turned ON, or when a malfunction is detected.

OFF: Approximately 2 seconds after ignition switch is turned ON (when system is in normal operation) and VDC/TCS function is not activated.

Note 3: ON/OFF timing of VDC OFF indicator lamp

ON: For approximately 2 seconds after ignition switch is turned ON, or when a malfunction is detected and VDC OFF switch is ON.

OFF: Approximately 2 seconds after ignition switch is turned ON (when system is in normal operation.) And when VDC OFF switch is OFF.

Note 4: SLIP indicator lamp ON/OFF timing

ON: For approximately 2 seconds after ignition switch is turned ON, or when a malfunction is detected and VDC/TCS function is activated while driving.

OFF: Approximately 2 seconds after ignition switch is turned ON (when system is in normal operation) and VDC/TCS function is not activated.

Flashing: VDC/TCS function is active during driving.

CONSULT-II Function (ABS)

CONSULT-II can display each diagnostic item using the diagnostic test modes shown following.

ABS diagnostic mode	Description
WORK SUPPORT	Supports inspection and adjustments. Commands are transmitted to the ABS actuator and electric unit (control unit) for setting the status suitable for required operation, input/output signals are received from the ABS actuator and electric unit (control unit) and received data is displayed.
SELF-DIAG RESULTS	Displays ABS actuator and electric unit (control unit) self-diagnosis results.
DATA MONITOR	Displays ABS actuator and electric unit (control unit) input/output data in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ACTIVE TEST	Operation of electrical loads can be checked by sending drive signal to them.
FUNCTION TEST	Conducted by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".
ECU PART NUMBER	ABS actuator and electric unit (control unit) part number can be read.

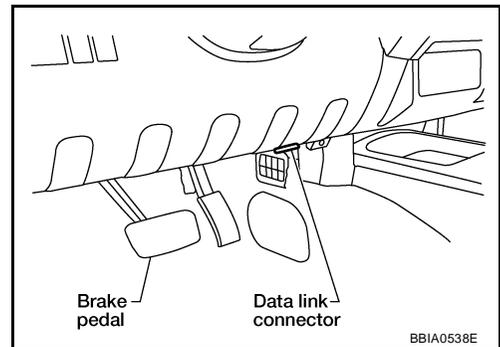
CONSULT-II BASIC OPERATION PROCEDURE

- Turn ignition switch OFF.
- Connect CONSULT-II and CONSULT-II CONVERTER to the data link connector.

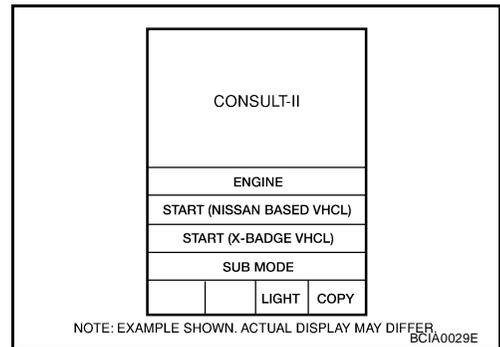
CAUTION:

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

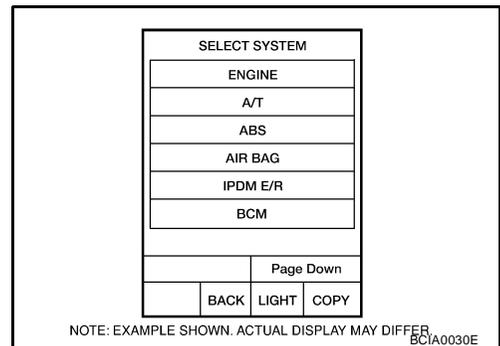
- Turn ignition switch ON.



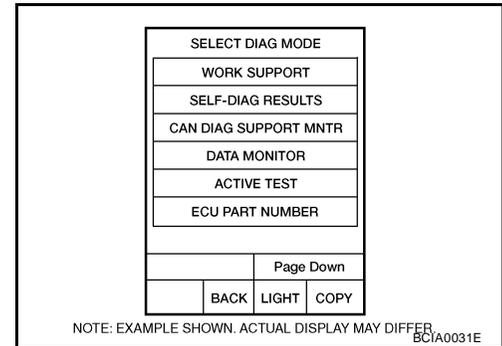
- Touch "START (NISSAN BASED VHCL)".



- Touch "ABS" in the "SELECT SYSTEM" screen. If "ABS" is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).



6. Select the required diagnostic location from the “SELECT DIAG MODE” screen.
For further information, see the CONSULT-II Operation Manual.



SELF-DIAGNOSIS

Description

If an error is detected in the system, the ABS warning lamp will turn on. In this case, perform self-diagnosis as follows:

Operation Procedure

1. Turn ignition switch OFF.
2. Connect CONSULT-II and CONSULT-II CONVERTER to the data link connector.

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 carries out **CAN** communication.

3. Turn ignition switch ON.
4. Start engine and drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute.
5. After stopping the 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 the 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. (If necessary, the self-diagnostic results can be printed out by touching “PRINT”.)
 - When “NO DTC IS DETECTED” is displayed, check the ABS warning lamp, SLIP indicator lamp and VDC OFF indicator lamp.
7. Conduct the appropriate inspection from the display item list, and repair or replace the malfunctioning component.
8. Start engine and drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute.

CAUTION:

● When a wheel sensor “short-circuit” is detected, if the vehicle is not driven at 30 km/h (19 MPH) for at least 1 minute, the ABS warning lamp will not turn off even if the malfunction is repaired.

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

CAUTION:

If the error memory is not erased, re-conduct the operation from step 5.

11. For the final inspection, drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute and confirm that the ABS warning lamp, SLIP indicator lamp, and VDC OFF indicator lamp are off.

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Display Item List

Self-diagnostic item	Malfunction detecting condition	Check system	
RR RH SENSOR 1 [C1101]	Circuit of rear RH wheel sensor is open, shorted or sensor power voltage is unusual.	BRC-125. "Wheel Sensor System Inspection" (Note 1)	A
RR LH SENSOR 1 [C1102]	Circuit of rear LH wheel sensor is open, shorted or sensor power voltage is unusual.		B
FR RH SENSOR 1 [C1103]	Circuit of front RH wheel sensor is open, shorted or sensor power voltage is unusual.		C
FR LH SENSOR 1 [C1104]	Circuit of front LH wheel sensor is open, shorted or sensor power voltage is unusual.		D
RR RH SENSOR 2 [C1105]	ABS actuator and electric unit (control unit) cannot identify sensor pulses, because of large gap between wheel sensor and sensor rotor.		E
RR LH SENSOR 2 [C1106]	ABS actuator and electric unit (control unit) cannot identify sensor pulses, because of large gap between wheel sensor and sensor rotor.		E
FR RH SENSOR 2 [C1107]	ABS actuator and electric unit (control unit) cannot identify sensor pulses, because of large gap between wheel sensor and sensor rotor.		BRC
FR LH SENSOR 2 [C1108]	ABS actuator and electric unit (control unit) cannot identify sensor pulses, because of large gap between wheel sensor and sensor rotor.		G
ABS SENSOR [C1115]	Wheel sensor input is abnormal.		H
BATTERY VOLTAGE [ABNORMAL] [C1109]	ABS actuator and electric unit (control unit) power voltage is too low.		BRC-134. "ABS/TCS/VDC Control Unit Power and Ground Systems Inspection"
CONTROLLER FAILURE [C1110]	Internal malfunction of ABS actuator and electric unit (control unit)	BRC-127. "ABS/TCS/VDC Control Unit Inspection"	J
PUMP MOTOR (Note 3) [C1111]	During actuator motor operation with ON, when actuator motor turns OFF or when control line for actuator motor relay is open.	BRC-132. "Actuator Motor, Motor Relay, and Circuit Inspection"	K
	During actuator motor operation with OFF, when actuator motor turns ON or when control line for relay is shorted to ground.		
G-SENSOR [C1113]	Longitudinal G-sensor is malfunctioning, or signal line of longitudinal G-sensor is open or shorted.	BRC-129. "Yaw Rate/Side/Decel G Sensor System Inspection"	L
STOP LAMP SW [C1116]	Stop lamp switch or circuit malfunction.	BRC-133. "Stop Lamp Switch System Inspection"	M

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Self-diagnostic item	Malfunction detecting condition	Check system
FR LH IN ABS SOL [C1120]	Circuit of front LH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	BRC-131, "Solenoid and VDC Change-Over Valve System Inspection"
FR LH OUT ABS SOL [C1121]	Circuit of front LH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
FR RH IN ABS SOL [C1122]	Circuit of front RH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
FR RH OUT ABS SOL [C1123]	Circuit of front RH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
RR LH IN ABS SOL [C1124]	Circuit of rear LH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
RR LH OUT ABS SOL [C1125]	Circuit of rear LH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
RR RH IN ABS SOL [C1126]	Circuit of rear RH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
RR RH OUT ABS SOL [C1127]	Circuit of rear RH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
ENGINE SIGNAL 1 [C1130]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine fuel cut system is malfunctioning.	BRC-140, "CAN Communication System Inspection"
ENGINE SIGNAL 2 [C1131]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine fuel cut system is malfunctioning.	
ENGINE SIGNAL 3 [C1132]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine fuel cut system is malfunctioning.	
ENGINE SIGNAL 4 [C1133]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine fuel cut system is malfunctioning.	
ENGINE SIGNAL 6 [C1136]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine fuel cut system is malfunctioning.	
ACTUATOR RLY [C1140]	ABS actuator relay or circuit malfunction.	BRC-132, "Actuator Motor, Motor Relay, and Circuit Inspection"
PRESS SEN CIRCUIT [C1142]	ABS pressure sensor circuit malfunction.	BRC-137, "Pressure Sensor System Inspection"
ST ANGLE SEN CIRCUIT [C1143]	Neutral position of steering angle sensor is dislocated, or steering angle sensor is malfunctioning.	BRC-127, "Steering Angle Sensor System"
ST ANGLE SEN SIGNAL [C1144]	Neutral position correction of steering angle sensor is not finished.	BRC-141, "Inspection For Self-diagnosis Result "ST ANGLE SEN SIGNAL""
YAW RATE SENSOR [C1145]	Yaw rate sensor has generated an error, or yaw rate sensor signal line is open or shorted.	BRC-129, "Yaw Rate/Side/Decel G Sensor System Inspection"
SIDE G-SEN CIRCUIT [C1146]	Lateral G-sensor is malfunctioning, or signal line of lateral G-sensor is open or shorted.	
BR FLUID LEVEL LOW [C1155]	Brake fluid level drops or circuit between ABS actuator and electric unit (control unit) and brake fluid level switch is open or shorted.	BRC-135, "Brake Fluid Level Switch System Inspection"
ST ANG SEN COM CIR [C1156]	CAN communication line or steering angle sensor has generated an error.	BRC-127, "Steering Angle Sensor System"

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Self-diagnostic item	Malfunction detecting condition	Check system
DECEL G SEN SET [C1160]	ABS decel sensor adjustment is incomplete.	BRC-141, "Inspection For Self-diagnosis Result "DECEL G SEN SET"
ST ANGL SEN SAFE [C1163]	When steering angle sensor is in safe mode.	BRC-140, "Steering Angle Sensor Safe Mode Inspection"
CV1 [C1164]	Front side VDC switch-over solenoid valve (cut valve) is open or shorted, or control line is open or shorted to power supply or ground.	BRC-131, "Solenoid and VDC Change-Over Valve System Inspection"
CV2 [C1165]	Rear side VDC switch-over solenoid valve (cut valve) is open or shorted, or control line is open or shorted to power supply or ground.	
SV1 [C1166]	Front side VDC switch-over solenoid valve (suction valve) is open or shorted, or control line is open or shorted to power supply or ground.	
SV2 [C1167]	Rear side VDC switch-over solenoid valve (suction valve) is open or shorted, or control line is open or shorted to power supply or ground.	
VARIANT CODING [C1170]	V coding is not malfunctioning.	
ABS ACTIVE BOOSTER SV NG [C1178]	Active booster solenoid is malfunctioning, or signal line of active booster servo is open or shorted.	BRC-136, "Active Booster System Inspection"
ABS ACTIVE BOOSTER RESPONSE NG [C1181]	Active booster response is malfunctioning, or signal line of active booster response is open or shorted.	
ABS BRAKE RELEASE SW NG [C1184]	Brake release switch is malfunctioning, or signal line of brake release switch is open or shorted.	
ABS DIFLOCK CONTROLLER NG [C1187]	Differential lock controller malfunction.	BRC-140, "CAN Communication System Inspection"
ABS BRAKE BOOSTER DEFECT [C1189]	Brake booster is defective or malfunctioning.	BRC-136, "Active Booster System Inspection"
CAN COMM CIRCUIT [U1000]	<ul style="list-style-type: none"> ● CAN communication line is open or shorted. ● ABS actuator and electric unit (control unit) internal malfunction ● Battery voltage for ECM is suddenly interrupted for approximately 0.5 second or more. 	BRC-140, "CAN Communication System Inspection" (Note 2)

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Note 1. If wheel sensor 2 for each wheel is indicated, check ABS actuator and electric unit (control unit) power supply voltage in addition to wheel sensor circuit check.

Note 2. If multiple malfunctions are detected including CAN communication line [U1000], perform diagnosis for CAN communication line first.

Note 3. "ACTUATOR RLY" on the CONSULT-II self-diagnosis results indicates the malfunction of the actuator motor relay or circuit.

DATA MONITOR

Operation Procedure

- After turning ignition switch OFF, connect CONSULT-II and the CONSULT-II CONVERTER to the data link connector.

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 carries out CAN communication.

- Touch "START (NISSAN BASED VHCL)", "ABS", "DATA MONITOR" in order on the CONSULT-II screen. If "ABS" is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

CAUTION:

When “START (NISSAN BASED VHCL)” is touched immediately after starting the 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 2.

3. Return to the SELECT MONITOR ITEM screen, and touch “ECU INPUT SIGNALS”, “MAIN SIGNALS”, or “SELECTION FROM MENU”. Refer to the following information.
4. When “START” is touched, the data monitor screen is displayed.

Display Item List

Item (Unit)	Data monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
GEAR	×	×	×	Gear position judged by PNP switch signal is displayed.
FR RH SENSOR (km/h, MPH)	×	×	×	Wheel speed calculated by front RH wheel sensor signal is displayed.
FR LH SENSOR (km/h, MPH)	×	×	×	Wheel speed calculated by front LH wheel sensor signal is displayed.
RR RH SENSOR (km/h, MPH)	×	×	×	Wheel speed calculated by rear RH wheel sensor signal is displayed.
RR LH SENSOR (km/h, MPH)	×	×	×	Wheel speed calculated by rear LH wheel sensor signal is displayed.
BATTERY VOLT (V)	×	×	×	Voltage supplied to ABS actuator and electric unit (control unit) is displayed.
N POSI SIG	–	–	×	Shift position judged by PNP switch signal.
P POSI SIG	–	–	×	Shift position judged by PNP switch signal.
ACCEL POS SIG (%)	×	–	×	Throttle valve open/close status judged by CAN communication signal is displayed.
ENGINE SPEED (rpm)	×	×	×	Engine speed judged by CAN communication signal is displayed.
STR ANGLE SIG (deg)	×	–	×	Steering angle detected by steering angle sensor is displayed.
YAW RATE SEN (d/s)	×	×	×	Yaw rate detected by yaw rate sensor is displayed.
DECEL G SEN (d/s)	×	×	×	Longitudinal acceleration detected by decel G-sensor is displayed.
SIDE G-SENSOR (m/s ²)	×	–	×	Transverse acceleration detected by side G-sensor is displayed.
STOP LAMP SW (ON/OFF)	×	×	×	Stop lamp switch (ON/OFF) status is displayed.
OFF SW (ON/OFF)	×	×	×	VDC OFF switch (ON/OFF) status is displayed.
HDC SW (ON/OFF)	–	–	×	HDC switch (ON/OFF) status is displayed.
ABS WARN LAMP (ON/OFF)	–	×	×	ABS warning lamp (ON/OFF) status is displayed.
SLIP LAMP (ON/OFF)	–	×	×	SLIP indicator lamp (ON/OFF) status is displayed.
FR LH IN SOL (ON/OFF)	–	×	×	Front LH IN ABS solenoid (ON/OFF) status is displayed.

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Item (Unit)	Data monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
FR LH OUT SOL (ON/OFF)	-	×	×	Front LH OUT ABS solenoid (ON/OFF) status is displayed.
RR RH IN SOL (ON/OFF)	-	×	×	Rear RH IN ABS solenoid (ON/OFF) status is displayed.
RR RH OUT SOL (ON/OFF)	-	×	×	Rear RH OUT ABS solenoid (ON/OFF) status is displayed.
FR RH IN SOL (ON/OFF)	-	×	×	Front RH IN ABS solenoid (ON/OFF) status is displayed.
FR RH OUT SOL (ON/OFF)	-	×	×	Front RH OUT ABS solenoid (ON/OFF) status is displayed.
RR LH IN SOL (ON/OFF)	-	×	×	Rear LH IN ABS solenoid (ON/OFF) status is displayed.
RR LH OUT SOL (ON/OFF)	-	×	×	Rear LH OUT ABS solenoid (ON/OFF) status is displayed.
OFF LAMP (ON/OFF)	-	×	×	OFF Lamp (ON/OFF) status is displayed.
MOTOR RELAY (ON/OFF)	-	×	×	ABS motor relay signal (ON/OFF) status is displayed.
ACTUATOR RLY (ON/OFF)	-	×	×	ABS actuator relay signal (ON/OFF) status is displayed.
CV1 (ON/OFF)	-	-	×	Front side switch-over solenoid valve (cut valve) (ON/OFF) status is displayed.
CV2 (ON/OFF)	-	-	×	Rear side switch-over solenoid valve (cut-valve) (ON/OFF) status is displayed.
SV1 (ON/OFF)	-	-	×	Front side switch-over solenoid valve (suction valve) (ON/OFF) status is displayed.
SV2 (ON/OFF)	-	-	×	Rear side switch-over solenoid valve (suction valve) (ON/OFF) status is displayed.
VDC FAIL SIG (ON/OFF)	-	-	×	VDC fail signal (ON/OFF) status is displayed.
TCS FAIL SIG (ON/OFF)	-	-	×	TCS fail signal (ON/OFF) status is displayed.
ABS FAIL SIG (ON/OFF)	-	-	×	ABS fail signal (ON/OFF) status is displayed.
EBD FAIL SIG (ON/OFF)	-	-	×	EBD fail signal (ON/OFF) status is displayed.
FLUID LEV SW (ON/OFF)	×	-	×	Brake fluid level switch (ON/OFF) status is displayed.
EBD SIGNAL (ON/OFF)	-	-	×	EBD operation (ON/OFF) status is displayed.
ABS SIGNAL (ON/OFF)	-	-	×	ABS operation (ON/OFF) status is displayed.
TCS SIGNAL (ON/OFF)	-	-	×	TCS operation (ON/OFF) status is displayed.
VDC SIGNAL (ON/OFF)	-	-	×	VDC operation (ON/OFF) status is displayed.
HDC SIGNAL (ON/OFF)	-	-	×	HDC operation (ON/OFF) status is displayed.

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TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Item (Unit)	Data monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
HSA SIGNAL (ON/OFF)	–	–	×	HSA operation (ON/OFF) status is displayed.
STP LAMP ON RLY	–	–	×	Stop lamp on relay signal status is displayed
EBD WARN LAMP	–	–	×	Brake warning lamp (ON/OFF) status is displayed.
SLCT LVR POSI	×	×	×	Shift position judged by PNP switch signal.
R POSI SIG	–	–	×	Shift position judged by PNP switch signal.
2WD/4WD	–	–	×	It recognizes on software whether it is 2WD and whether it is in 4WD state.
PRESS SENSOR	×	–	×	Brake pressure detected by pressure sensor is displayed.
PRESS SEN 2	–	–	×	Brake pressure detected by pressure sensor is displayed.
CRANKING SIG	–	–	×	The input state of the key SW START position signal is displayed.

×: Applicable

–: Not applicable

ACTIVE TEST

CAUTION:

- Do not perform active test while driving.
- Make sure to completely bleed air from the brake system.
- The ABS and brake warning lamps turn on during the active test.

Operation Procedure

1. Connect the CONSULT-II and CONSULT-II CONVERTER to the data link connector and start the engine.

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 carries out CAN communication.

2. Touch “START (NISSAN BASED VHCL)” on the display screen.
3. Touch “ABS”.
If “ABS” is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).
4. Touch “ACTIVE TEST”.
5. The test item selection screen is displayed.
6. Touch necessary test item.

SELECT TEST ITEM
FR RH SOL
FR LH SOL
RR RH SOL
RR LH SOL
REAR SOL
ABS MOTOR

WF1A0349E

7. With the “MAIN SIGNALS” display selected, touch “START”.
8. The Active Test screen will be displayed, so conduct the following test.

TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Solenoid Valve Operation Chart

Operation	ABS solenoid valve			ABS solenoid valve (ACT)		
	UP	KEEP	DOWN	UP	ACTUATOR UP	ACTUATOR KEEP
FR RH IN SOL	OFF	ON	ON	OFF	OFF	OFF
FR RH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
FR LH IN SOL	OFF	ON	ON	OFF	OFF	OFF
FR LH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
RR RH IN SOL	OFF	ON	ON	OFF	OFF	OFF
RR RH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
RR LH IN SOL	OFF	ON	ON	OFF	OFF	OFF
RR LH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
Primary side VDC switch over valve 1 (SV 1)	OFF	OFF	OFF	OFF	ON*	OFF
Primary side VDC switch over valve 1 (CV 1)	OFF	OFF	OFF	OFF	ON	ON
Primary side VDC switch over valve 2 (SV 1)	OFF	OFF	OFF	OFF	ON*	OFF
Primary side VDC switch over valve 2 (CV 1)	OFF	OFF	OFF	OFF	ON	ON

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

NOTE:

- If active test is performed with brake pedal depressed, pedal stroke may change. This is normal.
- "TEST IS STOPPED" is displayed approximately 10 seconds after operation starts.
- After "TEST IS STOPPED" is displayed, to perform test again, repeat Step 6.

ABS MOTOR

Touch "ON" and "OFF" on the screen. Check that ABS motor relay operates as shown in table below.

Operation	ON	OFF
MOTOR RELAY	ON	OFF
ACTUATOR RELAY	ON	ON

NOTE:

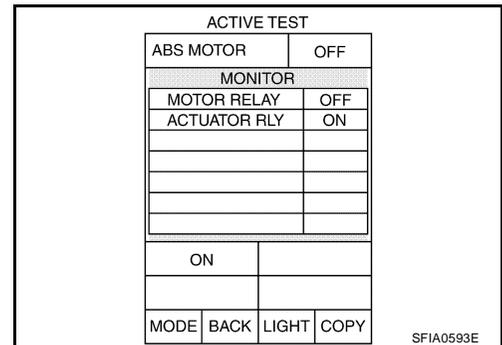
- If active test is performed with brake pedal depressed, pedal stroke may change. This is normal.
- "TEST IS STOPPED" is displayed approximately 10 seconds after operation starts.

BOOSTER DRIVE

CAUTION:

Perform active test subject to the conditions below.

- Do not operate brake pedal during active test.
- Make sure the engine revolution is over 500 rpm.
- Make sure the vehicle is not moving.

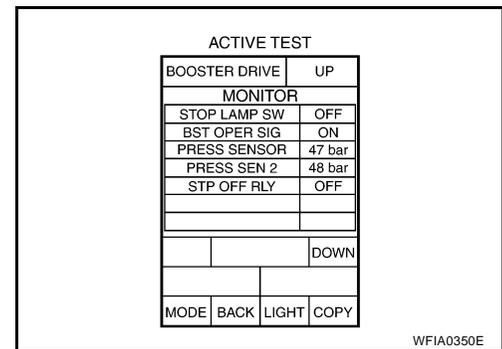


TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Touch "UP" and "DOWN" on the screen. Check that booster drive operates as shown in table below.

Operation	UP	DOWN
STOP LAMP SW	ON	OFF
BST OPER SIG	ON	OFF
PRESS SENSOR	50 ± 5 bar	0 bar
PRESS SEN 2	50 ± 5 bar	0 bar
STP OFF RLY	OFF	OFF



NOTE:

"TEST IS STOPPED" is displayed approximately 10 seconds after operation starts.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

PF0:00000

Wheel Sensor System Inspection

EFS005E1

INSPECTION PROCEDURE

1. CHECK TIRES

Check for inflation pressure, wear and size of each tire. Refer to [WT-31, "SERVICE DATA AND SPECIFICATIONS \(SDS\)"](#).

Are tire pressure and size correct and is tire wear within specifications?

YES >> GO TO 2.

NO >> Adjust tire pressure or replace tire(s).

2. CONNECTOR INSPECTION

Disconnect the ABS actuator and electric unit (control unit) connector E125 and wheel sensor of malfunctioning code.

Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace as necessary.

3. CHECK SENSOR AND SENSOR ROTOR

- Check the cord of the sensor mount (for looseness, etc.)
- Check sensor rotors for damage (rear only)
- Check wheel bearing axial end play

OK or NG

OK >> GO TO 4.

NG >> Repair or replace as necessary.

4. CHECK WHEEL SENSOR OUTPUT SIGNAL

1. Connect ABS active wheel sensor tester (J-45741) to wheel sensor using appropriate adapter.
2. Turn on the ABS active wheel sensor tester power switch.

NOTE:

The green POWER indicator should illuminate. If the POWER indicator does not illuminate, replace the battery in the ABS active wheel sensor tester before proceeding.

3. Spin the wheel of the vehicle by hand and observe the red SENSOR indicator on the ABS active wheel sensor tester. The red SENSOR indicator should flash on and off to indicate an output signal.

NOTE:

If the red SENSOR indicator illuminates but does not flash, reverse the polarity of the tester leads and retest.

Does the ABS active wheel sensor tester detect a signal?

YES >> GO TO 5.

NO >> Replace the wheel sensor. Refer to [BRC-152, "Removal and Installation"](#).

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

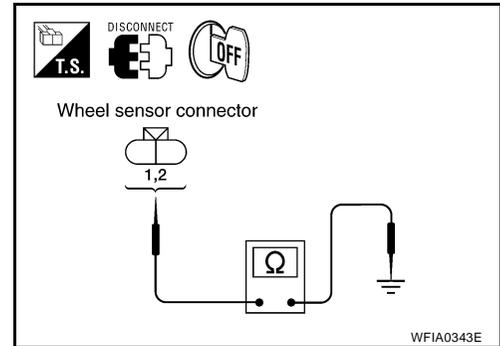
5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

1. Disconnect ABS actuator and electric unit (control unit) connector and wheel sensor connector of malfunction code No.
2. Check resistance between wheel sensor harness connector terminals and ground.

Continuity should not exist.

OK or NG

- OK >> GO TO 6.
 NG >> Repair the circuit.



6. CHECK WIRING HARNESS FOR OPEN CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) harness connector E125 and the malfunctioning wheel sensor harness connector E18, E117, C10 or C11.

Wheel sensor	ABS actuator and electric unit (control unit)		Wheel sensor		Continuity
	Connector	Terminal	Connector	Terminal	
Front LH	E125	45	E18	1	Yes
		46		2	
Front RH		34	E117	1	
		33		2	
Rear LH		37	C11	2	
		36		1	
Rear RH		42	C10	2	
		43		1	

Continuity should exist.

OK or NG

- OK >> Replace the ABS actuator and electric unit (control unit). Refer to [BRC-154, "Removal and Installation"](#) .
 NG >> Repair the circuit.

Engine System Inspection

EFS005E2

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

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

Is the above displayed in the self-diagnosis display items?

- YES >> GO TO 2.
 NO >> Inspection End.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

2. ENGINE SYSTEM INSPECTION

1. Perform ECM self-diagnosis and repair as necessary.
2. Perform ABS actuator and electric unit (control unit) self-diagnosis again.

OK or NG

- OK >> Inspection End.
NG >> Repair or replace as necessary.

ABS/TCS/VDC Control Unit Inspection

EFS005E3

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

Self-diagnosis results
CONTROLLER FAILURE
VARIANT CODING

Is the above displayed in the self-diagnosis display items?

- YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-154, "Removal and Installation"](#).
NO >> Inspection End.

Steering Angle Sensor System

EFS005E4

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULT

Check self-diagnosis results.

Self-diagnosis results
ST ANGLE SEN CIRCUIT
ST ANG SEN COM CIR

Is above displayed in self-diagnosis item?

- YES >> GO TO 2.
NO >> Inspection End.

2. CHECK CONNECTOR

1. Disconnect steering angle sensor connector M47 and ABS actuator and electric unit (control unit) connector E125 and check terminals for deformation, disconnection, looseness, or damage. Repair or replace as necessary.
2. Reconnect connectors and repeat ABS actuator and electric unit (control unit) self-diagnosis.

Is "ST ANGLE SEN CIRCUIT" or "ST ANG SEN COM CIR" displayed?

- YES >> GO TO 3.
NO >> Inspection End.

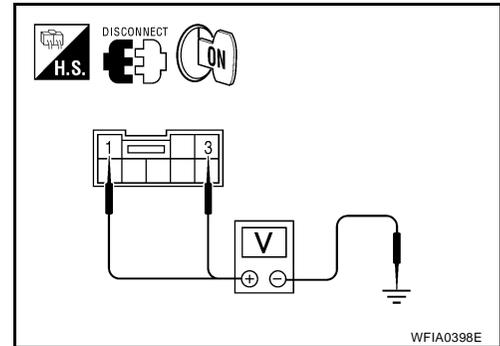
TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

3. CHECKING STEERING ANGLE SENSOR POWER AND GROUND

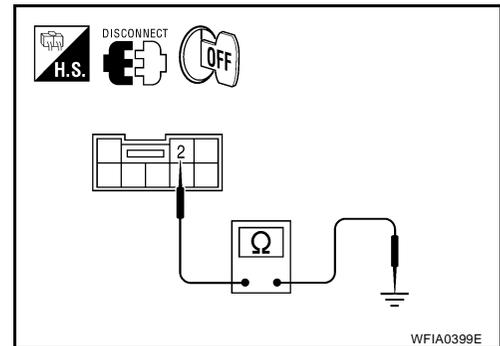
1. Check voltage between steering angle sensor harness connector M47 and body ground.

Terminals		(-)	Measured value (Approx.)
(+)	Terminal		
Steering angle sensor connector		Ground	12V
M47	1		
	3		12V



2. Turn ignition switch OFF.
3. Check resistance between steering angle sensor harness connector M47 and body ground.

Terminals		(-)	Measured value Ω (Approx.)
(+)	Terminal		
Steering angle sensor connector		Ground	0 Ω
M47	2		



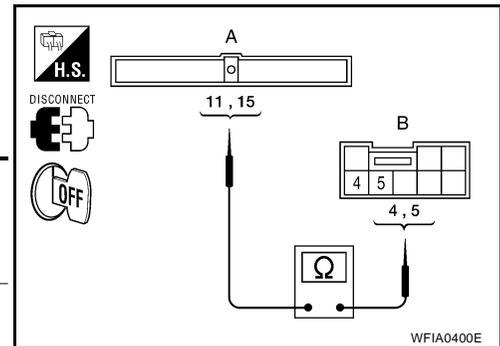
OK or NG

- OK >> GO TO 4.
 NG >> Repair the circuit.

4. CHECK STEERING ANGLE SENSOR HARNESS

1. Check CAN communication system. Refer to [LAN-22, "CAN COMMUNICATION"](#).
2. Disconnect ABS actuator and electric unit (control unit) connector E125.
3. Check continuity between ABS actuator and electric unit (control unit) connector E125 and steering angle sensor connector M47.

A		B		Continuity
Connector	Terminal	Connector	Terminal	
ABS actuator and electric unit (control unit): E125	11	Steering angle sensor: M47	4	Yes
ABS actuator and electric unit (control unit): E125	15	Steering angle sensor: M47	5	Yes



OK or NG

- OK >> GO TO 5.
 NG >> Repair or replace harness.

5. CHECK STEERING WHEEL PLAY

Check steering wheel play. Refer to [PS-8, "CHECKING STEERING WHEEL PLAY"](#).

OK or NG

- OK >> GO TO 6.
 NG >> Adjust steering wheel play.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

6. CHECK DATA MONITOR

1. Connect steering angle sensor and ABS actuator and electric unit (control unit) connectors.
2. Use "DATA MONITOR" to check if the status of "STR ANGLE SIG" is normal.

Steering condition	Data monitor
Straight-ahead	-3.5 deg to +3.5 deg
Turn wheel to the right by 90°	Approx. - 90deg
Turn wheel to the left by 90°	Approx. + 90deg

OK or NG

- OK >> Perform ABS actuator and electric unit (control unit) self-diagnosis again.
NG >> Replace spiral cable (steering angle sensor) and adjust neutral position of steering angle sensor.
Refer to [BRC-150, "Adjustment of Steering Angle Sensor Neutral Position"](#).

Yaw Rate/Side/Decel G Sensor System Inspection

EFS005E5

CAUTION:

Sudden turns (such as spin turns, acceleration turns), drifting, etc. when VDC function is OFF may cause the yaw rate/side/decel G sensor system to indicate a problem. This is not a problem if normal operation can be resumed after restarting the engine.

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

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

CAUTION:

If vehicle is on turntable 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 turntable or other moving surface, and start engine. Results will return to normal.

Is the above displayed in the self-diagnosis display items?

- YES >> GO TO 2.
NO >> Inspection End.

2. CONNECTOR INSPECTION

Disconnect the ABS actuator and electric unit (control unit) connector E125 and yaw rate/side/decel G sensor connector B73.

Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

- OK >> GO TO 3.
NG >> Repair or replace as necessary.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

3. YAW RATE/SIDE/DECEL G SENSOR HARNESS INSPECTION

1. Turn off the ignition switch and disconnect yaw rate/side/decel G sensor connector B73 and ABS actuator and electric unit (control unit) connector E125.
2. Check continuity between the ABS actuator and electric unit (control unit) connector E125 and the yaw rate/side/decel G sensor connector B73.

ABS actuator and electric unit (control unit) harness connector E125	Yaw rate/side/decel G sensor harness connector B73	Continuity
6	3	Yes
24	5	
25	1	
29	2	

OK or NG

OK >> GO TO 4.

NG >> Repair or replace as necessary.

4. YAW RATE/SIDE/DECEL G SENSOR INSPECTION

1. Connect the yaw rate/side/decel G sensor connector B73 and ABS actuator and electric unit (control unit) connector E125.
2. Use "DATA MONITOR" to check if the yaw rate/side/decel G sensor signals are normal.

Vehicle status	Yaw rate sensor (Data monitor standard)	Side G sensor (Data monitor standard)	Decel G Sensor (Data monitor standard)
When stopped	-4 to +4 deg/s	-1.1 to +1.1 m/s	-0.08 G to +0.08 G
Right turn	Negative value	Negative value	-
Left turn	Positive value	Positive value	-
Speed up	-	-	Negative value
Speed down	-	-	Positive value

OK or NG

OK >> Inspection End.

NG >> Replace the yaw rate/side/decel G sensor. Refer to [BRC-157, "Removal and Installation"](#).

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

Solenoid and VDC Change-Over Valve System Inspection

EFS005E6

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

Self-diagnosis results
FR LH IN ABS SOL
FR LH OUT ABS SOL
RR RH IN ABS SOL
RR RH OUT ABS SOL
FR RH IN ABS SOL
FR RH OUT ABS SOL
RR LH IN ABS SOL
RR LH OUT ABS SOL
CV 1
CV 2
SV 1
SV 2

Is the above displayed in the self-diagnosis display items?

YES >> GO TO 2.

NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector E125.
2. Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace as necessary.

A

B

C

D

E

BRC

G

H

I

J

K

L

M

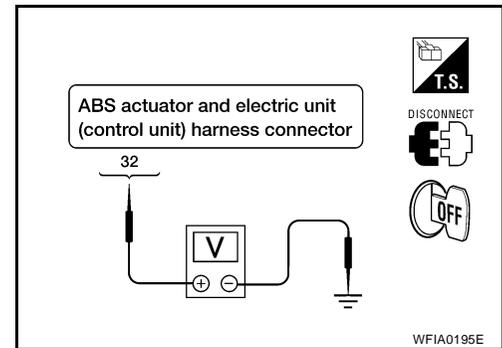
TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

3. CHECKING SOLENOID POWER AND GROUND

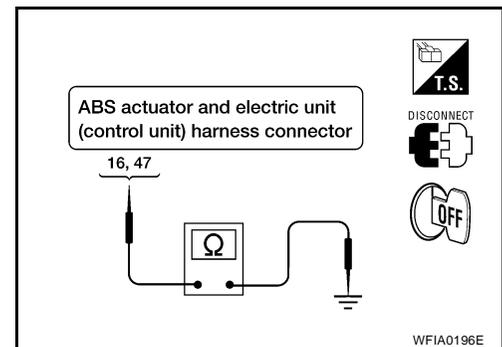
1. Check voltage between ABS actuator and electric unit (control unit) harness connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value (Approx.)
32	—	12V



2. Check resistance between ABS actuator and electric unit (control unit) harness connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value Ω (Approx.)
16	—	0 Ω
47	—	0 Ω



OK or NG

- OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-154, "Removal and Installation"](#).

NG >> Repair the circuit.

Actuator Motor, Motor Relay, and Circuit Inspection

EFS005E7

INSPECTION PROCEDURE

1. CHECKING SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
PUMP MOTOR
ACTUATOR RLY

Is the above displayed in the self-diagnosis display items?

YES >> GO TO 2.

NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector E125.
2. Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace as necessary.

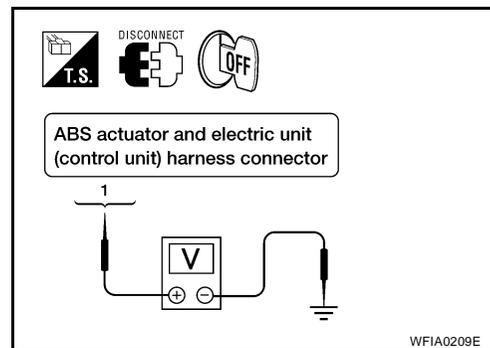
TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

3. CHECKING ABS MOTOR AND MOTOR RELAY POWER SYSTEM

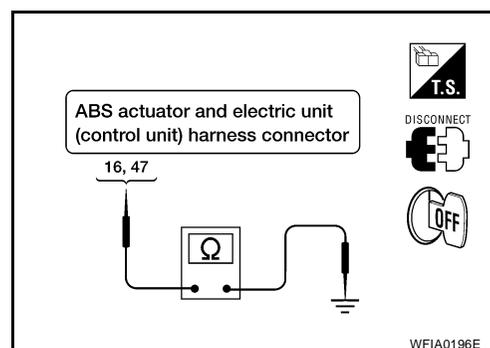
1. Check voltage between ABS actuator and electric unit (control unit) harness connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value (Approx.)
1	—	12V



2. Check resistance between ABS actuator and electric unit (control unit) connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value Ω (Approx.)
16	—	0 Ω
47	—	0 Ω



OK or NG

OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-154, "Removal and Installation"](#).

NG >> Repair the circuit.

Stop Lamp Switch System Inspection

EFS005E8

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

Self-diagnosis results
STOP LAMP SW

Is the above displayed in the self-diagnosis display items?

YES >> GO TO 2.

NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect the ABS actuator and electric unit (control unit) connector E125 and stop lamp switch connector E38.
2. Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace as necessary.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

3. STOP LAMP SWITCH INSPECTION

Check the voltage between the ABS actuator and electric unit (control unit) harness connector E125 terminal 41 and body ground.

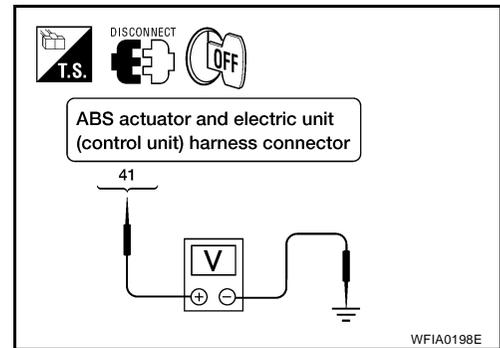
Brake pedal depressed : Battery voltage (approx. 12V)

Brake pedal not depressed : Approx. 0V

OK or NG

OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-154, "Removal and Installation"](#).

NG >> GO TO 4.



4. STOP LAMP RELAY CIRCUIT INSPECTION

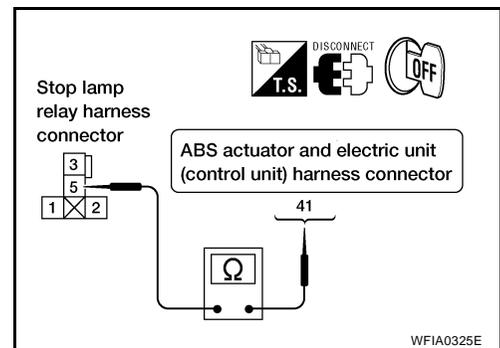
1. Disconnect the stop lamp relay harness connector E12.
2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector E125 terminal 41 and stop lamp relay harness connector E12 terminal 5.

Continuity should exist.

OK or NG

OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-154, "Removal and Installation"](#).

NG >> Refer to [LT-97, "STOP LAMP"](#).



ABS/TCS/VDC Control Unit Power and Ground Systems Inspection

EFS005E9

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

Self-diagnosis results

BATTERY VOLTAGE

Is the above displayed in the self-diagnosis display items?

YES >> GO TO 2.

NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect the ABS actuator and electric unit (control unit) connector E125.
2. Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace as necessary.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

3. ABS/TCS/VDC CONTROL UNIT POWER AND GROUND CIRCUIT INSPECTION

Measure the voltage and continuity between the ABS actuator and electric unit (control unit) harness connector E125 and body ground.

Signal name	ABS actuator and electric unit (control unit) harness connector E125	Body ground	Measured value
Power supply	1	—	Battery voltage (Approx. 12V)
	32		
Ground	16	—	Continuity should exist.
	47		

OK or NG

- OK >> Check the battery for loose terminals, low voltage, etc. Repair as necessary.
- NG >> Repair the circuit.

Brake Fluid Level Switch System Inspection

EFS005EA

BRC

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

1. Check the brake reservoir tank fluid level. If the level is low, add brake fluid.
2. Erase the self-diagnosis results and check the self-diagnosis results.

Self-diagnosis results

BR FLUID LEVEL LOW

Is the above displayed in the self-diagnosis display items?

- YES >> GO TO 2.
- NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect the ABS actuator and electric unit (control unit) connector E125 and brake fluid level switch connector E21.
2. Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

- OK >> GO TO 3.
- NG >> Repair or replace as necessary.

3. CHECK THE HARNESS BETWEEN THE BRAKE FLUID LEVEL SENSOR AND THE ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Check the continuity between the brake fluid level switch harness connector E21 and the ABS actuator and electric unit (control unit) harness connector E125.

ABS actuator and electric unit (control unit) harness connector E125	Brake fluid level switch harness connector E21	Continuity
8	1	Yes
8	Ground	No
Ground	2	Yes

OK or NG

- OK >> GO TO 4.
- NG >> Repair the circuit.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

4. CHECK BRAKE FLUID LEVEL SWITCH

Check continuity between brake fluid level switch terminals 1 and 2.

Continuity should not exist.

OK or NG

OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-154, "Removal and Installation"](#) .

NG >> Replace brake fluid level switch.

Active Booster System Inspection

EFS005EB

INSPECTION PROCEDURE

1. DISPLAY SELF DIAGNOSIS RESULTS

Check self-diagnosis result display item.

Self-diagnosis results
ABS ACTIVE BOOSTER SV NG
ABS ACTIVE BOOSTER RESPONSE NG
ABS BRAKE RELEASE SW NG
ABS BRAKE BOOSTER DEFECT

Is the self-diagnosis result display item shown above displayed?

YES >> GO TO 2.

NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the active booster connector E49 and ABS actuator and electric unit (control unit) connector E125 and inspect the terminals for deformation, disconnection, looseness, or damage.

OK or NG

OK >> GO TO 3.

NG >> Repair connector.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

3. ACTIVE BOOSTER CIRCUIT INSPECTION

1. Measure the continuity between the ABS actuator and electric unit (control unit) harness connector E125 and active booster harness connector E49.

ABS actuator and electric unit (control unit) harness connector E125	Active booster harness connector E49	Continuity
17	3	Yes
27	1	
28	5	
30	2	
31	4	

2. Measure the continuity between the ABS actuator and electric unit (control unit) harness connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Continuity
17	—	No
27		
28		
30		
31		

OK or NG

- OK >> GO TO 4.
 NG >> Repair or replace harness or connector.

4. ACTIVE BOOSTER SENSOR INSPECTION

1. Reconnect the active booster and ABS actuator and electric unit (control unit) connectors.
 2. Use "DATA MONITOR" to check if the status of "RELEASE SW NO" and "RELEASE SW NC" is normal.

Condition	Data monitor display	
	RELEASE SW NO	RELEASE SW NC
When brake pedal is depressed	ON	OFF
When brake pedal is released	OFF	ON

OK or NG

- OK >> Inspection End.
 NG >> Replace active booster. Refer to [BR-17, "Removal and Installation"](#).

Pressure Sensor System Inspection

EFS005EC

FRONT PRESSURE INSPECTION PROCEDURE

1. DISPLAY SELF DIAGNOSIS RESULTS

Check self-diagnosis result display item.

Self-diagnosis results
PRESS SEN CIRCUIT

Is the self-diagnosis result display item shown above displayed?

- YES >> GO TO 2.
 NO >> Inspection End.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

2. CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the front pressure sensor connector E31 and ABS actuator and electric unit (control unit) connector E125 and inspect the terminals for deformation, disconnection, looseness, or damage.

OK or NG

- OK >> GO TO 3.
NG >> Repair connector.

3. FRONT PRESSURE SENSOR CIRCUIT INSPECTION

1. Measure the continuity between the ABS actuator and electric unit (control unit) harness connector E125 and front pressure sensor harness connector E31.

ABS actuator and electric unit (control unit) harness connector E125	Front pressure sensor harness connector E31	Continuity
18	3	Yes
19	1	
20	2	

2. Measure the continuity between the ABS actuator and electric unit (control unit) harness connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Continuity
18	—	No
19		
20		

OK or NG

- OK >> GO TO 4.
NG >> Repair or replace harness or connector.

4. FRONT PRESSURE SENSOR INSPECTION

1. Reconnect the front pressure sensor and ABS actuator and electric unit (control unit) connectors.
2. Use "DATA MONITOR" to check if the status of "PRESS SENSOR" is normal.

Condition	Data monitor display (Approx.)
	PRESS SENSOR
When brake pedal is depressed	Positive value
When brake pedal is released	0 bar

OK or NG

- OK >> Inspection End.
NG >> Replace front pressure sensor.

REAR PRESSURE INSPECTION PROCEDURE

1. DISPLAY SELF DIAGNOSIS RESULTS

Check self-diagnosis result display item.

Self-diagnosis results
PRESS SEN CIRCUIT

Is the self-diagnosis result display item shown above displayed?

- YES >> GO TO 2.
NO >> Inspection End.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

2. CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the rear pressure sensor connector E32 and ABS actuator and electric unit (control unit) connector E125 and inspect the terminals for deformation, disconnection, looseness, or damage.

OK or NG

OK >> GO TO 3.

NG >> Repair connector.

3. REAR PRESSURE SENSOR CIRCUIT INSPECTION

1. Measure the continuity between the ABS actuator and electric unit (control unit) harness connector E125 and rear pressure sensor harness connector E32.

ABS actuator and electric unit (control unit) harness connector E125	Rear pressure sensor harness connector E32	Continuity
21	1	Yes
22	3	
23	2	

2. Measure the continuity between the ABS actuator and electric unit (control unit) harness connector E125 and body ground.

ABS actuator and electric unit (control unit) harness connector E125	Body ground	Continuity
21	—	No
22		
23		

OK or NG

OK >> GO TO 4.

NG >> Repair or replace harness or connector.

4. REAR PRESSURE SENSOR INSPECTION

1. Reconnect the rear pressure sensor and ABS actuator and electric unit (control unit) connectors.
2. Use "DATA MONITOR" to check if the status of "PRESS SEN 2" is normal.

Condition	Data monitor display (Approx.)
	PRESS SEN 2
When brake pedal is depressed	Positive value
When brake pedal is released	0 bar

OK or NG

OK >> Inspection End.

NG >> Replace rear pressure sensor.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

Steering Angle Sensor Safe Mode Inspection

EFS005ED

INSPECTION PROCEDURE

1. INDICATOR LAMP CHECK

Check that VDC OFF indicator lamp is on.

OK or NG

- OK >> GO TO 2.
- NG >> GO TO 3.

2. ADJUSTMENT OF STEERING ANGLE SENSOR NEUTRAL POSITION

Adjust steering angle sensor neutral position. Refer to [BRC-150, "Adjustment of Steering Angle Sensor Neutral Position"](#).

OK or NG

- OK >> GO TO 3.
- NG >> Check steering angle sensor. Refer to [BRC-127, "Steering Angle Sensor System"](#).

3. INDICATOR LAMP CHECK

Check that VDC OFF indicator lamp is off.

OK or NG

- OK >> GO TO 4.
- NG >> Perform basic inspection. Refer to [BRC-109, "Basic Inspection"](#).

4. CHECK SELF-DIAGNOSTIC RESULTS

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

Self-diagnosis results

ST ANGL SEN SAFE

NOTE:

When self-diagnostic results show items other than those above, perform repair or replacement for the item indicated and repeat self-diagnosis.

Is the above displayed on self-diagnosis display?

- YES >> Erase error memory.
- NO >> Inspection End.

CAN Communication System Inspection

EFS005EE

INSPECTION PROCEDURE

1. CHECK CONNECTOR

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

Is "CAN COMM CIRCUIT" displayed in self-diagnosis display items?

- YES >> Print out the self-diagnostic results, and refer to [LAN-22, "CAN COMMUNICATION"](#).
- NO >> Connector terminal is loose, damaged, open, or shorted.

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

Inspection For Self-diagnosis Result "ST ANGLE SEN SIGNAL"

EFS005EF

INSPECTION PROCEDURE

1. PERFORM SELF-DIAGNOSIS

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

Self-diagnosis results

ST ANGLE SEN SIGNAL

Do self-diagnosis results indicate anything other than shown above?

YES >> Perform repair or replacement for the item indicated.

NO >> Perform adjustment of steering angle sensor neutral position. Refer to [BRC-150, "Adjustment of Steering Angle Sensor Neutral Position"](#). GO TO 2.

2. PERFORM SELF-DIAGNOSIS AGAIN

1. Turn the ignition switch to OFF and then to ON and erase self-diagnosis results.

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

Are any self-diagnosis results displayed?

YES >> Replace steering angle sensor. Refer to [BRC-156, "Removal and Installation"](#).

NO >> Inspection End.

Inspection For Self-diagnosis Result "DECEL G SEN SET"

EFS005EG

INSPECTION PROCEDURE

1. PERFORM SELF-DIAGNOSIS

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

Self-diagnosis results

DECEL G SEN SET

Do self-diagnosis results indicate anything other than shown above?

YES >> Perform repair or replacement for the item indicated.

NO >> Perform calibration of decel G sensor. Refer to [BRC-150, "Calibration of Decel G Sensor"](#). GO TO 2.

2. PERFORM SELF-DIAGNOSIS AGAIN

1. Turn the ignition switch to OFF and then to ON and erase self-diagnosis results.

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

Are any self-diagnosis results displayed?

YES >> Replace yaw rate/side/decel G sensor. Refer to [BRC-157, "Removal and Installation"](#).

NO >> Inspection End.

VDC OFF Indicator Lamp Does Not Illuminate

EFS005EH

INSPECTION PROCEDURE

1. CHECK VDC OFF INDICATOR LAMP

Disconnect ABS actuator and electric unit (control unit) connector E125.

Do the ABS warning lamp and VDC OFF indicator lamp illuminate?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-154, "Removal and Installation"](#).

NO >> Replace combination meter. Refer to [IP-12, "COMBINATION METER"](#).

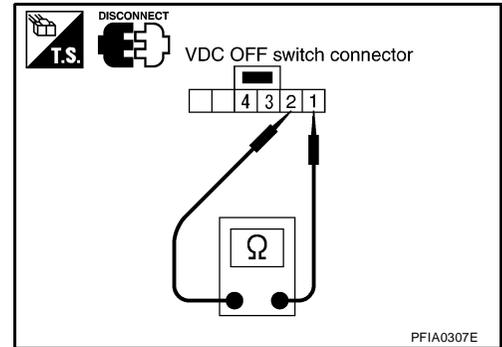
TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS [HDC/HSA/VDC/TCS/ABS]

EFS005E1

Component Inspection VDC OFF SWITCH

Check the continuity between terminals 1 and 2.

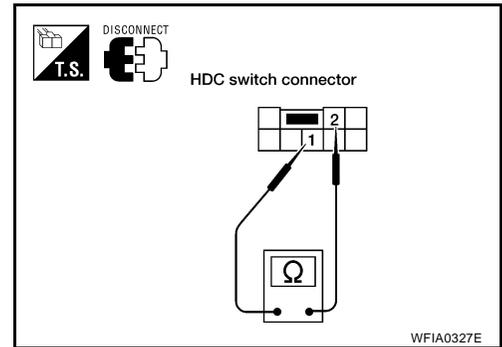
- 1 - 2** : Continuity should exist when pushing the switch.
Continuity should not exist when releasing the switch.



HDC SWITCH

Check the continuity between terminals 1 and 2.

- 1 - 2** : Continuity should exist when pushing the switch.
Continuity should not exist when releasing the switch.



TROUBLE DIAGNOSES FOR SYMPTOMS

PFP:99999

ABS Works Frequently

EFS005EJ

1. CHECK WARNING LAMP ACTIVATION

Make sure warning lamp remains off while driving.

OK or NG

OK >> GO TO 2.

NG >> Carry out self-diagnosis. Refer to [BRC-116, "SELF-DIAGNOSIS"](#) .

2. CHECK WHEEL SENSORS

Check the following.

- Wheel sensor mounting for looseness
- Wheel sensors for physical damage
- Wheel sensor connectors for terminal damage or loose connections
- Sensor rotor and mount for physical damage (rear only)

OK or NG

OK >> GO TO 3.

NG >> Repair or replace as necessary.

3. CHECK FRONT AND REAR AXLES

Check front and rear axles for excessive looseness. Refer to [FAX-5, "WHEEL BEARING INSPECTION"](#) , [RAX-6, "Rear Axle Bearing"](#) (C200) or [RAX-18, "Rear Axle Bearing"](#) (M226).

OK or NG

OK >> GO TO 4.

NG >> Repair as necessary.

4. CHECK BRAKE FLUID PRESSURE

Check brake fluid pressure distribution.

Refer to [BRC-109, "Basic Inspection"](#) .

Is brake fluid pressure distribution normal?

YES >> Inspection End.

NO >> Perform Basic Inspection. Refer to [BRC-109, "Basic Inspection"](#) .

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Unexpected Pedal Action

1. CHECK WARNING LAMP ACTIVATION

Make sure warning lamp remains off while driving.

OK or NG

OK >> GO TO 2.

NG >> Carry out self-diagnosis. Refer to [BRC-116, "SELF-DIAGNOSIS"](#) .

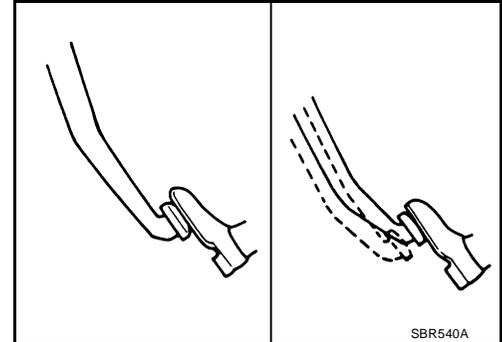
2. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke.

Is pedal stroke excessive?

YES >> Perform Basic Inspection. Refer to [BRC-109, "Basic Inspection"](#) .

NO >> GO TO 3.



3. CHECK CONNECTOR AND BRAKING PERFORMANCE

1. Disable ABS by disconnecting ABS actuator and electric unit (control unit) connector.

2. Drive vehicle and check brake operation.

NOTE:

- Stopping distance may be longer than vehicles without ABS when road condition is slippery.
- Driving the vehicle with the ABS actuator and electric unit (control unit) disconnected may induce DTCs in electrical control units using CAN communication. After the inspection, clear all DTCs. Refer to [LAN-22, "CAN COMMUNICATION"](#) .

OK or NG

OK >> GO TO 4.

NG >> Perform Basic Inspection. Refer to [BRC-109, "Basic Inspection"](#) .

4. CHECK WHEEL SENSORS

Check the following.

- Wheel sensor mounting for looseness
- Wheel sensors for physical damage
- Wheel sensor connectors for terminal damage or loose connections

OK or NG

OK >> Check ABS actuator and electric unit (control unit) connector terminals for deformation, disconnection, looseness or damage. Reconnect ABS actuator and electric unit (control unit) harness connector. Then retest.

NG >> Repair or replace as necessary.

Long Stopping Distance

EFS005EL

1. CHECK BASE BRAKING SYSTEM PERFORMANCE

1. Disable ABS by disconnecting ABS actuator and electric unit (control unit) connector.
2. Drive vehicle and check brake operation.

NOTE:

- Stopping distance may be longer than vehicles without ABS when road condition is slippery.
- Driving the vehicle with the ABS actuator and electric unit (control unit) disconnected may induce DTCs in electrical control units using CAN communication. After the inspection, clear all DTCs. Refer to [LAN-22, "CAN COMMUNICATION"](#).

OK or NG

- OK >> Go to [BRC-143, "ABS Works Frequently"](#).
- NG >> Perform Basic Inspection. Refer to [BRC-109, "Basic Inspection"](#).

ABS Does Not Work

EFS005EM

CAUTION:

The ABS does not operate when the vehicle speed is 10 km/h (6 MPH) or less.

1. CHECK WARNING LAMP ACTIVATION

Turn ignition switch ON and check for warning lamp activation.

- Warning lamp should activate for approximately 2 seconds after turning the ignition switch ON.

OK or NG

- OK >> Carry out self-diagnosis. Refer to [BRC-116, "SELF-DIAGNOSIS"](#).
- NG >> Go to [BRC-146, "ABS Warning Lamp Does Not Come On When Ignition Switch Is Turned On"](#).

Pedal Vibration or ABS Operation Noise

EFS005EN

NOTE:

During ABS activation, pedal vibration may be felt and a noise may be heard. This is normal and does not indicate a malfunction.

1. CHECK SYMPTOM

1. Apply brake.
2. Start engine.

Does the symptom occur only when engine is started?

- YES >> Carry out self-diagnosis. Refer to [BRC-116, "SELF-DIAGNOSIS"](#).
- NO >> GO TO 2.

2. RECHECK SYMPTOM

Does the symptom occur only when electrical equipment switches (such as headlamps) are turned on?

- YES >> Check for radio, antenna or related wiring that is routed too close to the ABS actuator and electric unit (control unit) and reroute as necessary.
- NO >> Go to [BRC-143, "ABS Works Frequently"](#).

TROUBLE DIAGNOSES FOR SYMPTOMS

[HDC/HSA/VDC/TCS/ABS]

ABS Warning Lamp Does Not Come On When Ignition Switch Is Turned On EFS005E0

1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) FUSES

Check 30A fusible link **n** and 40A fusible link **I** for ABS actuator and electric unit (control unit). For fusible link layout, refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#).

OK or NG

OK >> GO TO 2.

NG >> If fusible link is blown, be sure to eliminate cause of problem before replacing.

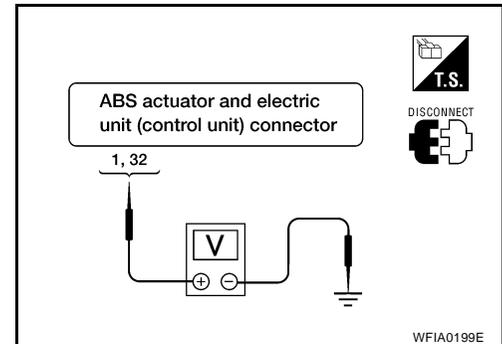
2. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY CIRCUITS

1. Disconnect ABS actuator and electric unit (control unit) connector.
2. Check voltage between ABS actuator and electric unit (control unit) connector terminal 1 and ground and terminal 32 and ground.

Does battery voltage exist?

YES >> GO TO 3.

NO >> Repair harness or connectors between fusible link and ABS actuator and electric unit (control unit).



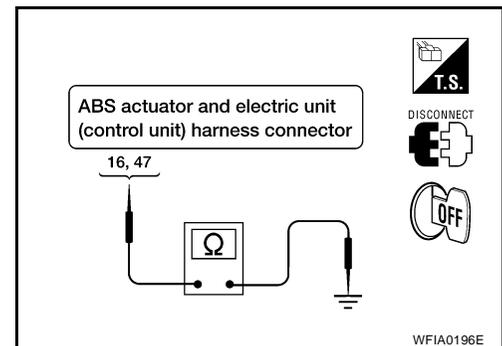
3. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

Check continuity between ABS actuator and electric unit (control unit) connector terminal 16 and ground and terminal 47 and ground.

Does continuity exist?

YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-154, "Removal and Installation"](#).

NO >> Repair harness or connectors between ABS actuator and electric unit (control unit) and ground.



ABS Warning Lamp Stays On When Ignition Switch Is Turned On EFS005EP

1. CARRY OUT SELF-DIAGNOSIS

Carry out self-diagnosis. Refer to [BRC-116, "SELF-DIAGNOSIS"](#).

Are malfunctions detected in self-diagnosis?

YES >> Refer to [BRC-117, "Display Item List"](#).

NO >> Refer to [DI-34, "WARNING LAMPS"](#).

TROUBLE DIAGNOSES FOR SYMPTOMS

[HDC/HSA/VDC/TCS/ABS]

Vehicle Jerks During TCS/VDC Activation

EFS005EQ

1. ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS

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

Are self-diagnosis result items displayed?

- YES >> After checking and repairing the applicable item, perform the ABS actuator and electric unit (control unit) self-diagnosis again.
- NO >> GO TO 2.

2. ENGINE SPEED SIGNAL INSPECTION

Perform data monitor with CONSULT-II for the ABS actuator and electric unit (control unit).

Is the engine speed at idle 400 rpm or higher?

- YES >> GO TO 4.
- NO >> GO TO 3.

3. ECM SELF-DIAGNOSIS

Perform ECM self-diagnosis.

Are self-diagnosis result items displayed?

- YES >> After checking and repairing the applicable item, perform the ECM self-diagnosis again.
- NO >> GO TO 4.

4. TCM SELF-DIAGNOSIS

Perform TCM self-diagnosis.

Are self-diagnosis result items displayed?

- YES >> After checking and repairing the applicable item, perform the TCM self-diagnosis again.
- NO >> GO TO 5.

5. CONNECTOR INSPECTION

Disconnect the ABS actuator and electric unit (control unit) connector and the ECM connectors and check the terminals for deformation, disconnection, looseness or damage.

OK or NG

- OK >> GO TO 6.
- NG >> Repair or replace as necessary.

6. CAN COMMUNICATION INSPECTION

Check the CAN communication system. Refer to [BRC-140, "CAN Communication System Inspection"](#).

OK or NG

- OK >> Inspection End.
- NG >> Refer to [LAN-22, "CAN COMMUNICATION"](#).

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TROUBLE DIAGNOSES FOR SYMPTOMS

[HDC/HSA/VDC/TCS/ABS]

EFS005ER

Stop Lamp Relay Inspection

STOP LAMPS TURN ON THOUGH HDC DOES NOT FUNCTION

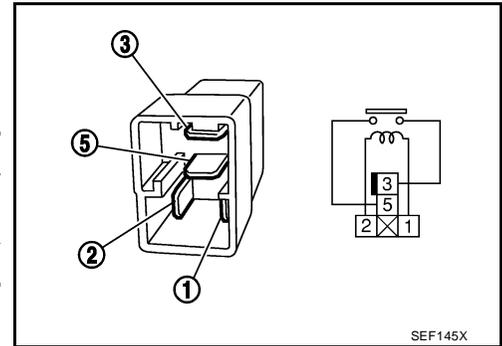
1. INSPECTION OF STOP LAMP RELAY

1. Turn ignition switch OFF.
2. Disconnect stop lamp relay connector E12.
3. Check continuity between stop lamp relay terminals 3 and 5.

Condition	Continuity
12V direct current supply between terminals 1 and 2	Yes
No current supply	No

OK or NG

- OK >> GO TO 2.
 NG >> Replace stop lamp relay.



SEF145X

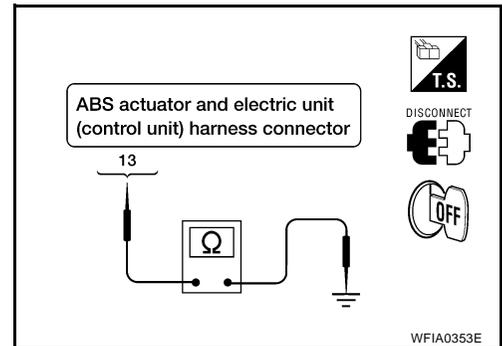
2. INSPECTION OF STOP LAMP RELAY CIRCUIT

1. Disconnect ABS actuator and electric unit (control unit) connector E125.
2. Check continuity between ABS actuator and electric unit (control unit) connector E125 terminal 13 and ground.

Continuity should not exist.

OK or NG

- OK >> Replace ABS actuator and electric unit (control unit).
 Refer to [BRC-154, "Removal and Installation"](#) .
 NG >> Repair or replace harness or connector.



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STOP LAMPS DO NOT TURN ON THOUGH HDC FUNCTIONS

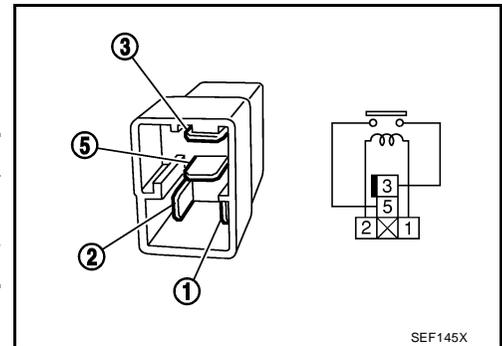
1. INSPECTION OF STOP LAMP RELAY

1. Turn ignition switch OFF.
2. Disconnect stop lamp relay connector E12.
3. Check continuity between stop lamp relay terminals 3 and 5.

Condition	Continuity
12V direct current supply between terminals 1 and 2	Yes
No current supply	No

OK or NG

- OK >> Repair the stop lamp circuit.
 NG >> Replace stop lamp relay.



SEF145X

EFS005ES

HDC Switch Inspection

1. HDC SWITCH INSPECTION

Check if the HDC indicator lamp in the combination meter turns on or flashes when pressing HDC switch.

OK or NG

- OK >> Inspection End.
 NG >> GO TO 2.

TROUBLE DIAGNOSES FOR SYMPTOMS

[HDC/HSA/VDC/TCS/ABS]

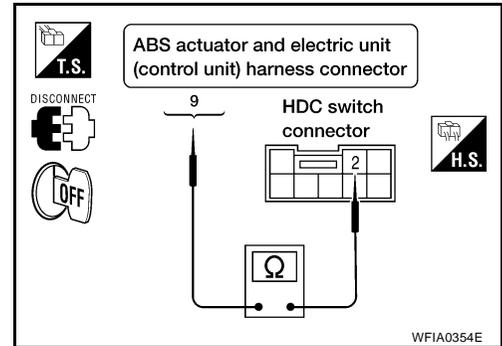
2. CHECK HDC SWITCH CIRCUIT

1. Disconnect ABS actuator and electric unit (control unit) connector E125.
2. Check continuity between ABS actuator and electric unit (control unit) connector E125 terminal 9 and HDC switch connector M155 terminal 2.

Continuity should exist.

OK or NG

- OK >> GO TO 3.
NG >> Repair or replace harness or connector.



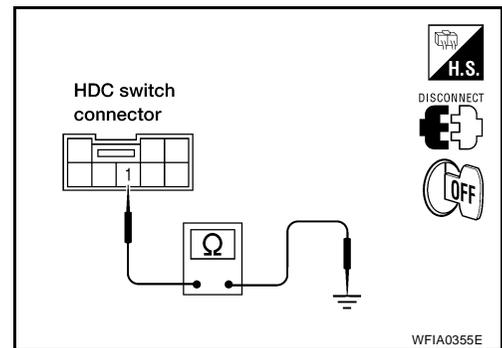
3. CHECK HDC SWITCH GROUND

Check continuity between HDC switch connector M155 terminal 1 and body ground.

Continuity should exist.

OK or NG

- OK >> Replace HDC switch.
NG >> Repair or replace harness or connector.



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ON-VEHICLE SERVICE

PFP:00000

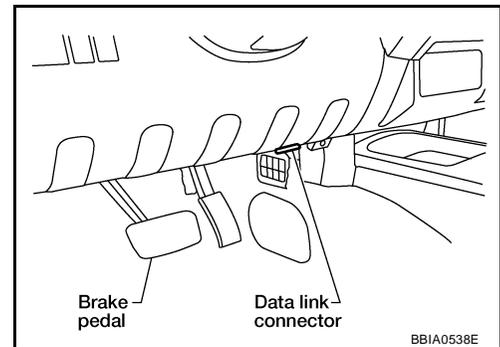
Adjustment of Steering Angle Sensor Neutral Position

EFS005ET

After removing/installing or replacing ABS actuator and electric unit (control unit), steering angle sensor, steering and suspension components which affect wheel alignment or after adjusting wheel alignment, be sure to adjust neutral position of steering angle sensor before running vehicle.

Ⓜ WITH 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, and turn ignition switch ON (do not start engine).
3. Touch "ABS", "WORK SUPPORT" and "ST ANGLE SENSOR ADJUSTMENT" on CONSULT-II screen in this order.



4. Touch "START".

CAUTION:

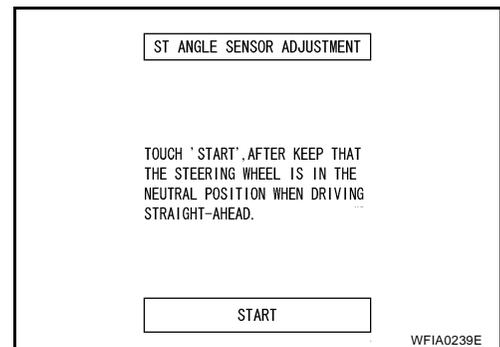
Do not touch steering wheel while adjusting steering angle sensor.

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:

Do not touch steering wheel while adjusting steering angle sensor.

7. Run vehicle with front wheels in straight-ahead position, then stop.
8. Select "DATA MONITOR", "SELECTION FROM MENU", and "STR ANGLE SIG" on CONSULT-II screen. Then check that "STR ANGLE SIG" is within 0 ± 3.5 deg. If value is more than specification, repeat steps 3 to 7.
9. Erase memory of ABS actuator and electric unit (control unit) and ECM.
10. Turn ignition switch to OFF.



ⓧ WITHOUT CONSULT-II

Set the steering wheel in a straight forward position and drive the vehicle at 10 mph (15 km/h) or more for 10 minutes. When the procedure is complete, the SLIP indicator lamp and VDC OFF indicator lamp will turn off.

Calibration of Decel G Sensor

EFS005EU

After removing/installing or replacing ABS actuator and electric unit (control unit), yaw rate/side/decel G sensor, steering and suspension components which affect wheel alignment or after adjusting wheel alignment, be sure to calibrate the decel G sensor before running vehicle.

NOTE:

Calibration of decel G sensor requires CONSULT-II.

1. Stop vehicle with front wheels in straight-ahead position.

CAUTION:

- The work should be done on a level area with an unloaded vehicle.

- Keep all the tires inflated to the correct pressures. Adjust the tire pressure to the specified pressure value.

2. Connect CONSULT-II with CONSULT-II CONVERTER to data link connector on vehicle, and turn ignition switch ON (do not start engine).

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 carries out CAN communication.

3. Touch "ABS", "WORK SUPPORT" and "DECEL G SEN CALIBRATION" on CONSULT-II screen in this order. Refer to [BRC-115, "CONSULT-II BASIC OPERATION PROCEDURE"](#).
4. Touch "START".

CAUTION:

Set vehicle as shown in the display.

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 carry out above operation.

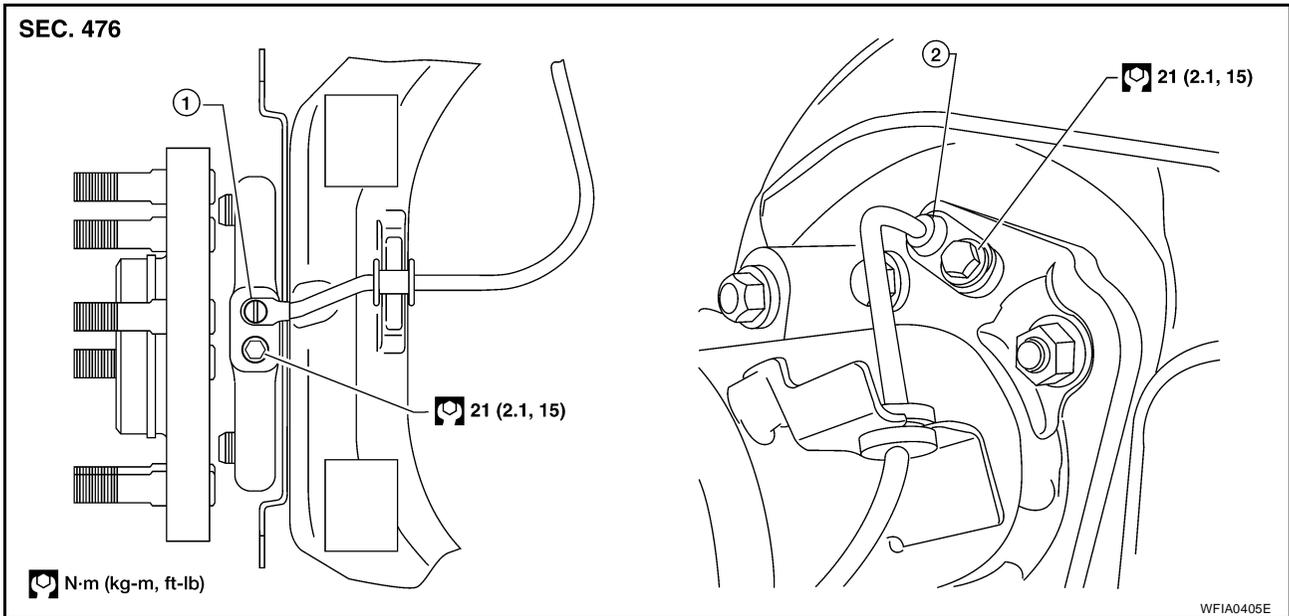
7. Run vehicle with front wheels in straight-ahead position, then stop.
8. Select "DATA MONITOR", "SELECTION FROM MENU", and "DECEL G SEN" on CONSULT-II screen. Then check that "DECEL G SEN" is within $\pm 0.08G$. If value is more than specification, repeat steps 3 to 7.
9. Erase memory of ABS actuator and electric unit (control unit) and ECM.
10. Turn ignition switch to OFF.



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WHEEL SENSORS

Removal and Installation



1. Front wheel sensor

2. Rear wheel sensor

REMOVAL

1. Remove wheel sensor mounting screw.
 - When removing the front wheel sensor, first remove the disc rotor to gain access to the front wheel sensor. Refer to [BR-23, "Removal and Installation of Brake Caliper Assembly and Disc Rotor"](#) .
2. Pull out the sensor, being careful to turn it as little as possible.

CAUTION:

- Be careful not to damage sensor edge and sensor rotor teeth.
 - Do not pull on the sensor harness.
3. Disconnect wheel sensor harness electrical connector, then remove harness from mounts.

INSTALLATION

- Before installing wheel sensors,
 - Inspect and replace sensor assembly if damaged.
 - Clean wheel sensor hole and mounting surface with brake cleaner and a lint-free shop rag. Be careful that dirt and debris do not enter the axle.
 - Replace wheel sensor O-ring, then apply a coat of suitable grease to the O-ring and mounting hole.
- Installation is in the reverse order of removal.

SENSOR ROTOR

PFP:47970

Removal and Installation FRONT

EFS005EW

The wheel sensor rotors are built into the wheel hubs and are not removable. If damaged, replace wheel hub and bearing assembly. Refer to [FAX-5, "Removal and Installation"](#)

REAR

Removal

1. Remove axle shaft assembly. Refer to [RAX-19, "Removal and Installation"](#) .

NOTE:

It is necessary to disassemble the rear axle to replace the sensor rotor.

2. Pull the sensor rotor of off the axle shaft using Tool and a press.

Tool number : 205-D002 (—)

Installation

1. Install new sensor rotor on axle shaft using a suitable length steel tube and a press. Make sure sensor rotor is fully seated.

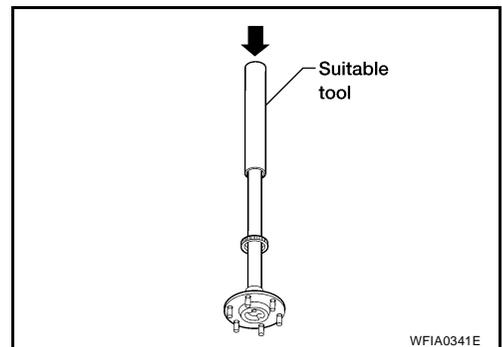
CAUTION:

Do not reuse the old sensor rotor.

2. Install axle shaft assembly. Refer to [RAX-19, "Removal and Installation"](#) .

CAUTION:

Do not reuse the axle oil seal. The axle oil seal must be replaced every time the axle shaft assembly is removed from the axle shaft housing.



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ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

[HDC/HSA/VDC/TCS/ABS]

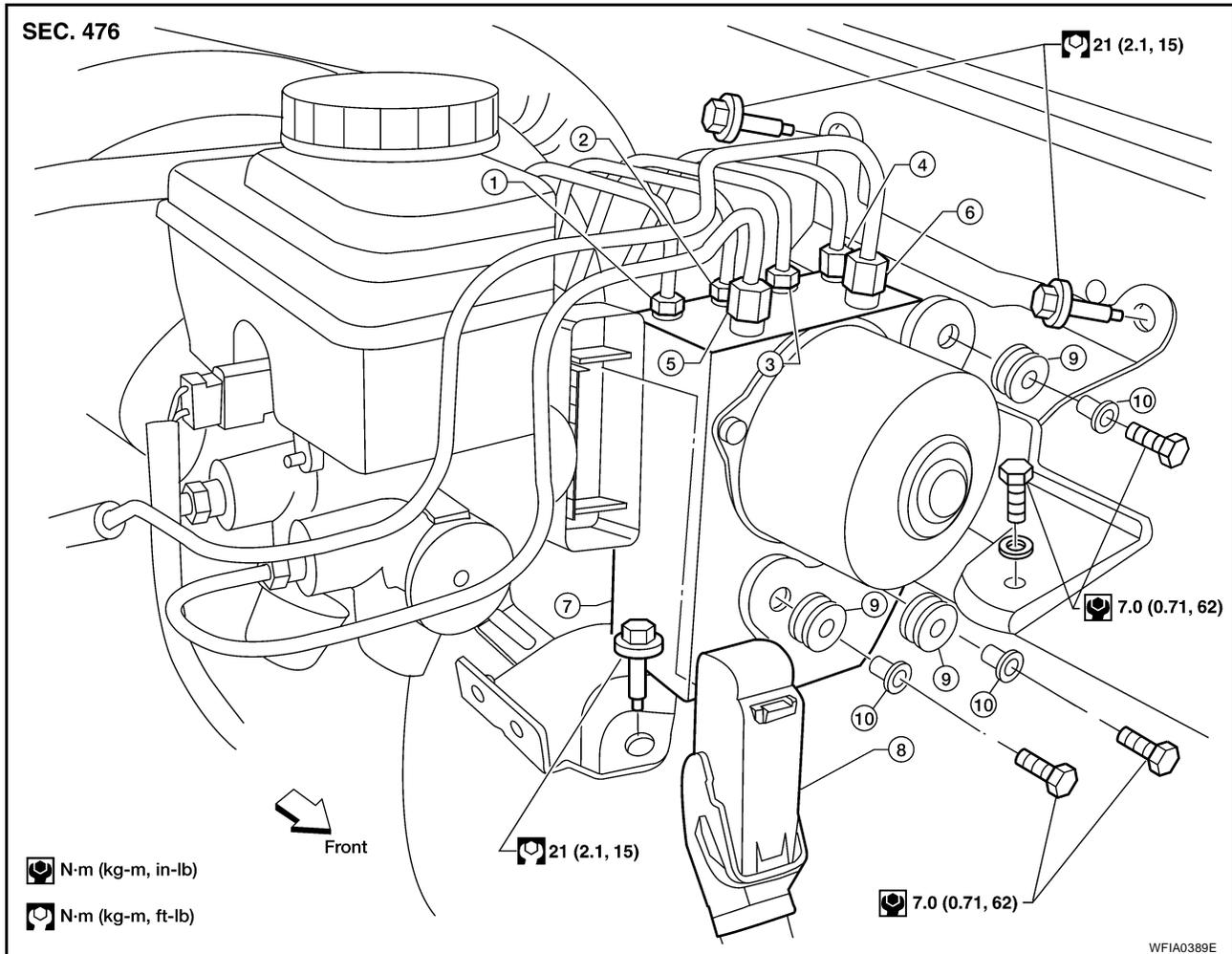
ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

PFP:47660

Removal and Installation

EFS005EX

SEC. 476



- | | | |
|--|--|--|
| 1. To rear left | 2. To rear right | 3. To front left |
| 4. To front right | 5. From the master cylinder secondary side | 6. From the master cylinder primary side |
| 7. ABS actuator and electric unit (control unit) | 8. Harness connector | 9. Grommet |
| 10. Collar | | |

REMOVAL

1. Disconnect the negative battery terminal.
2. Drain the brake fluid. Refer to [BR-9, "Drain and Refill"](#).
3. Disconnect the actuator harness from the ABS actuator and electric unit (control unit).

CAUTION:

- To remove the brake tubes, use a flare nut wrench to prevent the flare nuts and brake tubes from being damaged.
- Be careful not to splash brake fluid on painted areas.

4. Disconnect the brake tubes.
5. Remove the three bolts and remove the ABS actuator and electric unit (control unit).

ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

[HDC/HSA/VDC/TCS/ABS]

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

To install, use a flare nut wrench (commercial service tool).

- Always tighten brake tubes to specification when installing. Refer to [BR-11, "Hydraulic Circuit"](#) .
- Never reuse drained brake fluid.
- After installation of the ABS actuator and electric unit (control unit), refill brake system with new brake fluid. Then bleed the air from the system. Refer to [BR-10, "Bleeding Brake System"](#) .
- Calibrate the decel G sensor. Refer to [BRC-150, "Calibration of Decel G Sensor"](#) .

NOTE:

If the ABS actuator and electric unit (control unit) is replaced, make sure to adjust position of steering angle sensor. Refer to [BRC-150, "Adjustment of Steering Angle Sensor Neutral Position"](#) .

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STEERING ANGLE SENSOR

PF2:25554

Removal and Installation

EFS005EY

Refer to [SRS-45, "Removal and Installation"](#) .

NOTE:

- The steering angle sensor is an integral part of the spiral cable.
- If the ABS actuator and electronic unit (control unit) is replaced, make sure to adjust position of steering angle sensor. Refer to [BRC-150, "Adjustment of Steering Angle Sensor Neutral Position"](#) .

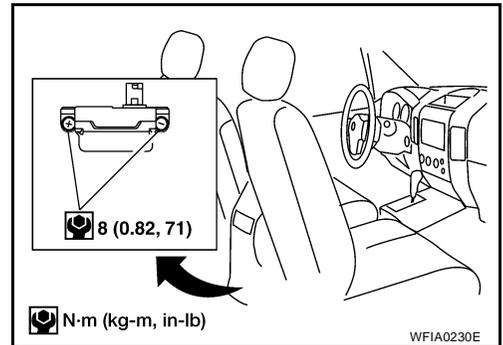
G SENSOR**Removal and Installation****REMOVAL**

1. Remove center console. Refer to [IP-15, "CENTER CONSOLE"](#) .
2. Remove yaw rate/side/decel G sensor attaching nuts as shown.

- The location of the sensor is the same for all models.

CAUTION:

- Do not use power tools to remove or install yaw rate/side/decel G sensor.
 - Do not drop or strike the yaw rate/side/decel G sensor.
3. Disconnect harness connector and remove the yaw rate/side/decel G sensor.

**INSTALLATION**

Installation is in the reverse order of removal.

NOTE:

After performing the above work, calibrate the decel G sensor. Refer to [BRC-150, "Calibration of Decel G Sensor"](#) .

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