

# SECTION **BRC**

## BRAKE CONTROL SYSTEM

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**PRECAUTIONS**

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

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

**WARNING:**

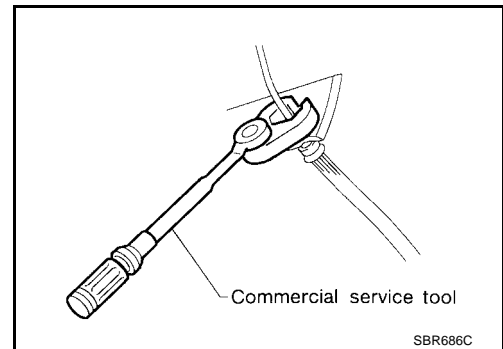
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation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

**Precautions for Brake System**

EFS0064I

**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-29, "Brake Burnishing"](#) (front disc brake) or [BR-35, "Brake Burnishing"](#) (rear disc brake).

**WARNING:**

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

**Precautions When Using CONSULT-II**

EFS0064J

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-25, "CAN COMMUNICATION"](#).

### Precautions for Brake Control

EFS0064K

- 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.
- 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 screen goes into steering angle sensor safe mode.
- When screen goes into steering angle sensor safe mode, perform "Adjustment of Steering Angle Sensor Neutral Position" with CONSUT-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

[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.

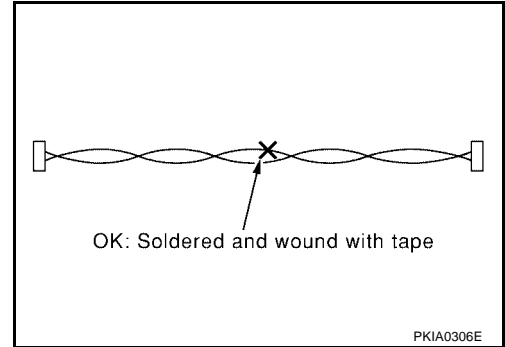
## NOTE:

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

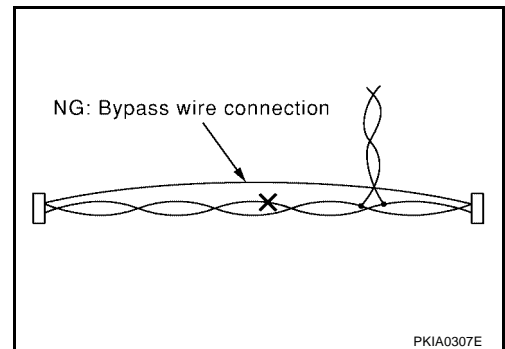
## Precautions for CAN System

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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).



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



# PREPARATION

[VDC/TCS/ABS]

## PREPARATION

PF0:00002

### Special Service Tool

EFS0064N

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
KV991J0080 (J-45741) ABS active wheel sensor tester	Checking operation of ABS active wheel sensors
ST30031000 ( — ) Bearing puller	Removing sensor rotor
ST30720000 (J-25405) Drift	Installing rear sensor rotor <b>a: 77 mm (0.03 in) dia.</b> <b>b: 55 mm (2.17 in) dia.</b>
ST27863000 ( — ) Drift	Installing rear sensor rotor <b>a: 75 mm (2.95 in) dia.</b> <b>b: 62 mm (2.44 in) dia.</b>
KV40104710 ( — ) Drift	Installing rear sensor rotor <b>a: 76 mm (2.99 in) dia.</b> <b>b: 68.5 mm (2.697 in) dia.</b>

## Commercial Service Tools

EFS0064O

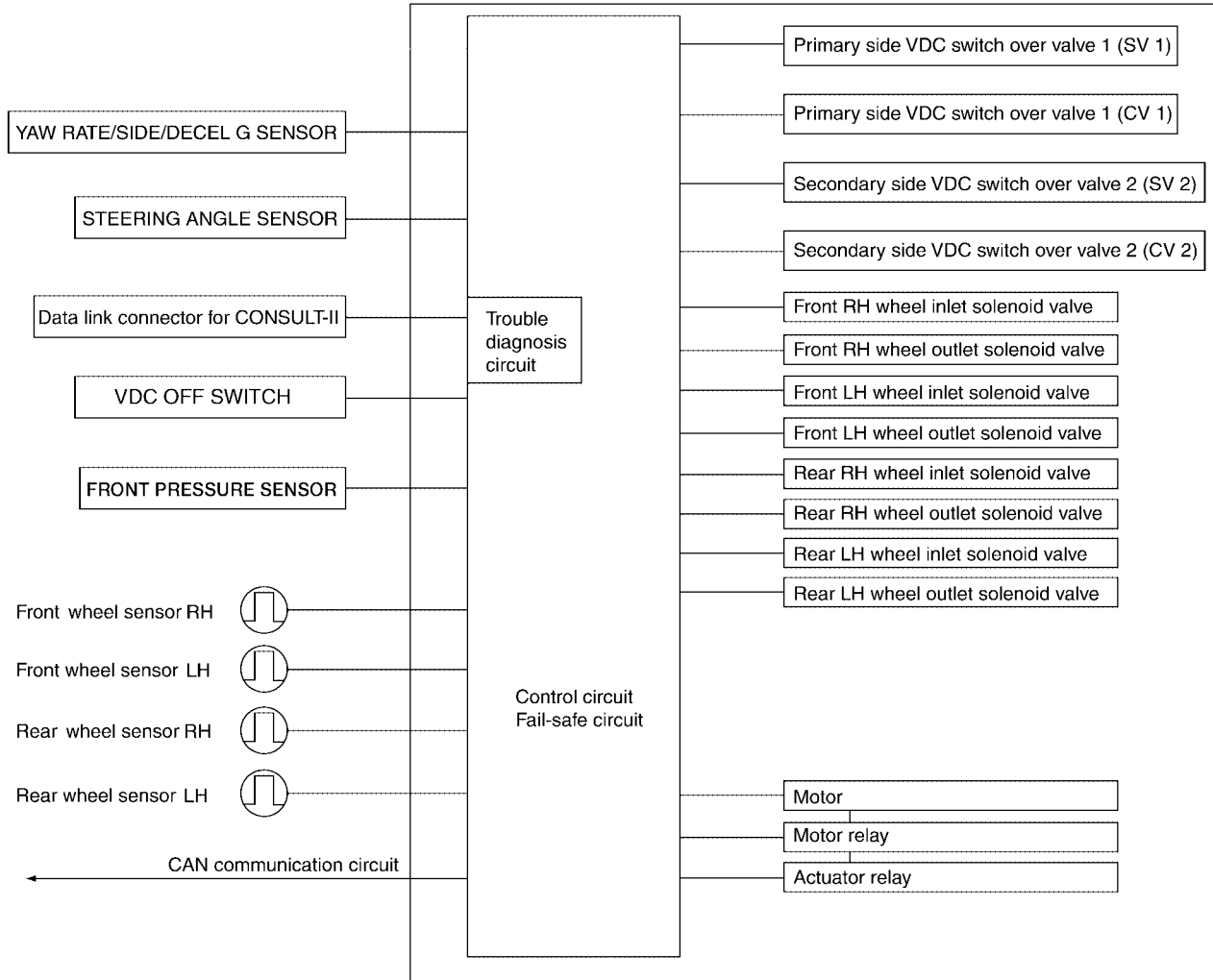
Tool name	Description
1. Flare nut crowfoot 2. Torque wrench	Removing and installing brake piping <b>a: 10 mm (0.39 in)/12 mm (0.47 in)</b>

SYSTEM DESCRIPTION

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System Components

EFS0064P



ABS actuator and electric unit (control unit)



**ABS Function**

EFS0064Q

- 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**

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- 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**

EFS0064S

- 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**

EFS0064T

- 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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**Fail-Safe Function**

EFS0064U

**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.

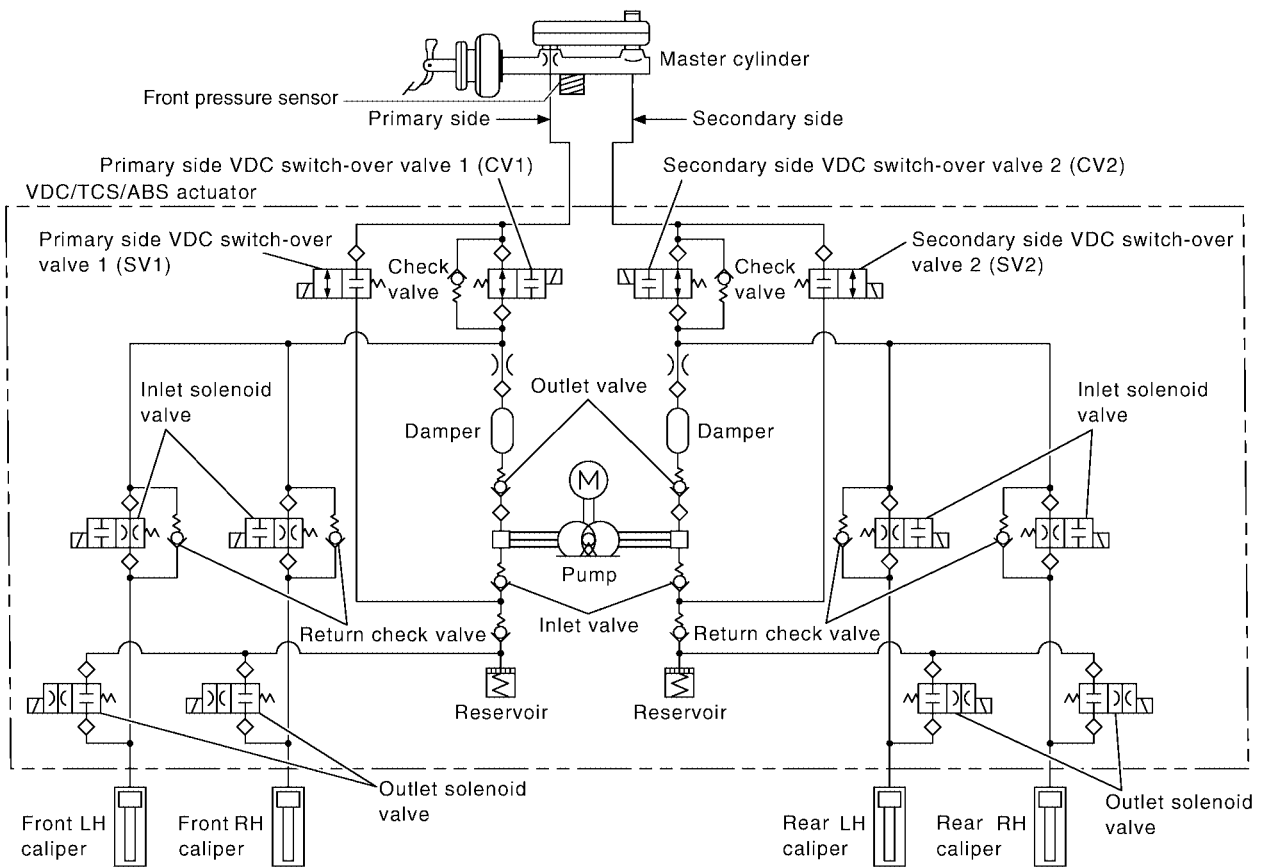
1. For ABS malfunction, only the EBD is operative and the condition of the vehicle is the same condition of vehicles without ABS/TCS/VDC system.
2. For EBD malfunction, the EBD and ABS become inoperative, and the condition of the vehicle is the same as the condition of vehicles without ABS/TCS/VDC or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

## 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.

## Hydraulic Circuit Diagram

EFS0064V



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**CAN COMMUNICATION**

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**System Description**

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Refer to [LAN-25, "CAN COMMUNICATION"](#) .

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## TROUBLE DIAGNOSIS

### How to Perform Trouble Diagnoses for Quick and Accurate Repair INTRODUCTION

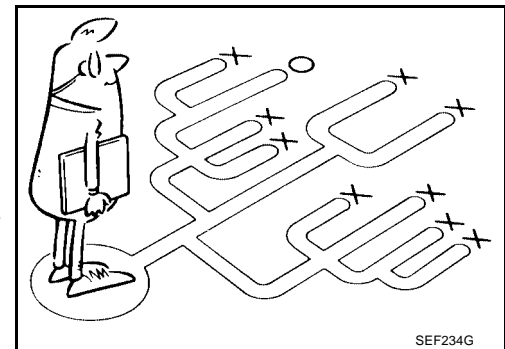
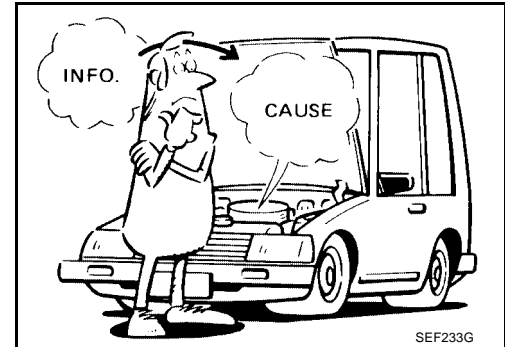
The ABS/TCS/VDC system has an electronic control unit to control major functions. The control unit accepts input signals from sensors and controls actuator operation. It is also important to check for conventional problems such as air leaks in the booster or lines, lack of brake fluid, or other problems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

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

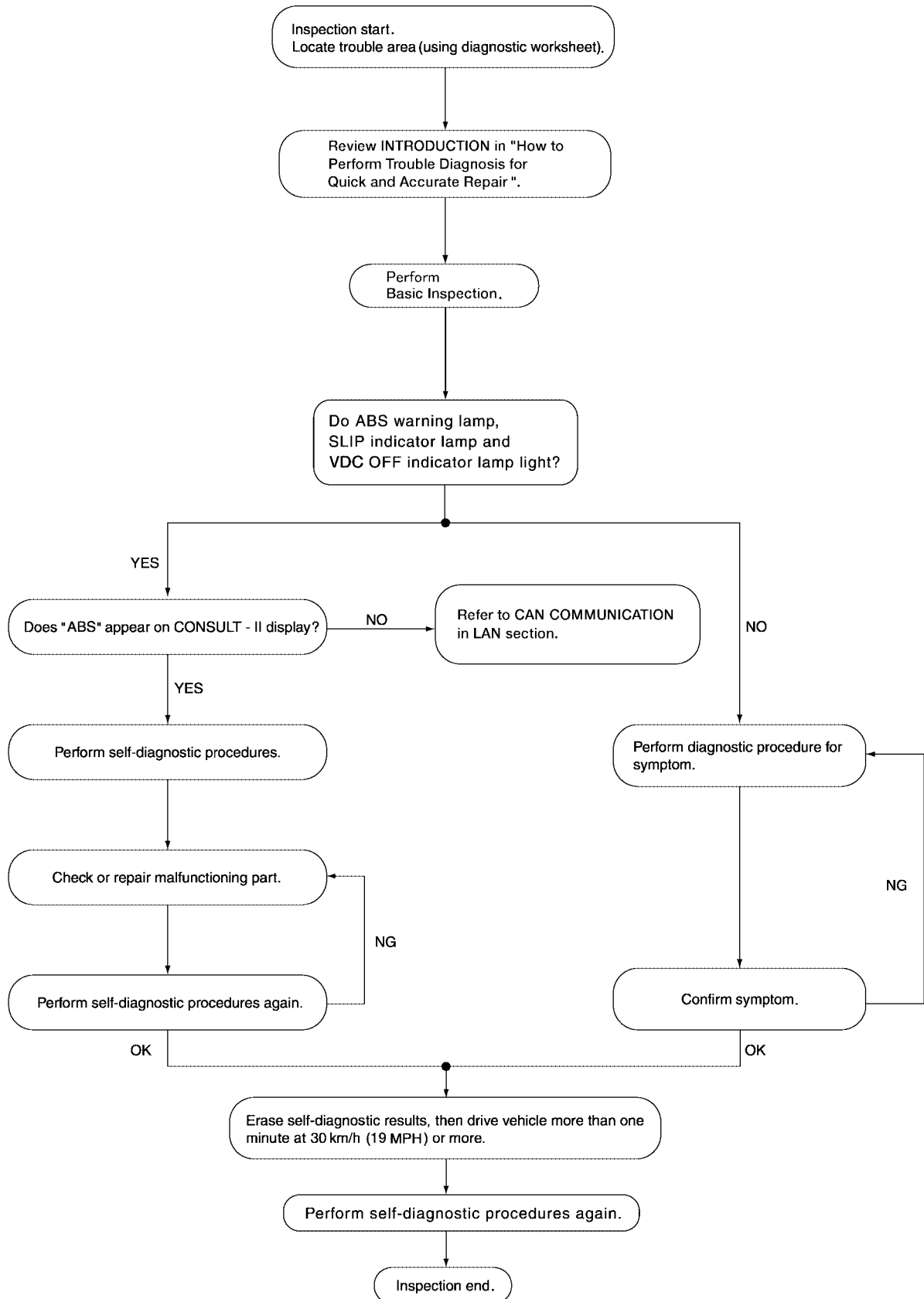
A visual check only may not find the cause of the problem, so a road test should be performed.

Before undertaking actual checks, take just a few minutes to talk with a customer who approaches with a ABS/TCS/VDC complaint. The customer is a very good source of information on such problems, especially intermittent ones. 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" problems first. This is one of the best ways to troubleshoot brake problems on a ABS/TCS/VDC equipped vehicle. Also check related Service Bulletins for information.



## WORK FLOW



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# TROUBLE DIAGNOSIS

[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 trouble the customer is having.

**KEY POINTS**

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

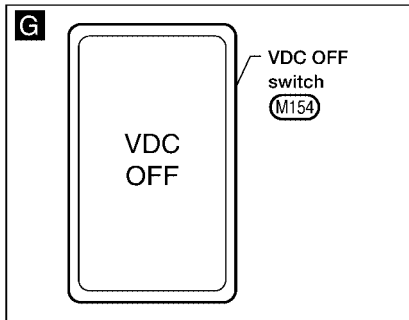
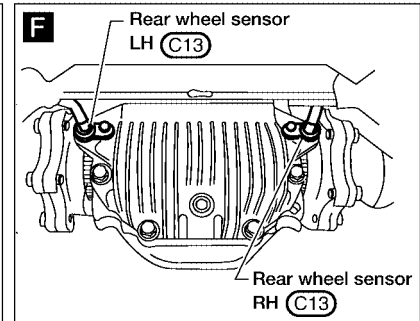
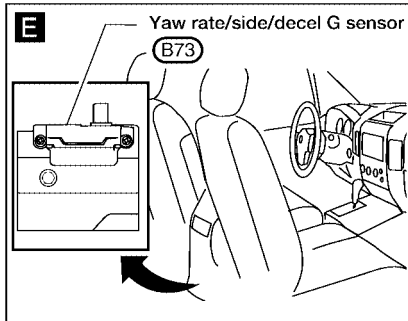
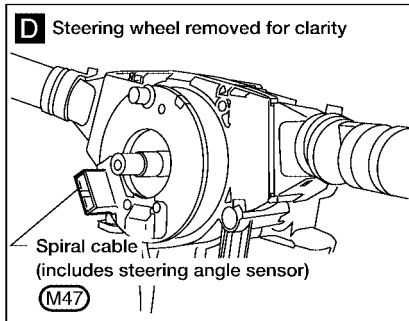
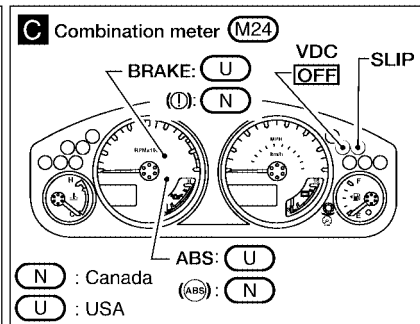
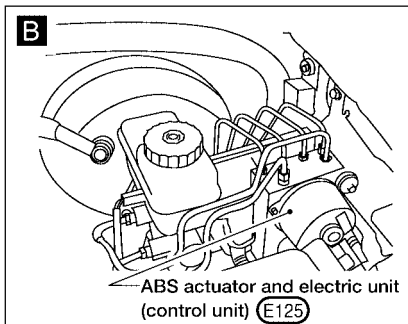
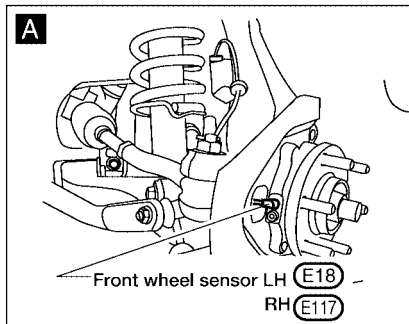
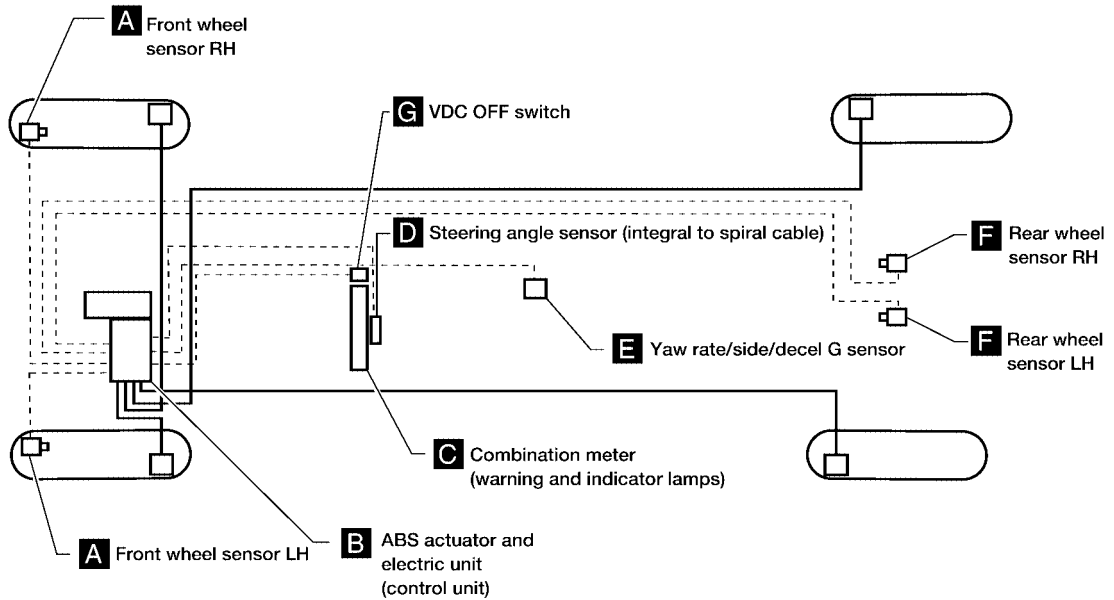
SBR339B

## 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

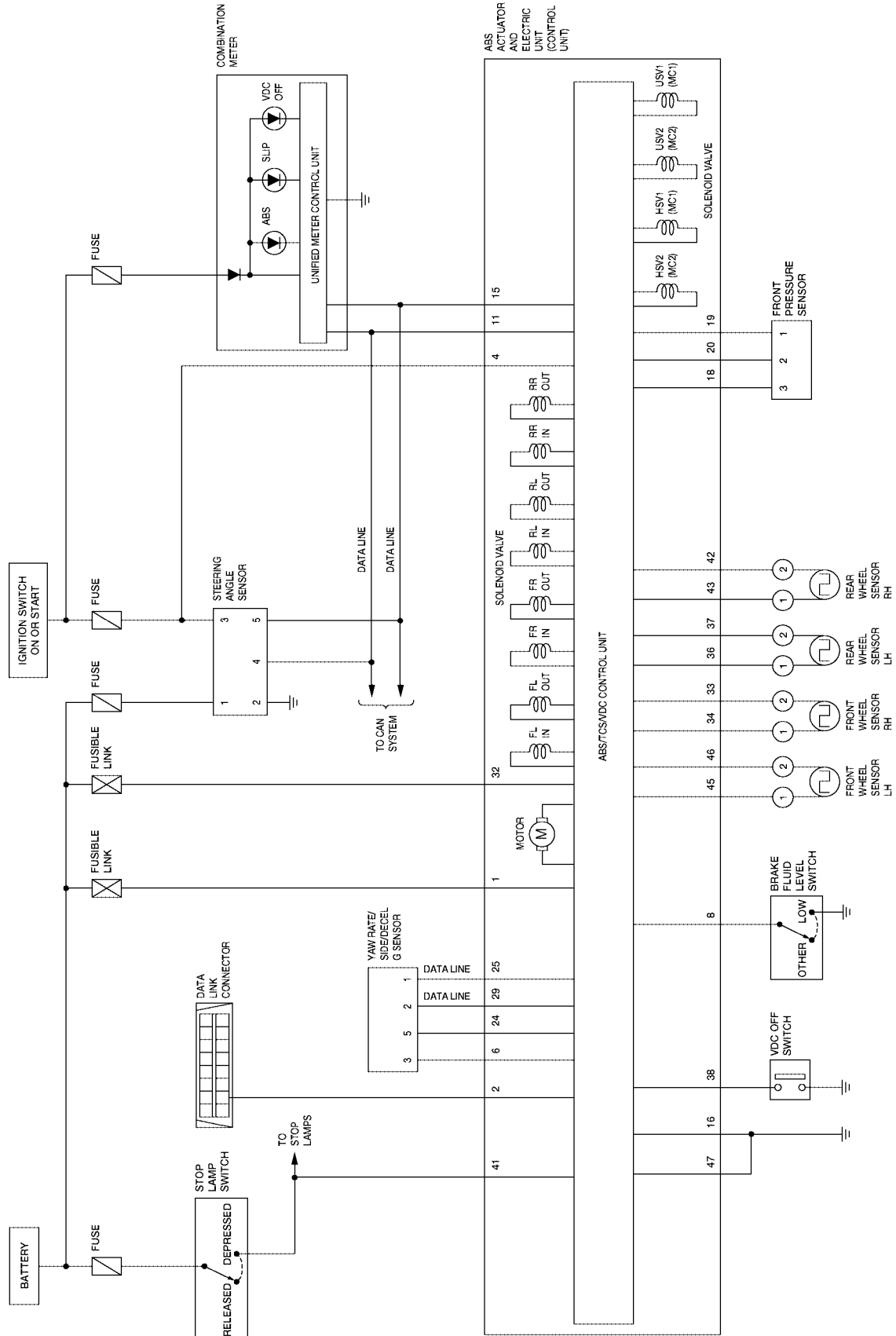
### Component Parts and Harness Connector Location



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### Schematic





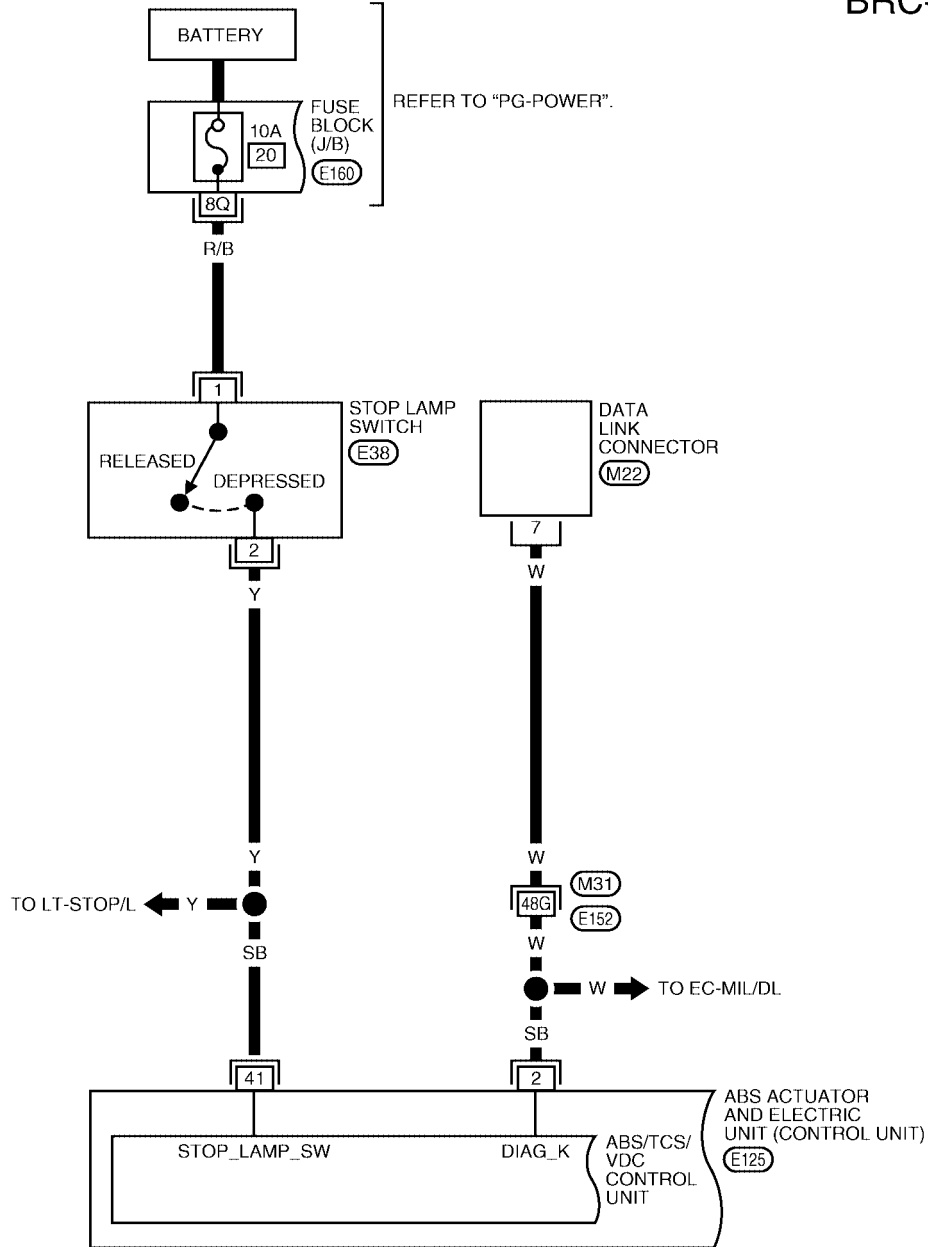
# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

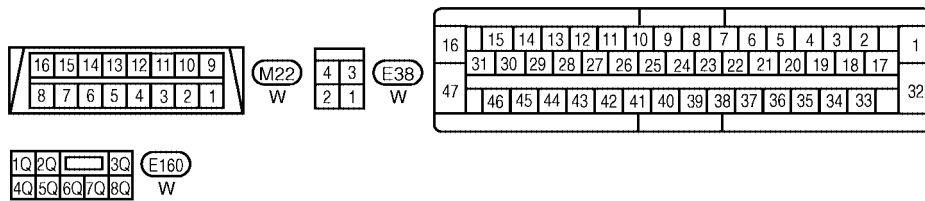
## Wiring Diagram — VDC —

EFS00650

BRC-VDC-01



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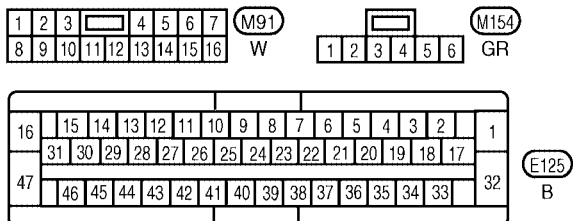
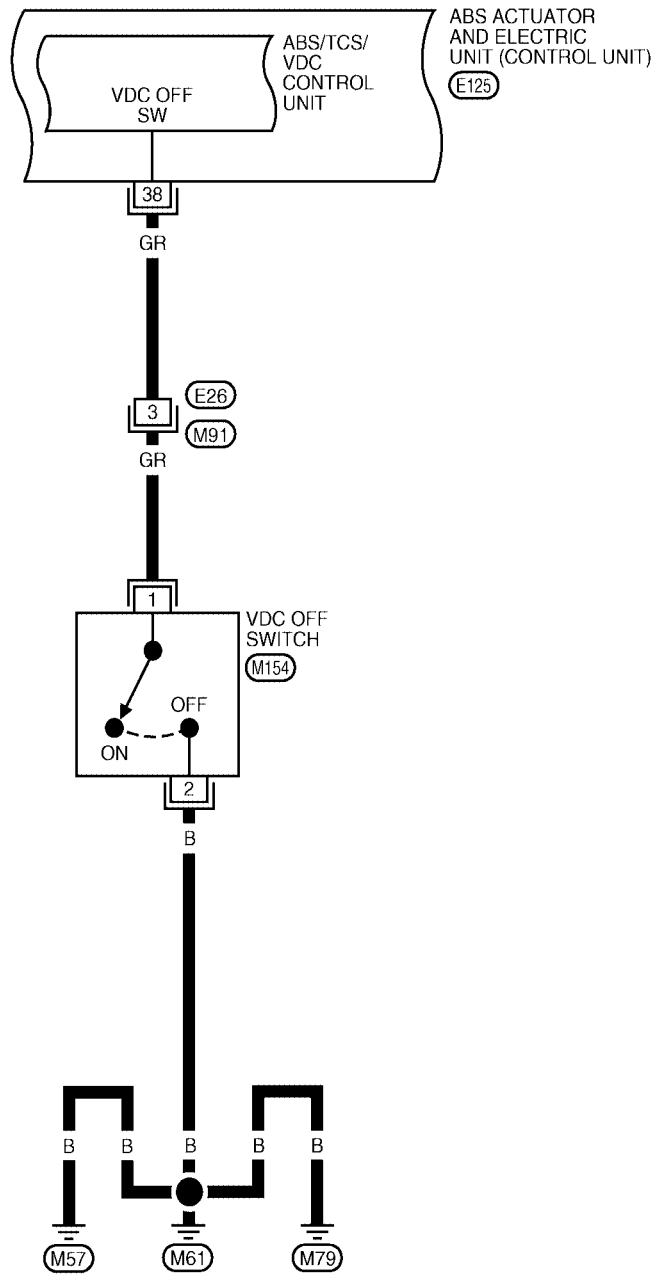
REFER TO THE FOLLOWING.  
**(M31)** - SUPER MULTIPLE JUNCTION (SMJ)

WFWA0362E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-02



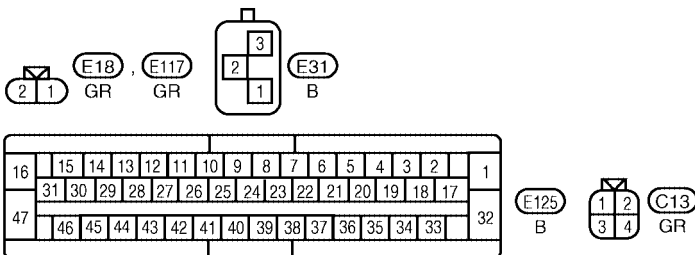
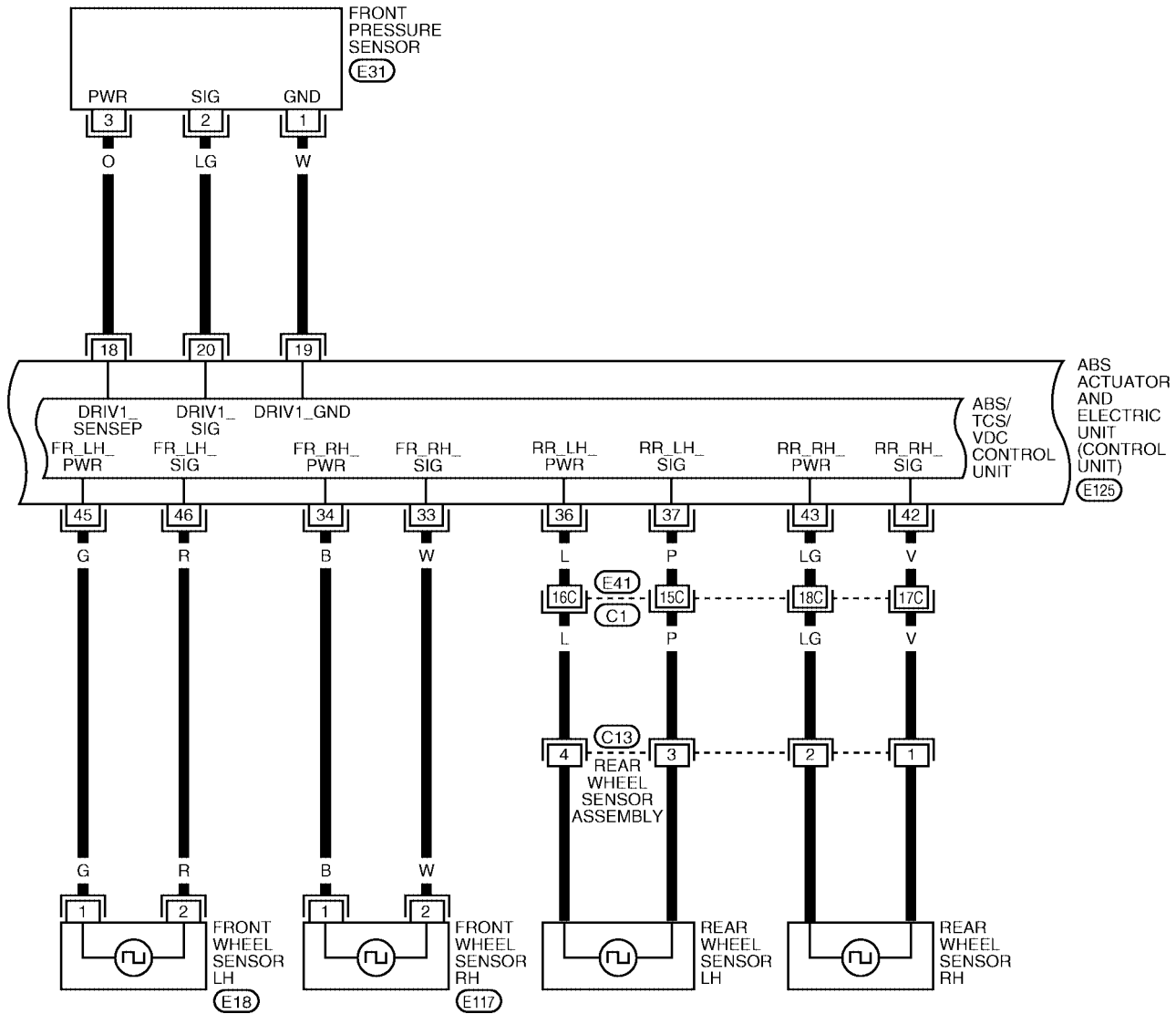
WFWA0363E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-03

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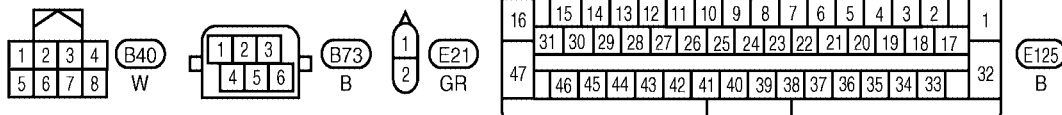
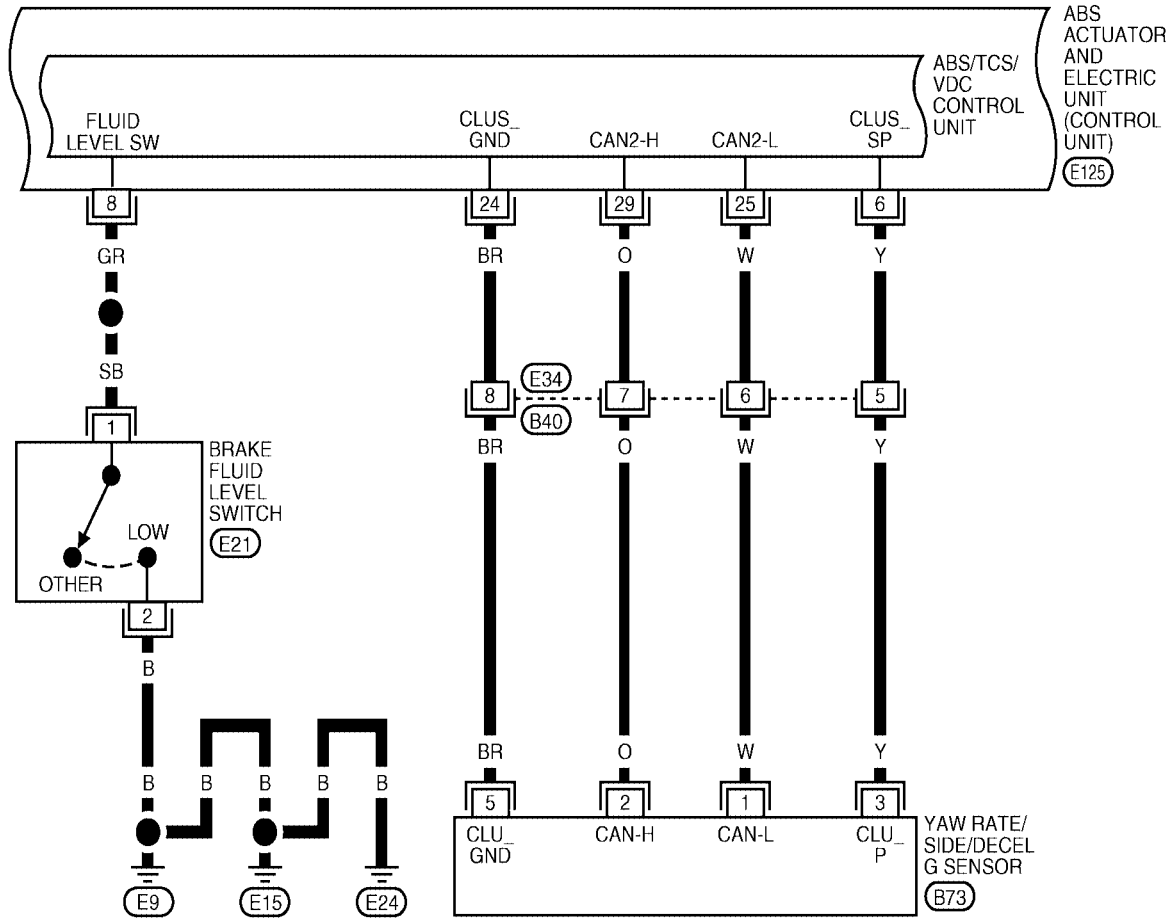
REFER TO THE FOLLOWING.  
 (C1) - SUPER MULTIPLE JUNCTION (SMJ)

WFWA0364E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-04



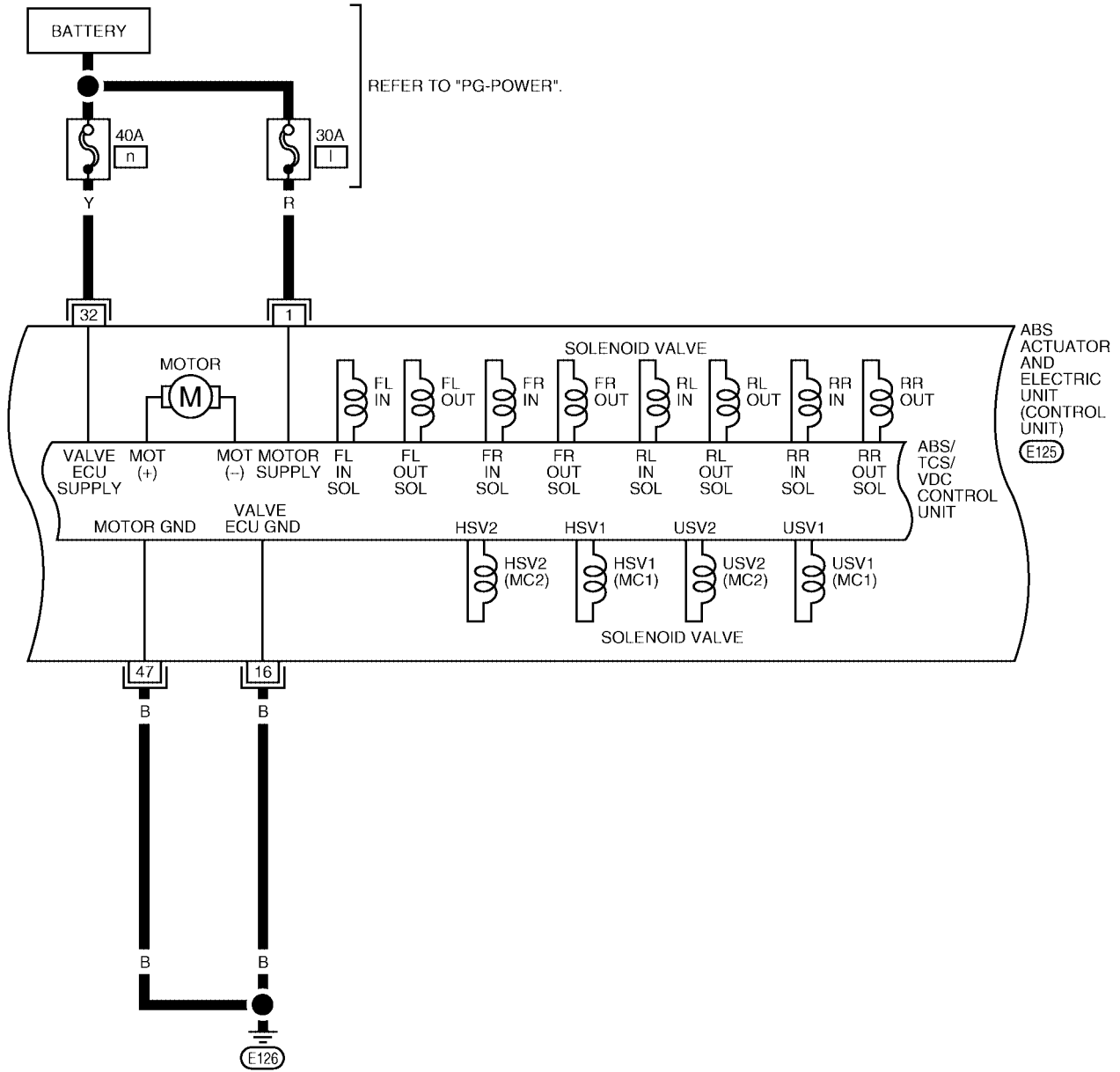
WFWA0365E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

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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

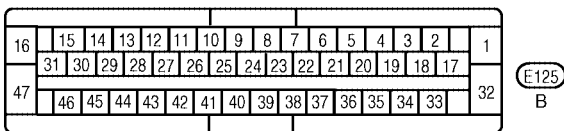
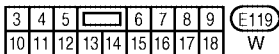
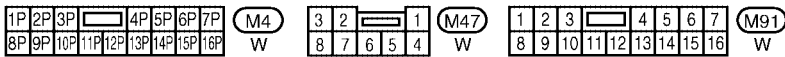
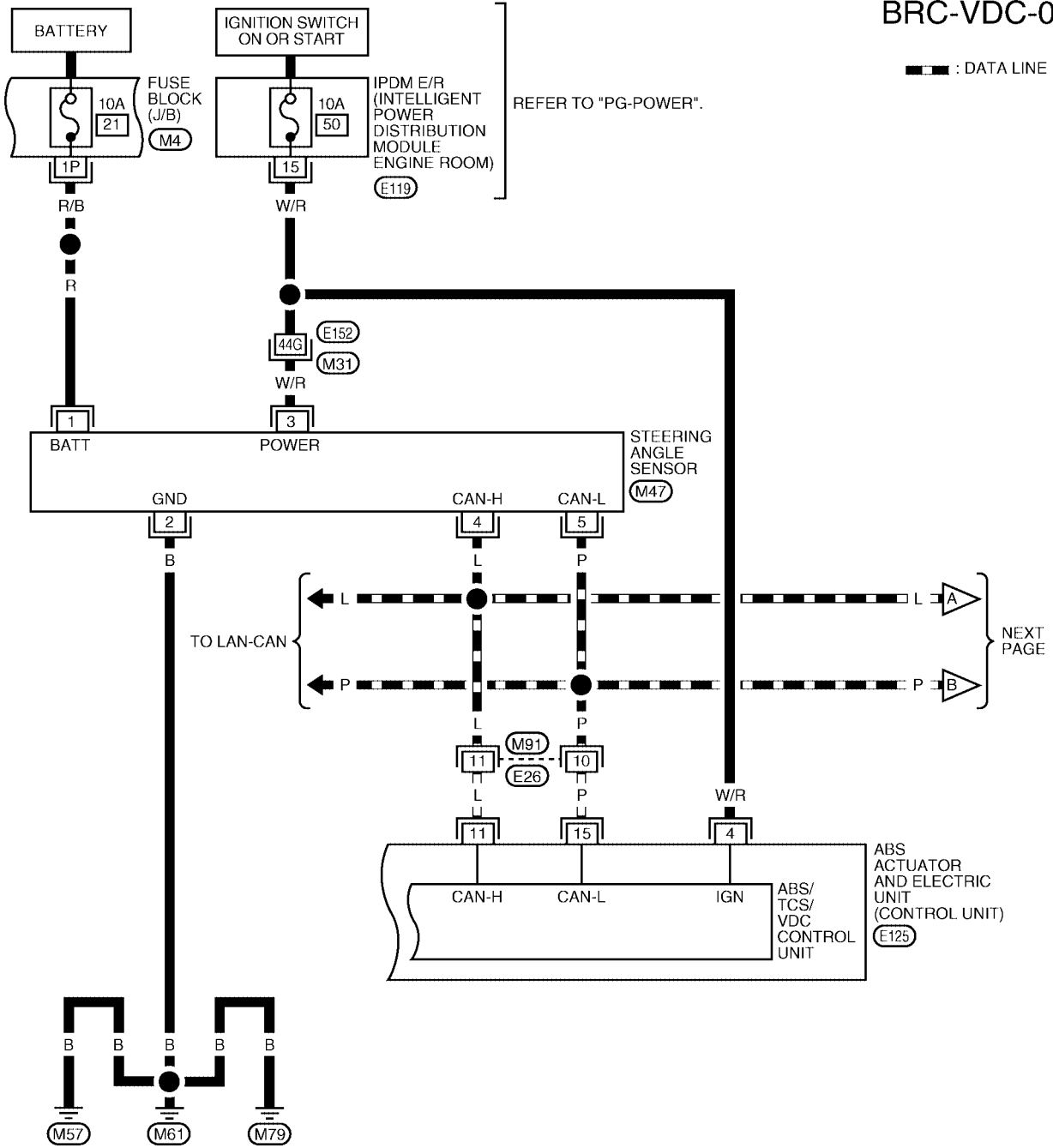
WFWA0366E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-06

— : DATA LINE



REFER TO THE FOLLOWING.

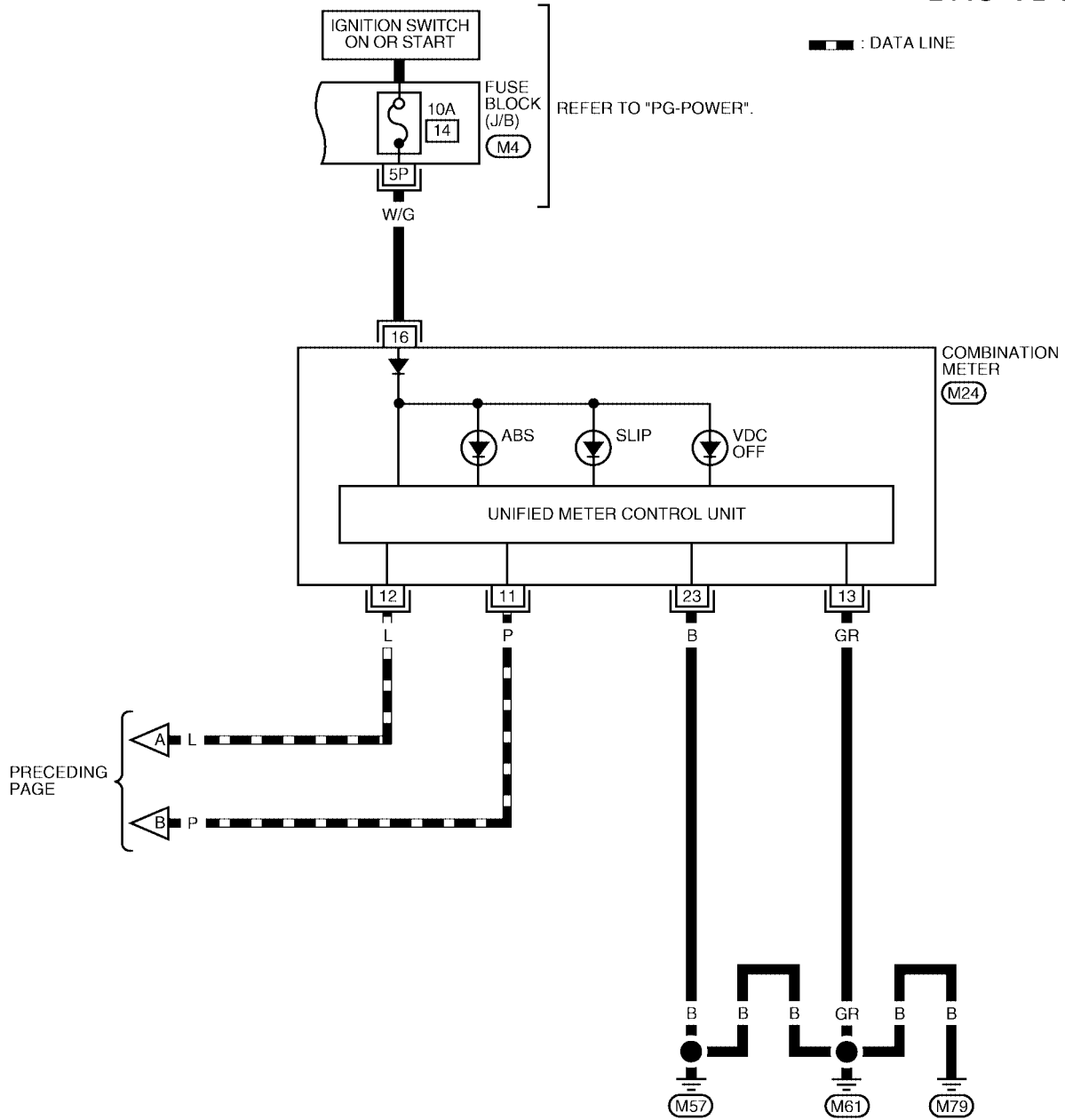
(M31) - SUPER MULTIPLE JUNCTION (SMJ)

WFWA0367E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-07



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1P	2P	3P	4P	5P	6P	7P	(M4)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	(M24)		
8P	9P	10P	11P	12P	13P	14P	15P	16P	W	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	W

WFWA0368E

**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 AND VDC OFF INDICATOR LAMP INSPECTION**

1. Make sure ABS warning lamp, SLIP indicator lamp and VDC OFF indicator lamp (when VDC OFF 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 and VDC OFF indicator lamp. Check CAN communications. If there are no errors with the CAN communication system, check combination meter. Refer to [DI-4, "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-30, "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-52, "VDC OFF SWITCH"](#).
  4. Make sure ABS warning lamp, SLIP indicator lamp and VDC OFF indicator lamp turn off approximately 2 seconds after the ignition switch is turned ON. If ABS warning lamp, SLIP indicator lamp and VDC OFF 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).
  5. After conducting the self-diagnosis, be sure to erase the error memory. Refer to [BRC-29, "CONSULT-II Function \(ABS\)"](#).



## For Fast and Accurate Diagnosis

### PRECAUTIONS FOR DIAGNOSIS

- Before performing diagnosis, always read precautions. Refer to [BRC-4, "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-58, "Adjustment of Steering Angle Sensor Neutral Position"](#) .
- After diagnosis is finished, be sure to erase memory. Refer to [BRC-30, "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

[VDC/TCS/ABS]

## Warning Lamp and Indicator Timing

EFS00653

Condition	ABS warning lamp	VDC OFF indicator lamp	SLIP indicator lamp	Remarks
When the ignition switch is OFF	—	—	—	—
After the ignition switch is turned ON for approx. 2 seconds	×	×	×	—
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	—	×	×	—

X: ON

—: OFF

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

EFS00654

### 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	<a href="#">BRC-51, "CAN Communication System Inspection"</a>
		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 href="#">BRC-51, "CAN Communication System Inspection"</a>
		A/T shift position = other than 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)]	<a href="#">BRC-38, "Wheel Sensor System Inspection"</a>
		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%	<a href="#">BRC-51, "CAN Communication System Inspection"</a>
		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	<a href="#">BRC-39, "Engine System Inspection"</a>
		Engine running	Almost in accordance with tachometer display	

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Monitor item	Display content	Data monitor		Note: Error inspection checklist
		Condition	Reference value in normal operation	
STR ANGLE SIG	Steering angle detected by steering angle sensor	Straight-ahead	Approx. 0 deg	<a href="#">BRC-40. "Steering Angle Sensor System"</a>
		Steering wheel turned	-756 to 756 deg	
YAW RATE SEN	Yaw rate detected by yaw rate sensor	Vehicle stopped	Approx. 0 d/s	<a href="#">BRC-42. "Yaw Rate/Side/Decel G Sensor System Inspection"</a>
		Vehicle running	-100 to 100 d/s	
SIDE G-SENSOR	Transverse G detected by side G-sensor	Vehicle stopped	Approx. 0 m/s <sup>2</sup>	<a href="#">BRC-42. "Yaw Rate/Side/Decel G Sensor System Inspection"</a>
		Vehicle running	-16.7 to 16.7 m/s <sup>2</sup>	
BATTERY VOLT	Battery voltage supplied to ABS actuator and electric unit (control unit)	Ignition switch ON	10 to 16V	<a href="#">BRC-47. "ABS/TCS/VDC Control Unit Power and Ground Systems Inspection"</a>
OFF SW	VDC OFF switch ON/OFF status	VDC OFF switch ON (When VDC OFF indicator lamp is ON)	ON	<a href="#">BRC-52. "VDC OFF SWITCH"</a>
		VDC OFF switch OFF (When VDC OFF indicator lamp is OFF)	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	<a href="#">BRC-45. "Actuator Motor, Motor Relay, and Circuit Inspection"</a>
		Ignition switch ON or engine running (ABS activated)	ON	
ACTUATOR RLY	Actuator relay operation status	Vehicle stopped (Ignition switch ON)	OFF	<a href="#">BRC-45. "Actuator Motor, Motor Relay, and Circuit Inspection"</a>
		Vehicle stopped (Engine running)	ON	
OFF LAMP	VDC OFF indicator lamp status (Note 3)	When VDC OFF indicator lamp is ON	ON	<a href="#">BRC-51. "CAN Communication System Inspection"</a>
		When VDC OFF indicator lamp is OFF	OFF	
SLIP LAMP	SLIP indicator lamp status (Note 4)	When SLIP indicator lamp is ON	ON	<a href="#">BRC-51. "CAN Communication System Inspection"</a>
		When SLIP indicator 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	<a href="#">BRC-44. "Solenoid and VDC Change-Over Valve System Inspection"</a>
		When actuator (solenoid) is not active and actuator relay is active (ignition switch ON).	OFF	
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	<a href="#">BRC-44. "Solenoid and VDC Change-Over Valve System Inspection"</a>
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON).	OFF	

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# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Monitor item	Display content	Data monitor		Note: Error inspection checklist
		Condition	Reference value in normal operation	
DECEL G-SEN	Longitudinal acceleration detected by Decel G-Sensor	Vehicle stopped	Approx. 0 G	<a href="#">BRC-42. "Yaw Rate/Side/Decel G Sensor System Inspection"</a>
		Vehicle running	-1.7 to 1.7 G	
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	<a href="#">DI-33. "WARNING LAMPS"</a>
		When brake fluid level switch OFF	OFF	
VDC SIGNAL TCS SIGNAL ABS SIGNAL EBD SIGNAL	Signal status	VDC active TCS active ABS active EBD active	ON	VDC system TCS system ABS system EBD system
		VDC not active TCS not active ABS not active EBD 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.

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.

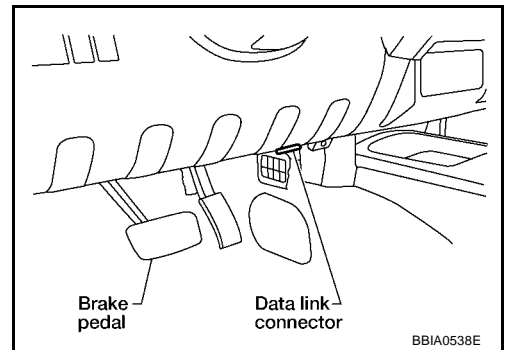
### CONSULT-II BASIC OPERATION PROCEDURE

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

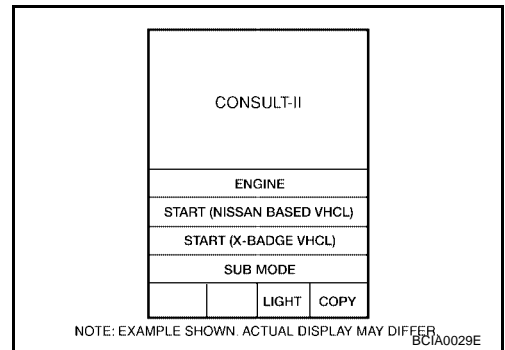
**CAUTION:**

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.

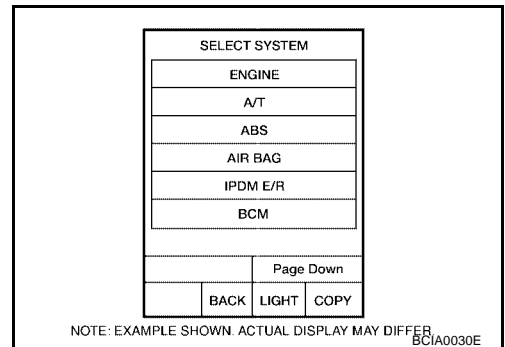
3. Turn ignition switch ON.



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

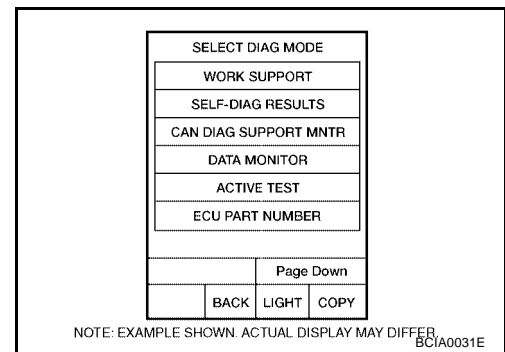


5. Touch "ABS" in the "SELECT SYSTEM" screen. If "ABS" is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).



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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

[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.	<a href="#">BRC-38. "Wheel Sensor System Inspection"</a> (Note 1)
RR LH SENSOR 1 [C1102]	Circuit of rear LH 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.	
FR LH SENSOR 1 [C1104]	Circuit of front LH wheel sensor is open, shorted or sensor power voltage is unusual.	
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.	
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.	
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.	
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.	
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)	<a href="#">BRC-40. "ABS/TCS/VDC Control Unit Inspection"</a>
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.	<a href="#">BRC-45. "Actuator Motor, Motor Relay, and Circuit Inspection"</a>
	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.	<a href="#">BRC-42. "Yaw Rate/Side/Decel G Sensor System Inspection"</a>
STOP LAMP SW [C1116]	Stop lamp switch or circuit malfunction.	<a href="#">BRC-46. "Stop Lamp Switch System Inspection"</a>

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# TROUBLE DIAGNOSIS

[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.	<a href="#">BRC-44, "Solenoid and VDC Change-Over Valve System Inspection"</a>
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.	<a href="#">BRC-39, "Engine System Inspection"</a>
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.	<a href="#">BRC-45, "Actuator Motor, Motor Relay, and Circuit Inspection"</a>
PRESS SEN CIRCUIT [C1142]	ABS pressure sensor circuit malfunction.	<a href="#">BRC-49, "Pressure Sensor System Inspection"</a>
ST ANGLE SEN CIRCUIT [C1143]	Neutral position of steering angle sensor is dislocated, or steering angle sensor is malfunctioning.	<a href="#">BRC-40, "Steering Angle Sensor System"</a>
ST ANGLE SEN SIGNAL [C1144]	Neutral position correction of steering angle sensor is not finished.	<a href="#">BRC-51, "Inspection For Self-diagnosis Result "ST ANGLE SEN SIGNAL""</a>
YAW RATE SENSOR [C1145]	Yaw rate sensor has generated an error, or yaw rate sensor signal line is open or shorted.	<a href="#">BRC-42, "Yaw Rate/Side/Decel G Sensor System Inspection"</a>
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.	<a href="#">BRC-48, "Brake Fluid Level Switch System Inspection"</a>
ST ANG SEN COM CIR [C1156]	CAN communication line or steering angle sensor has generated an error.	<a href="#">BRC-40, "Steering Angle Sensor System"</a>
DECEL G SEN SET [C1160]	ABS decel sensor adjustment is incomplete.	<a href="#">BRC-51, "Inspection For Self-diagnosis Result "DECEL G SEN SET""</a>



# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Self-diagnostic item	Malfunction detecting condition	Check system
ST ANGL SEN SAFE [C1163]	When steering angle sensor is in safe mode.	<a href="#">BRC-50, "Steering Angle Sensor Safe Mode Inspection"</a>
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.	<a href="#">BRC-44, "Solenoid and VDC Change-Over Valve System Inspection"</a>
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.	<a href="#">BRC-40, "ABS/TCS/VDC Control Unit Inspection"</a>
CAN COMM CIRCUIT [U1000]	<ul style="list-style-type: none"> <li>● CAN communication line is open or shorted.</li> <li>● ABS actuator and electric unit (control unit) internal malfunction</li> <li>● Battery voltage for ECM is suddenly interrupted for approximately 0.5 second or more.</li> </ul>	<a href="#">BRC-51, "CAN Communication System Inspection"</a> (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 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.

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	
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.

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Item (Unit)	Data monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
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 <sup>2</sup> )	×	-	×	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.
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.

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Item (Unit)	Data monitor item selection			Remarks	
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU		
OFF LAMP (ON/OFF)	-	×	×	OFF Lamp (ON/OFF) status is displayed.	A B
MOTOR RELAY (ON/OFF)	-	×	×	ABS motor relay signal (ON/OFF) status is displayed.	C
ACTUATOR RLY (ON/OFF)	-	×	×	ABS actuator relay signal (ON/OFF) status is displayed.	D
CV1 (ON/OFF)	-	-	×	Front side switch-over solenoid valve (cut valve) (ON/OFF) status is displayed.	E
CV2 (ON/OFF)	-	-	×	Rear side switch-over solenoid valve (cut-valve) (ON/OFF) status is displayed.	BRC
SV1 (ON/OFF)	-	-	×	Front side switch-over solenoid valve (suction valve) (ON/OFF) status is displayed.	G
SV2 (ON/OFF)	-	-	×	Rear side switch-over solenoid valve (suction valve) (ON/OFF) status is displayed.	H
VDC FAIL SIG (ON/OFF)	-	-	×	VDC fail signal (ON/OFF) status is displayed.	I
TCS FAIL SIG (ON/OFF)	-	-	×	TCS fail signal (ON/OFF) status is displayed.	J
ABS FAIL SIG (ON/OFF)	-	-	×	ABS fail signal (ON/OFF) status is displayed.	K
EBD FAIL SIG (ON/OFF)	-	-	×	EBD fail signal (ON/OFF) status is displayed.	L
FLUID LEV SW (ON/OFF)	×	-	×	Brake fluid level switch (ON/OFF) status is displayed.	M
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.	
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.	
CRANKING SIG	-	-	×	The input state of the key SW START position signal is displayed.	

x: 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.

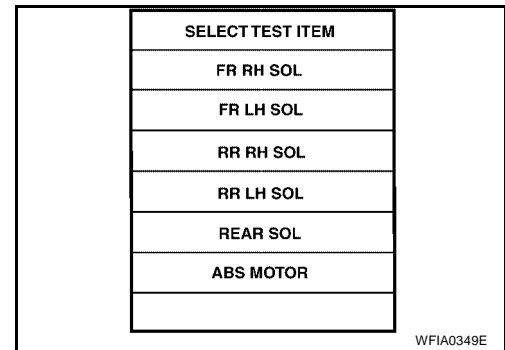
### Operation Procedure

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.



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	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

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

**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.

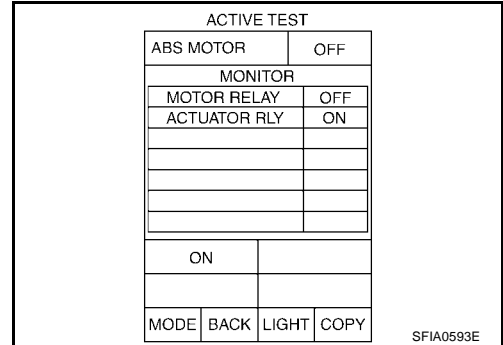
**ABS MOTOR**

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.



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**BRC**

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**TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS**

PFP:00000

**Wheel Sensor System Inspection**

EFS00656

## INSPECTION PROCEDURE

**1. CHECK TIRES**

---

Check for inflation pressure, wear and size of each tire.

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-60, "Removal and Installation"](#) .

# TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[VDC/TCS/ABS]

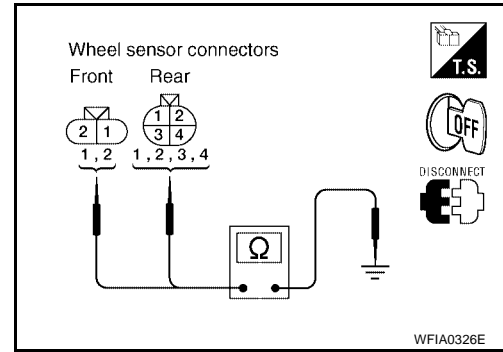
## 5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

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 or C13.

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	C13	3	
		36		4	
Rear RH		42		1	
		43		2	

OK or NG

- OK >> Replace the ABS actuator and electric unit (control unit). Refer to [BRC-62, "Removal and Installation"](#).
- NG >> Repair the circuit.

## Engine System Inspection

EFS00657

### 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.

**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 &gt;&gt; Inspection End.

NG &gt;&gt; Repair or replace as necessary.

**ABS/TCS/VDC Control Unit Inspection**

EFS00658

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-62, "Removal and Installation"](#)

NO &gt;&gt; Inspection End.

**Steering Angle Sensor System**

EFS00659

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 &gt;&gt; GO TO 2.

NO &gt;&gt; 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 &gt;&gt; GO TO 3.

NO &gt;&gt; Inspection End.



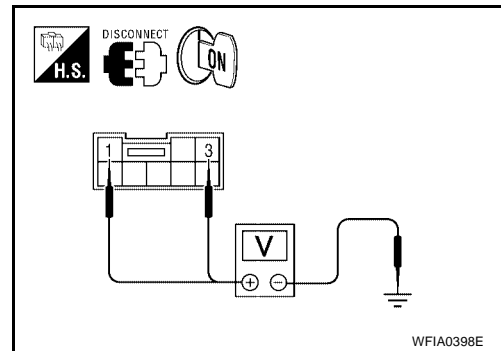
# TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[VDC/TCS/ABS]

## 3. CHECKING STEERING ANGLE SENSOR POWER AND GROUND

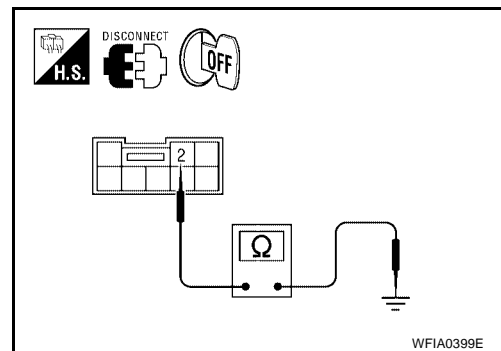
1. Check voltage between steering angle sensor harness connector M47 and body ground.

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 $\Omega$ (Approx.)
(+)	Terminal		
Steering angle sensor connector		Ground	0 $\Omega$
M47	2		



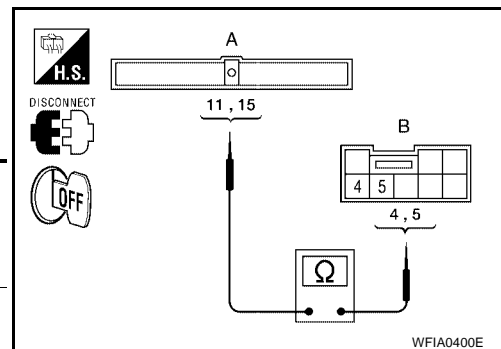
OK or NG

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

## 4. CHECK STEERING ANGLE SENSOR HARNESS

1. Check CAN communication system. Refer to [LAN-25, "CAN COMMUNICATION"](#).
2. Disconnect steering angle sensor connector M47 and 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.

**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-58, "Adjustment of Steering Angle Sensor Neutral Position"](#).

**Yaw Rate/Side/Decel G Sensor System Inspection**

EFS0065A

**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

[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	Yes
25	1	Yes
29	2	Yes

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	-0.11 G to +0.11 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-65, "Removal and Installation"](#).

**Solenoid and VDC Change-Over 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
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

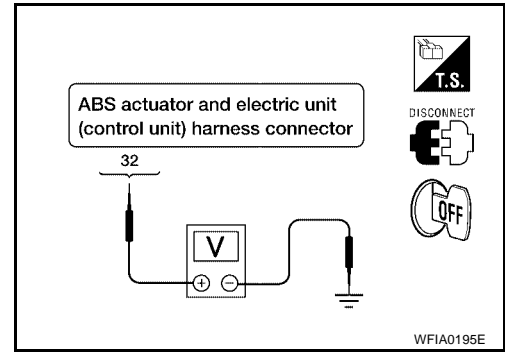
OK >> GO TO 3.

NG >> Repair or replace as necessary.

3. CHECKING SOLENOID POWER AND GROUND

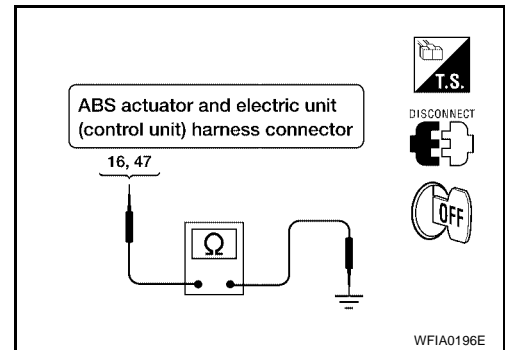
1. Check voltage between ABS actuator and electric unit (control unit) harness connector E125 and body ground.

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-62, "Removal and Installation"](#).

NG >> Repair the circuit.

Actuator Motor, Motor Relay, and Circuit Inspection

EFS0065C

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.

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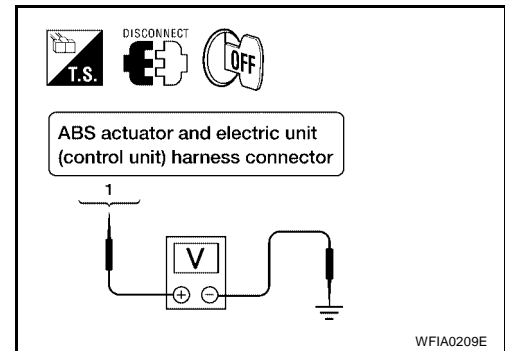
# TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[VDC/TCS/ABS]

## 3. CHECKING ABS MOTOR AND MOTOR RELAY POWER SYSTEM

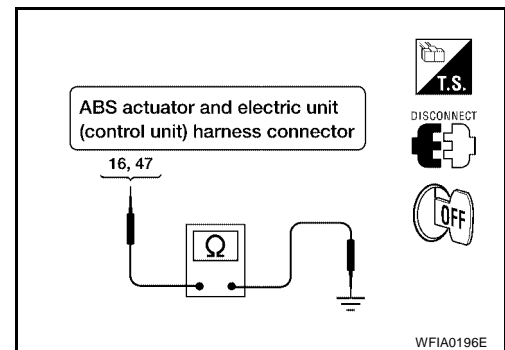
1. Check voltage between ABS actuator and electric unit (control unit) harness connector E125 and body ground.

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 $\Omega$ (Approx.)
16	—	0 $\Omega$
47	—	0 $\Omega$



OK or NG

- OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-62, "Removal and Installation"](#).
- NG >> Repair the circuit.

## Stop Lamp Switch System Inspection

EFS0065D

### 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.

## 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.

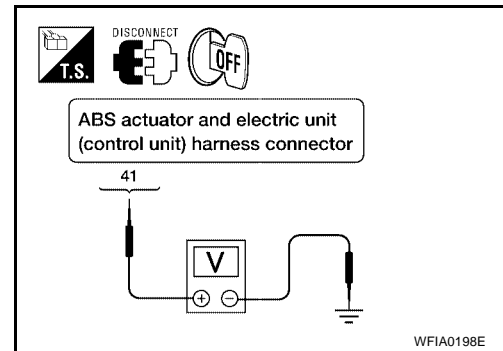
**Brake pedal depressed : Battery voltage (approx. 12V)**

**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-62, "Removal and Installation"](#).

NG >> Refer to [LT-85, "STOP LAMP"](#).



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

EFS0065E

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/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

### 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-62, "Removal and Installation"](#) .  
 NG >> Replace brake fluid level switch.



# TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[VDC/TCS/ABS]

EFS0065G

## Pressure Sensor System Inspection

### 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.

#### 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.

#### Steering Angle Sensor Safe Mode Inspection

EFS0065H

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-58, "Adjustment of Steering Angle Sensor Neutral Position"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Check steering angle sensor. Refer to [BRC-40, "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-24, "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**

EFS0065I

## 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-25, "CAN COMMUNICATION"](#) .
- NO >> Connector terminal is loose, damaged, open, or shorted.

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

EFS0065J

## 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-58, "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-64, "Removal and Installation"](#) .
- NO >> Inspection End.

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

EFS0065K

## 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-58, "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-65, "Removal and Installation"](#) .
- NO >> Inspection End.

**VDC OFF Indicator lamp Does Not Illuminate**

## 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?

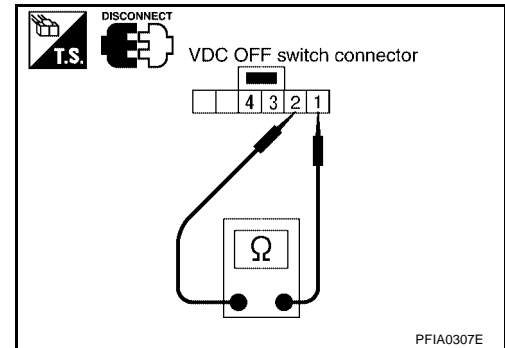
YES >> Replace ABS actuator and electric unit (control unit). Refer to [BRC-62, "Removal and Installation"](#)

NO >> Replace combination meter. Refer to [IP-14, "COMBINATION METER"](#) .

**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.**



**TROUBLE DIAGNOSES FOR SYMPTOMS**

PFP:99999

**ABS Works Frequently**

EFS0065N

**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-30, "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"](#) or [RAX-5, "WHEEL BEARING INSPECTION"](#) .

OK or NG

OK >> GO TO 4.

NG >> Repair as necessary.

**4. CHECK BRAKE FLUID PRESSURE**

Check brake fluid pressure distribution.

Refer to [BRC-24, "Basic Inspection"](#) .

Is brake fluid pressure distribution normal?

YES >> Inspection End.

NO >> Perform Basic Inspection. Refer to [BRC-24, "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-30, "SELF-DIAGNOSIS"](#) .

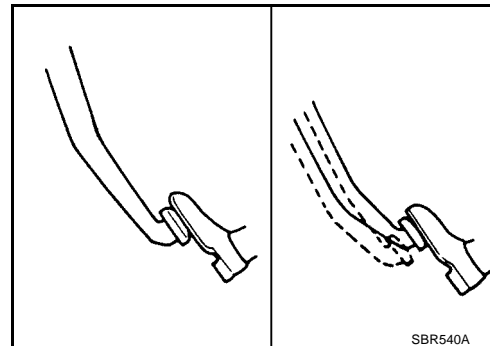
### 2. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke.

Is pedal stroke excessive?

YES >> Perform Basic Inspection. Refer to [BRC-24, "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-25, "CAN COMMUNICATION"](#) .

OK or NG

OK >> GO TO 4.

NG >> Perform Basic Inspection. Refer to [BRC-24, "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**

EFS0065P

**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-25, "CAN COMMUNICATION"](#) .

**OK or NG**

- OK >> Go to [BRC-53, "ABS Works Frequently"](#) .
- NG >> Perform Basic Inspection. Refer to [BRC-24, "Basic Inspection"](#) .

**ABS Does Not Work**

EFS0065Q

**CAUTION:**

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

**BRC****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-30, "SELF-DIAGNOSIS"](#) .
- NG >> Go to [BRC-56, "ABS Warning Lamp Does Not Come On When Ignition Switch Is Turned On"](#) .

**Pedal Vibration or ABS Operation Noise**

EFS0065R

**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-30, "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-53, "ABS Works Frequently"](#) .

**ABS Warning Lamp Does Not Come On When Ignition Switch Is Turned On** EFS0065S**1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) FUSES**

Check 40A fusible link n and 30A 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.

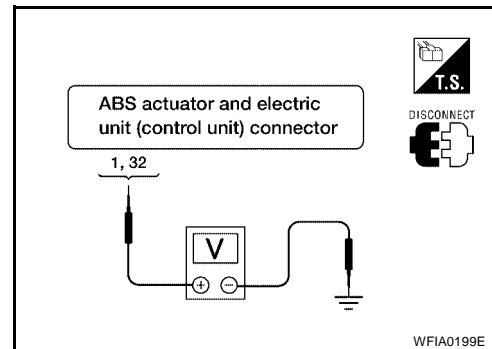
**2. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY CIRCUITS**

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).

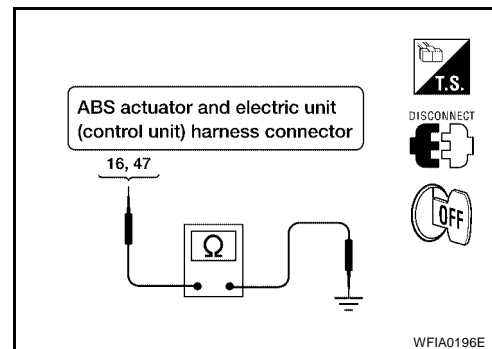
**3. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT**

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-62, "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**

EFS0065T

**1. CARRY OUT SELF-DIAGNOSIS**

Carry out self-diagnosis. Refer to [BRC-30, "SELF-DIAGNOSIS"](#).

Are malfunctions detected in self-diagnosis?

YES >> Refer to [BRC-31, "Display Item List"](#).

NO >> Refer to [DI-33, "WARNING LAMPS"](#).



**Vehicle Jerks During TCS/VDC Activation****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-51, "CAN Communication System Inspection"](#) .

OK or NG

- OK >> Inspection End.
- NG >> Refer to [LAN-25, "CAN COMMUNICATION"](#) .

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## ON-VEHICLE SERVICE

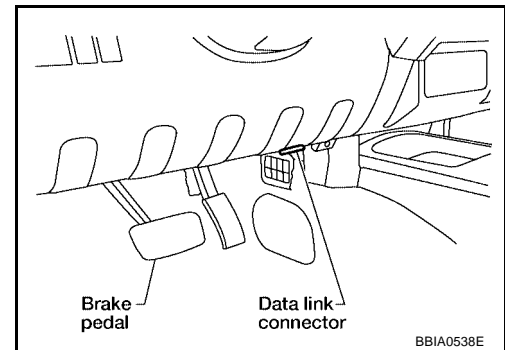
## Adjustment of Steering Angle Sensor Neutral Position

EFS0065V

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 "START (NISSAN BASED VHCL)", "ABS", "WORK SUPPORT" and "ST ANGLE SENSOR ADJUSTMENT" on CONSULT-II screen in this order.



4. Touch "START".

**CAUTION:**

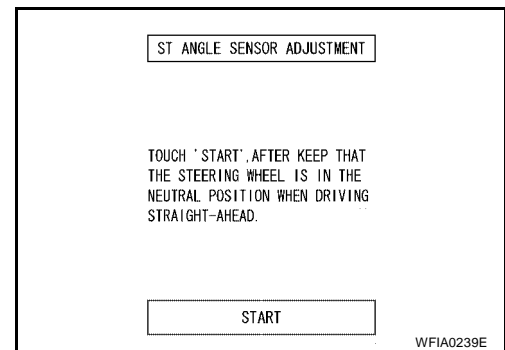
**Do not touch steering wheel while adjusting steering angle sensor.**

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  $0 \pm 3.5$  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

EFS0065W

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 "START (NISSAN BASED VHCL)", "ABS", "WORK SUPPORT" and "DECEL G SEN CALIBRATION" on CONSULT-II screen in this order. Refer to [BRC-29, "CONSULT-II BASIC OPERATION PROCEDURE"](#).
4. Touch "START".

**CAUTION:**

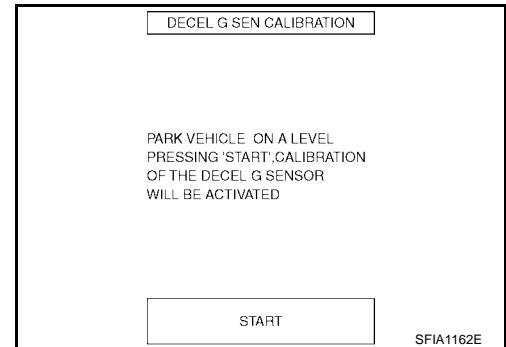
**Set vehicle as shown in the display.**

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.**

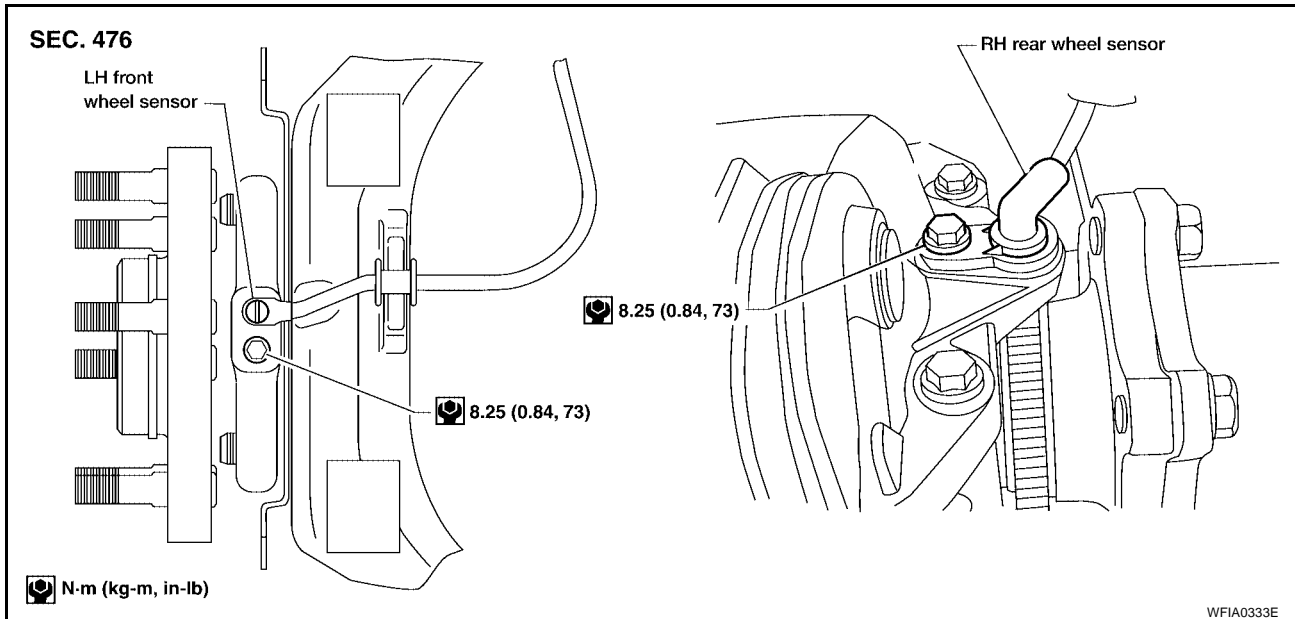
7. Run vehicle with front wheels in straight-ahead position, then stop.
8. Select "DATA MONITOR", "SELECTION FROM MENU", and "DECEL G SEN" on CONSULT-II screen. Then check that "DECEL G SEN" is within  $\pm 0.08G$ . If value is more than specification, repeat steps 3 to 7.
9. Erase memory of ABS actuator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



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## WHEEL SENSORS

### Removal and Installation



#### REMOVAL

1. Remove wheel and tire using power tool.
2. Remove wheel sensor mounting screw.

**NOTE:**

- When removing front wheel sensor, first remove the disc rotor to gain access to the front wheel sensor mounting bolt. Refer to [BR-25, "Removal and Installation of Brake Caliper and Disc Rotor"](#) .
  - When removing rear wheel sensor, first remove spare tire.
3. Pull out the wheel 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.
4. Disconnect wheel sensor harness electrical connector, then remove harness from mounts.

#### INSTALLATION

Installation is in the reverse order of removal. When installing wheel and tire, refer to [WT-7, "Rotation"](#) .

**CAUTION:**

- Inspect wheel sensor O-ring, 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.

**NOTE:**

- Apply a coat of suitable grease to the wheel sensor O-ring and mounting hole.
- Tighten wheel sensor bolt to specification.

## SENSOR ROTOR

PFP:47970

### Removal and Installation FRONT

EFS0065Y

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 side flange from final drive assembly. Refer to [RFD-12, "Removal and Installation"](#).

**CAUTION:**

**Discard side oil seal.**

2. Using tool and a suitable puller, remove sensor rotor from side flange.

**Tool number** : ST30031000 ( — )

#### Installation

1. Install new sensor rotor on side flange using Tools and a press. Make sure sensor rotor is fully seated.

**CAUTION:**

**Do not reuse the old sensor rotor.**

**Tool numbers**

**A: ST30720000 (J-25405)**

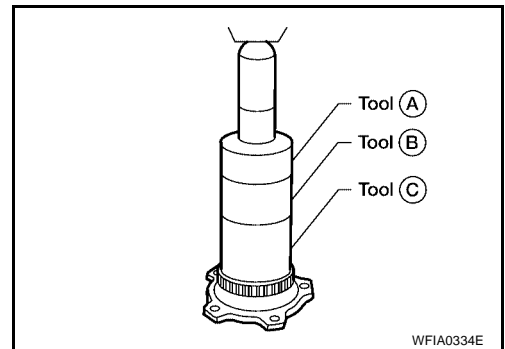
**B: ST27863000 ( — )**

**C: KV40104710 ( — )**

2. Install side flange to final drive assembly. Refer to [RFD-12, "Removal and Installation"](#).

**CAUTION:**

**Do not reuse the side oil seal. The side oil seal must be replaced every time the side flange is removed from the final drive assembly.**



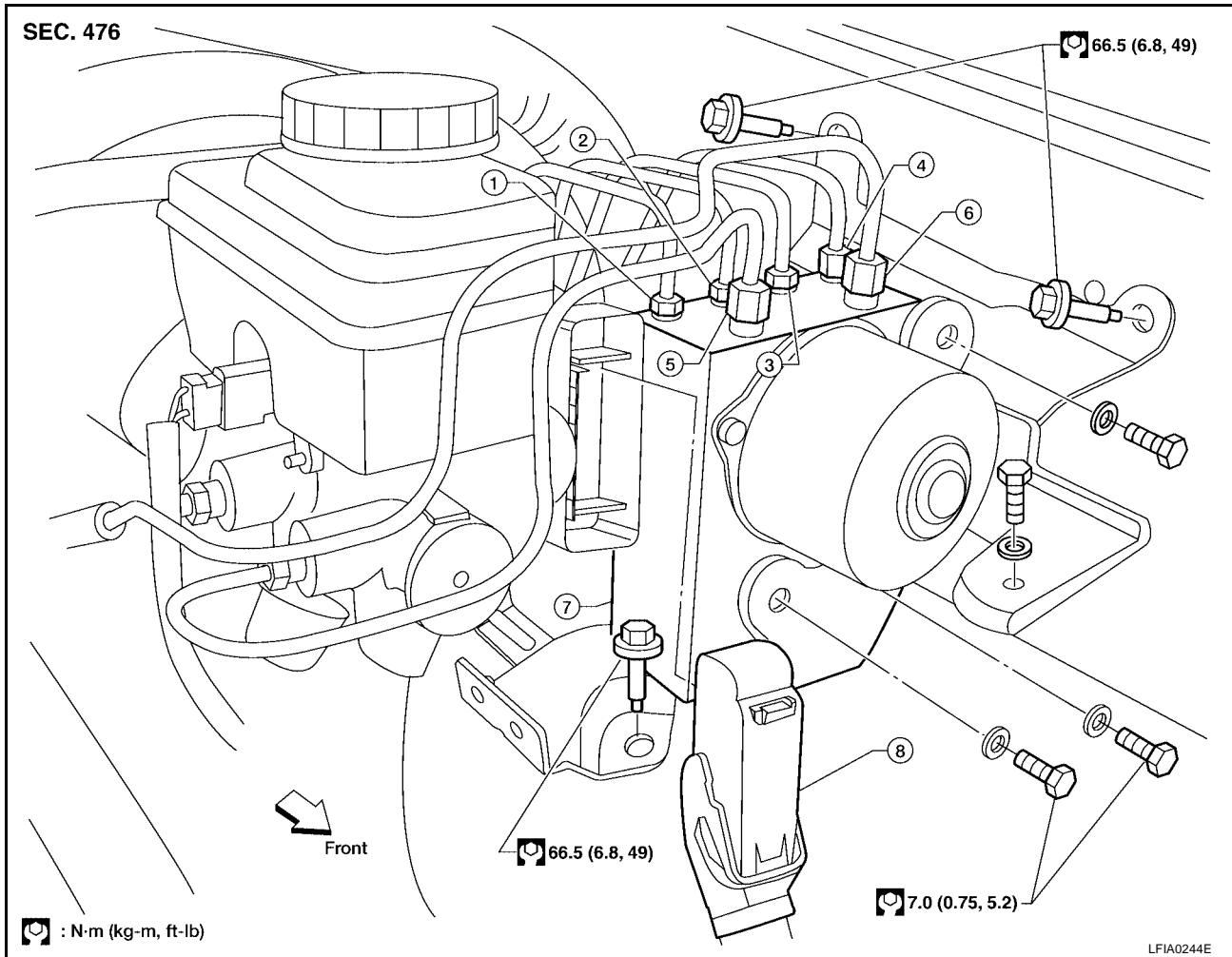
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## ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

PFP:47660

### Removal and Installation

EFS0065Z



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| 1. To rear left disc brake                       | 2. To rear right disc brake                | 3. To front left disc brake              |
| 4. To front right disc brake                     | 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                       |  |

### REMOVAL

1. Disconnect the battery negative terminal.
2. Drain the brake fluid. Refer to [BR-11, "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-13, "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-12, "Bleeding Brake System"](#) .

### NOTE:

In the case that ABS actuator and electric unit (control unit) is replaced, make sure to adjust position of steering angle sensor. Refer to [BRC-58, "Adjustment of Steering Angle Sensor Neutral Position"](#) .

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**BRC**

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## STEERING ANGLE SENSOR

PF2:25554

### Removal and Installation

EFS00660

The steering angle sensor is an integral part of the spiral cable. Refer to [SRS-47, "Removal and Installation"](#) .

**CAUTION:**

In the case that the ABS actuator and electronic unit (control unit) is replaced, make sure to adjust position of steering angle sensor. Refer to [BRC-58, "Adjustment of Steering Angle Sensor Neutral Position"](#) .



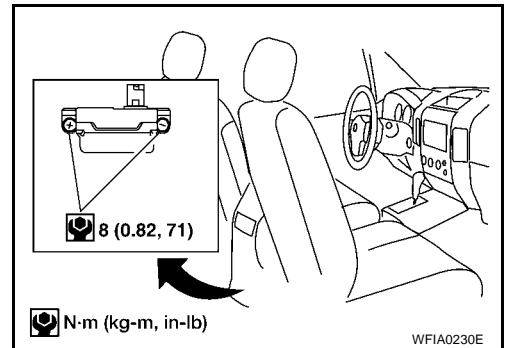
**G SENSOR****Removal and Installation****REMOVAL**

1. Remove center console. Refer to [IP-16, "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-58, "Calibration of Decel G Sensor"](#) .

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## PRECAUTIONS

PFP:00001

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

EFS00662

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:**

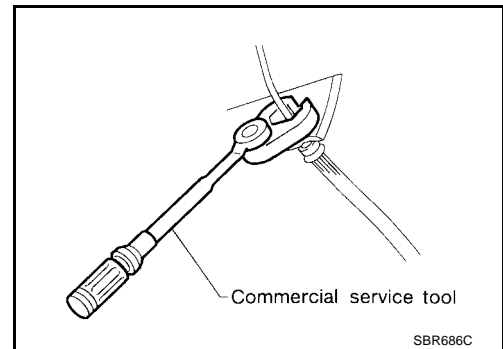
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation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

EFS00663

**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-29, "Brake Burnishing"](#) (front disc brake) or [BR-35, "Brake Burnishing"](#) (rear disc brake).

**WARNING:**

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

### Precautions When Using CONSULT-II

EFS00664

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-25, "CAN COMMUNICATION"](#).

## Precautions for Brake Control

EFS00665

- 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 screen goes into steering angle sensor 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.

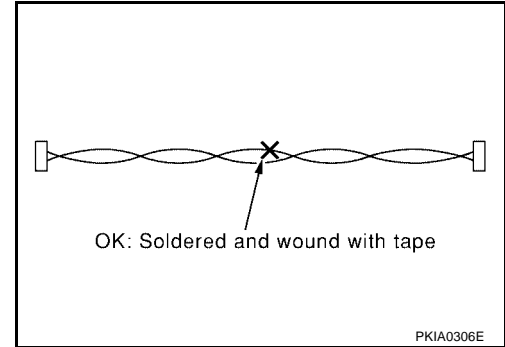
## NOTE:

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

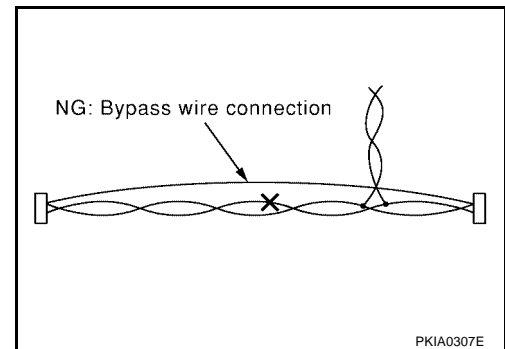
## Precautions for CAN System

EFS00666

- 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.)



# PREPARATION

[HDC/HSA/VDC/TCS/ABS]

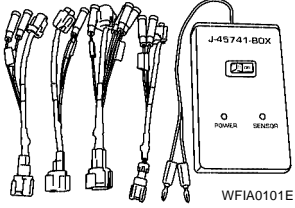
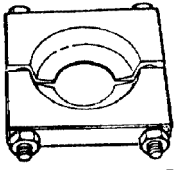
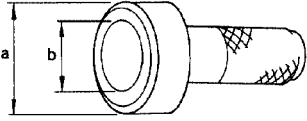
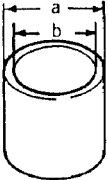
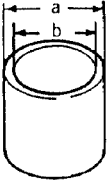
## PREPARATION

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### Special Service Tool

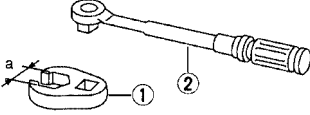
EFS006G6

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
KV991J0080 (J-45741) ABS active wheel sensor tester	 WFI A0101E Checking operation of ABS active wheel sensors
ST30031000 ( — ) Bearing puller	 ZZA0700D Removing sensor rotor
ST30720000 (J-25405) Drift	 ZZA0701D Installing rear sensor rotor a: 77 mm (0.03 in) dia. b: 55 mm (2.17 in) dia.
ST27863000 ( — ) Drift	 ZZA0832D Installing rear sensor rotor a: 75 mm (2.95 in) dia. b: 62 mm (2.44 in) dia.
KV40104710 ( — ) Drift	 ZZA0832D Installing rear sensor rotor a: 76 mm (2.99 in) dia. b: 68.5 mm (2.697 in) dia.

### Commercial Service Tools

EFS006G7

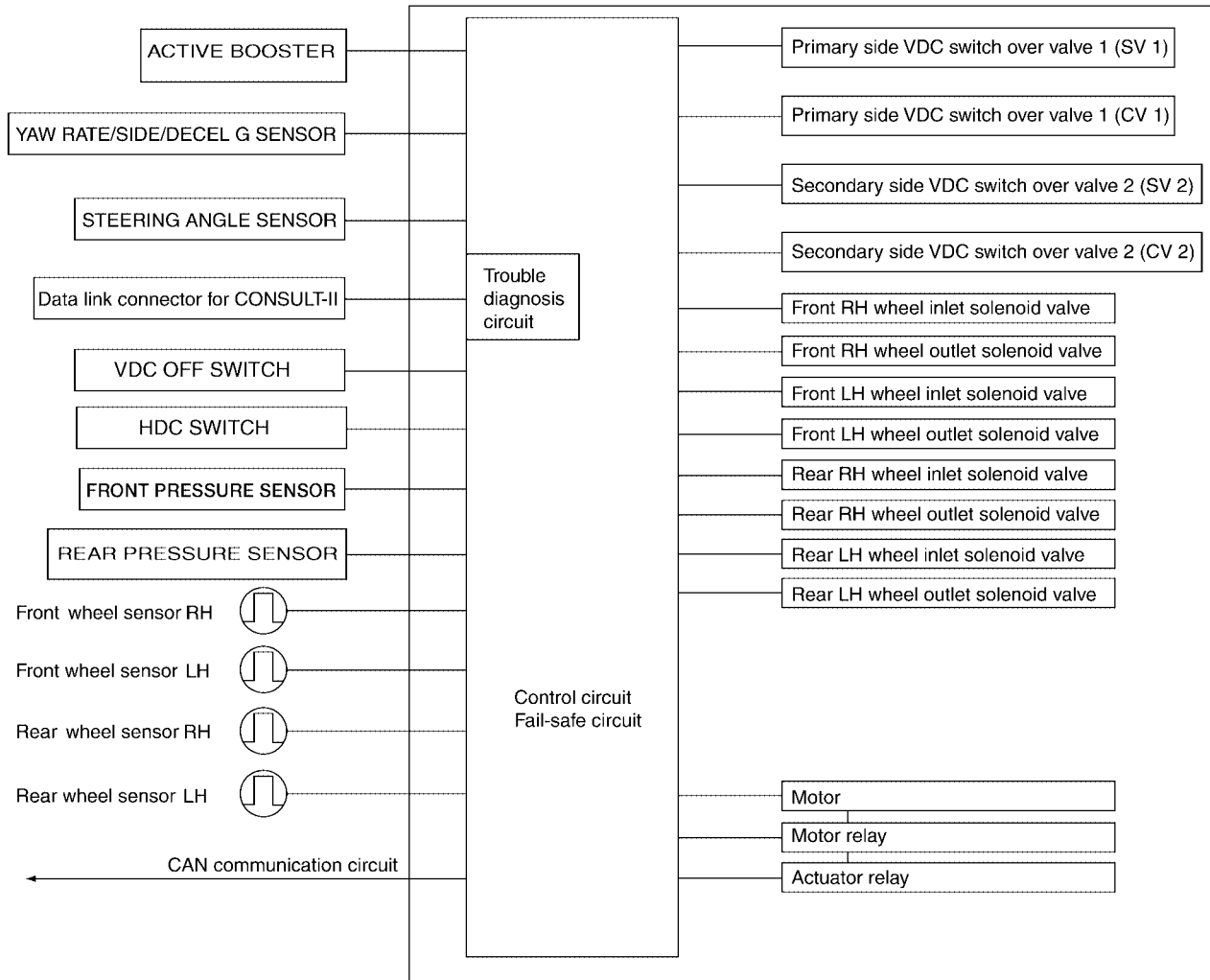
Tool name	Description
1. Flare nut crowfoot 2. Torque wrench	 S-NT360 Removing and installing brake piping a: 10 mm (0.39 in)/12 mm (0.47 in)

SYSTEM DESCRIPTION

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System Components

EFS0066A



ABS actuator and electric unit (control unit)

**ABS Function**

EFS0066B

- 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**

EFS0066C

- 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**

EFS0066D

- 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**

EFS0066E

- 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**

EFS0066F

- 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 4 LO 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

EFS0066G

- The HSA 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

EFS0066H

### 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.

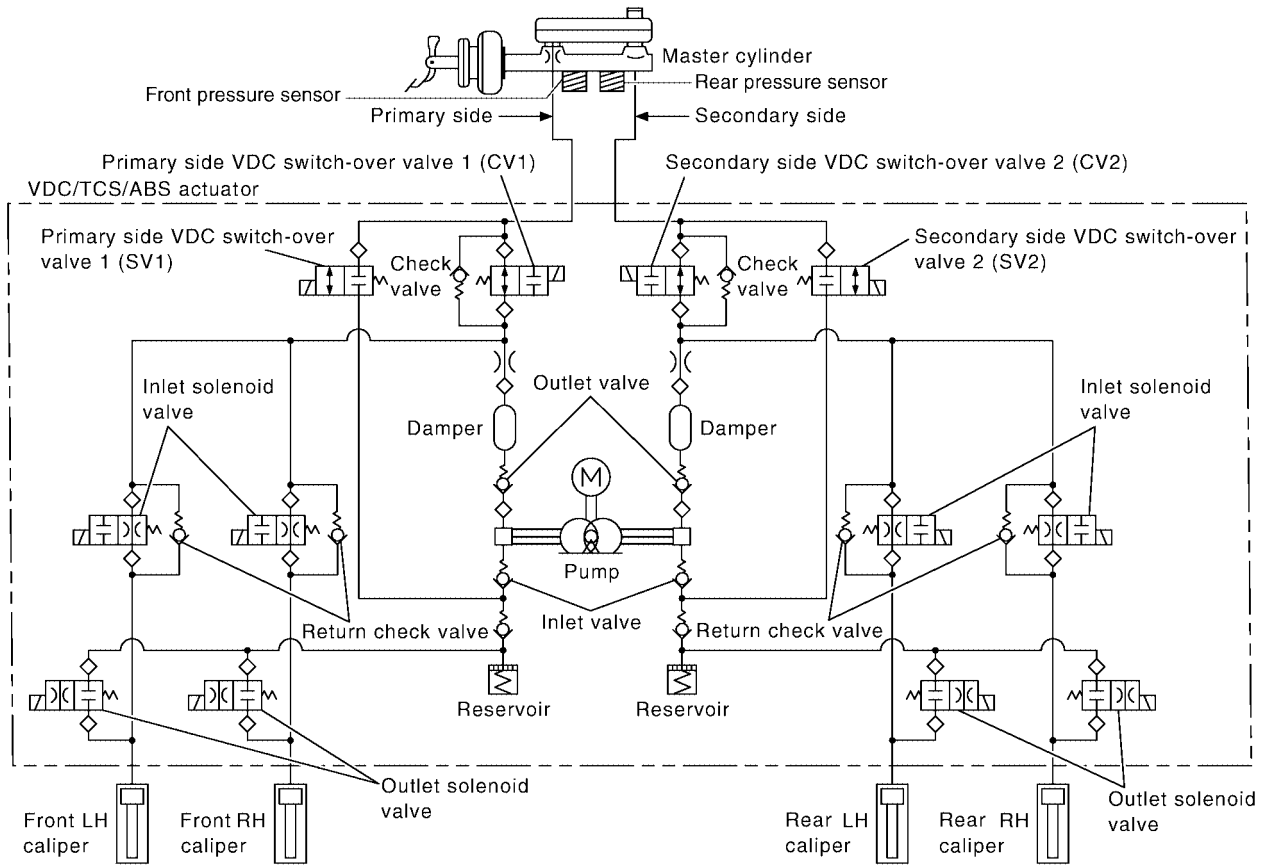


# SYSTEM DESCRIPTION

[HDC/HSA/VDC/TCS/ABS]

## Hydraulic Circuit Diagram

EFS0066I



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**CAN COMMUNICATION**

PF:23710

**System Description**

EF0066J

Refer to [LAN-25, "CAN COMMUNICATION"](#) .

**TROUBLE DIAGNOSIS**

PF0:00000

**How to Perform Trouble Diagnoses for Quick and Accurate Repair**

EFS0066K

**INTRODUCTION**

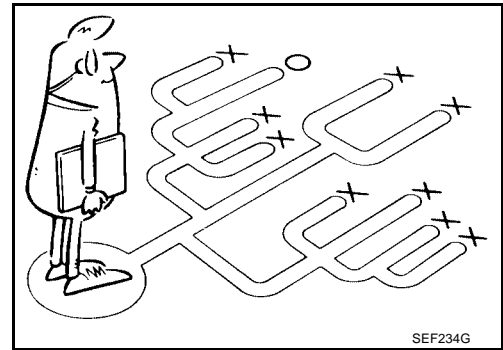
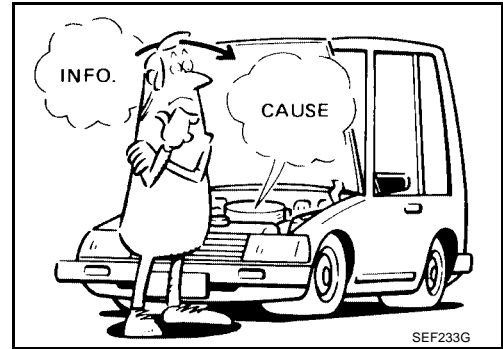
The ABS/TCS/VDC/HDC/HSA system has an electronic control unit to control major functions. The control unit accepts input signals from sensors and controls actuator operation. It is also important to check for conventional problems such as air leaks in the booster or lines, lack of brake fluid, or other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

It is much more difficult to diagnose a problem that occurs intermittently rather than continuously. Most intermittent problems are caused by poor electrical connections or faulty 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 problem, so a road test should be performed.

Before undertaking actual checks, take just a few minutes to talk with a customer who approaches with a ABS/TCS/VDC/HDC/HSA complaint. The customer is a very good source of information on such problems, especially intermittent ones. 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" problems first. This is one of the best ways to troubleshoot brake problems on a ABS/TCS/VDC/HDC/HSA equipped vehicle. Also check related Service Bulletins for information.

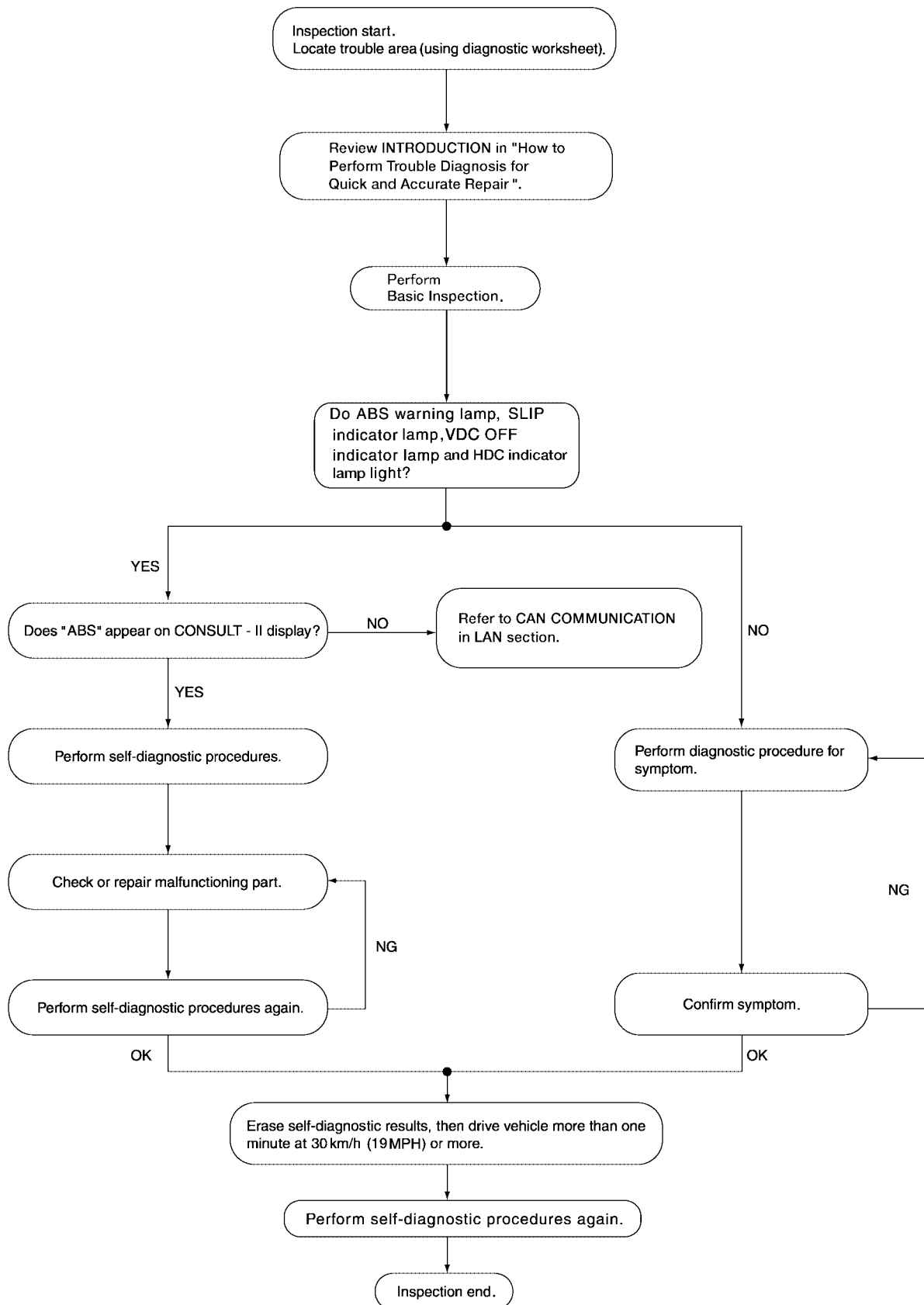


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# TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

## WORK FLOW



WFIA00337E

# 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 trouble the customer is having.

KEY POINTS	
<b>WHAT</b> .....	Vehicle model
<b>WHEN</b> .....	Date, Frequencies
<b>WHERE</b> .....	Road conditions
<b>HOW</b> .....	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		

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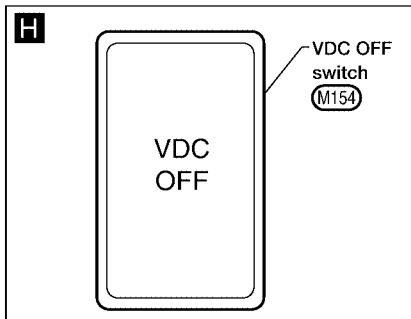
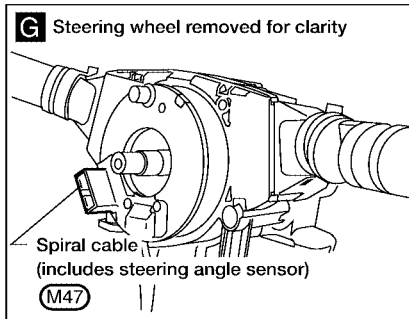
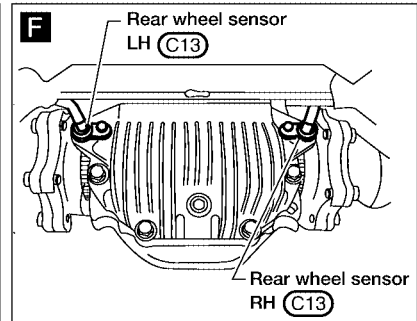
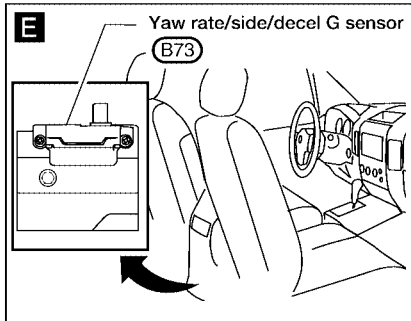
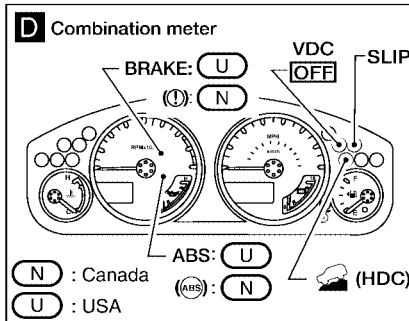
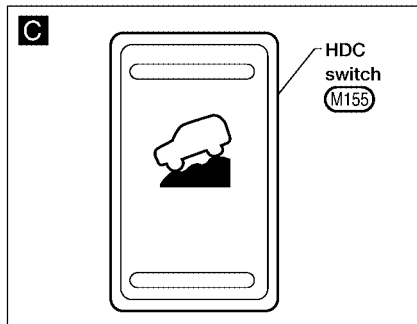
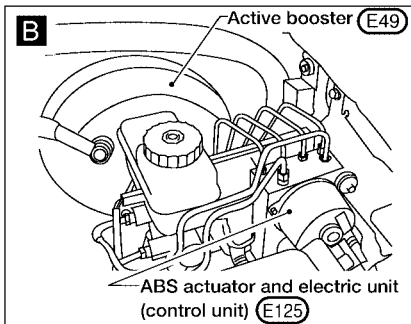
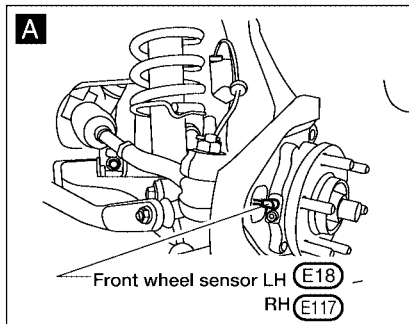
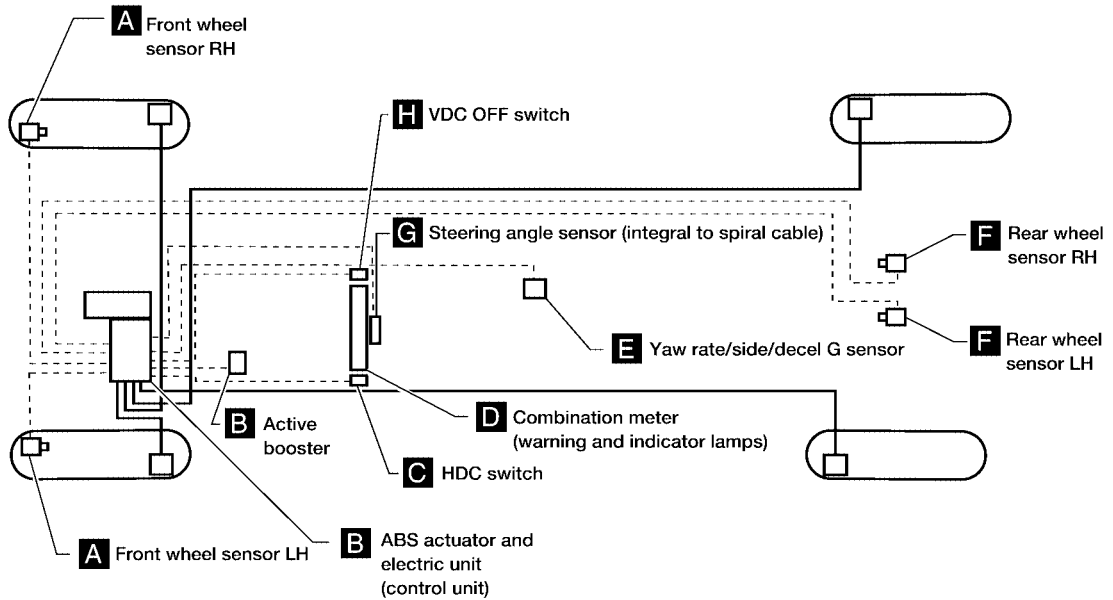
BRC

# TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

## Component Parts and Harness Connector Location

EFS0066L



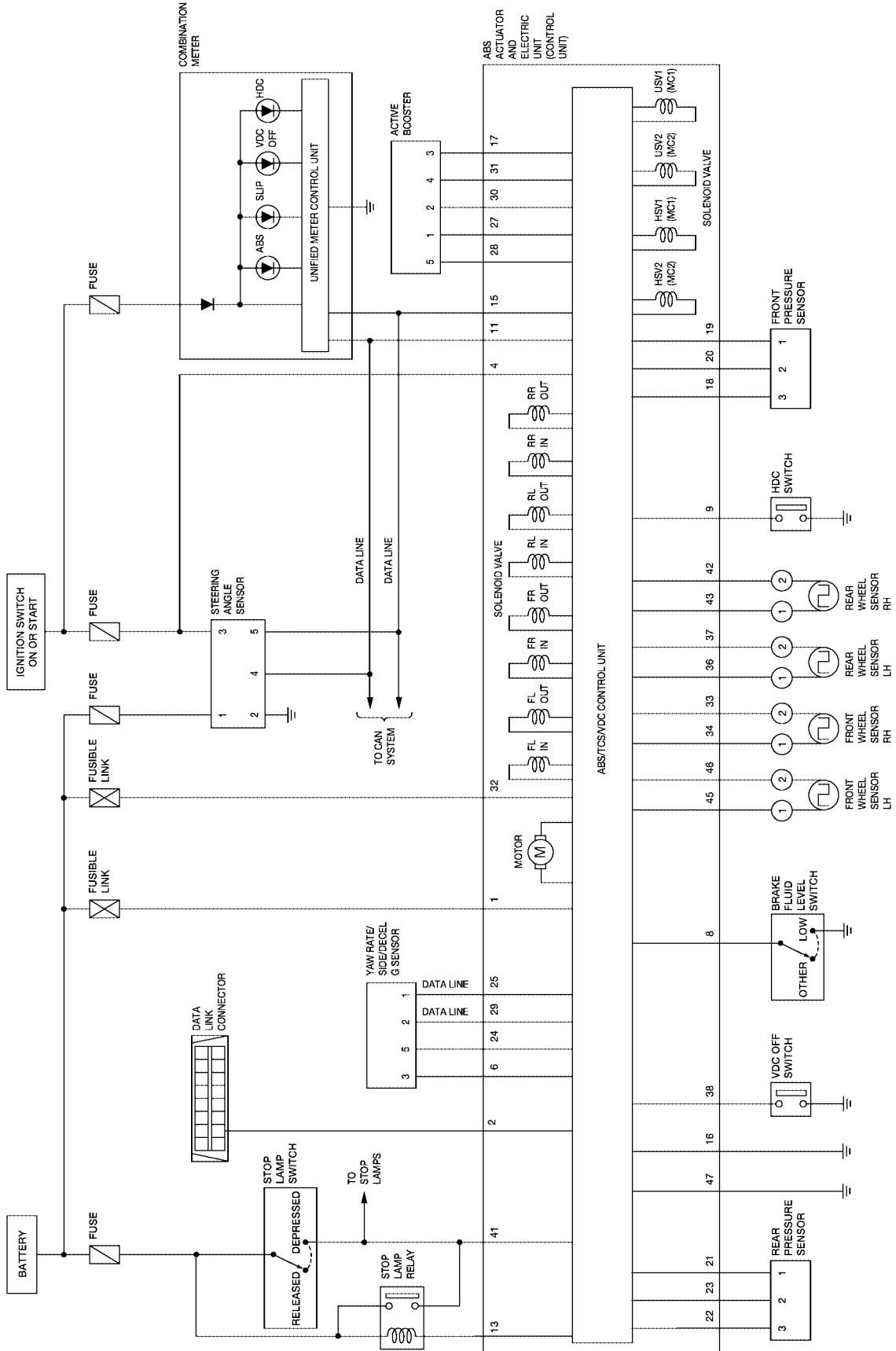
WFIA0348E

# TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

## Schematic

EFS0066M



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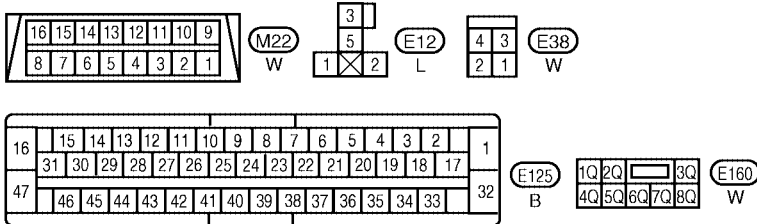
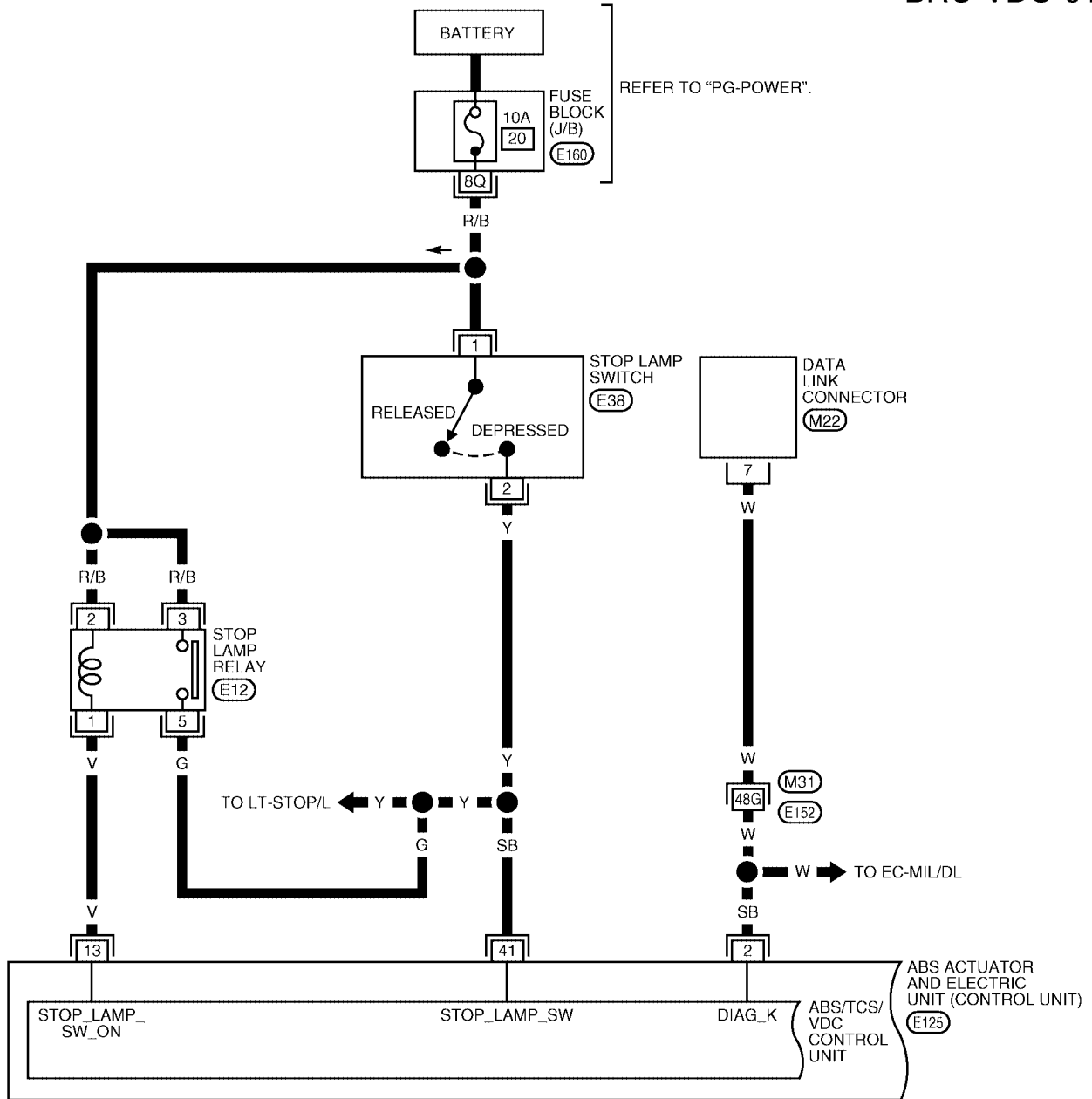
# TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

EFS0066N

## Wiring Diagram — VDC —

BRC-VDC-01



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

WFWA0370E

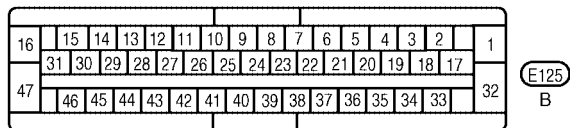
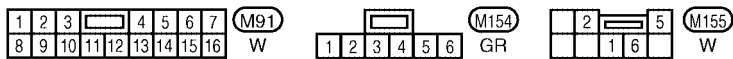
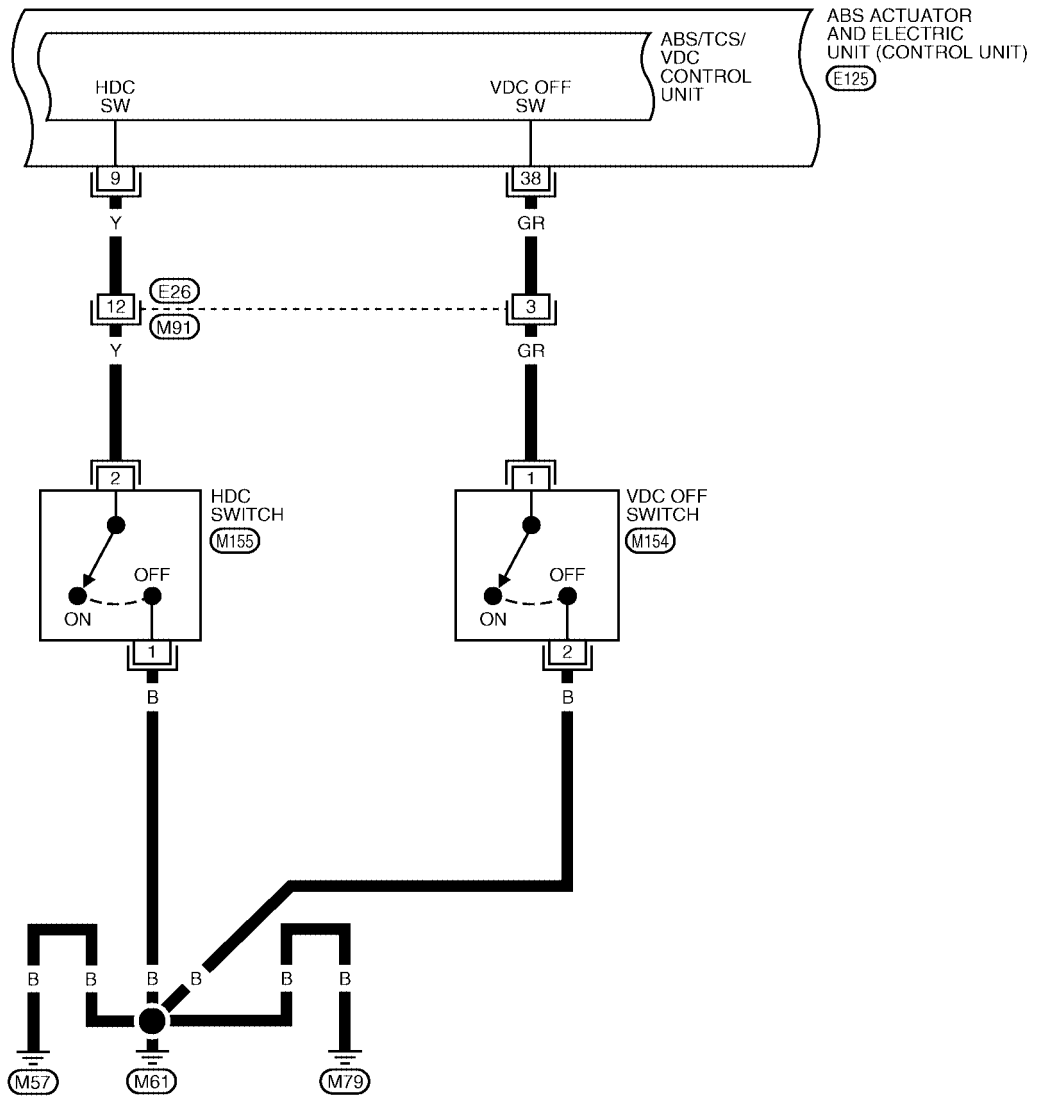


# TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

BRC-VDC-02

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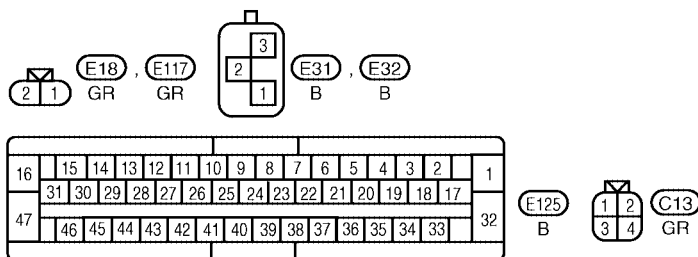
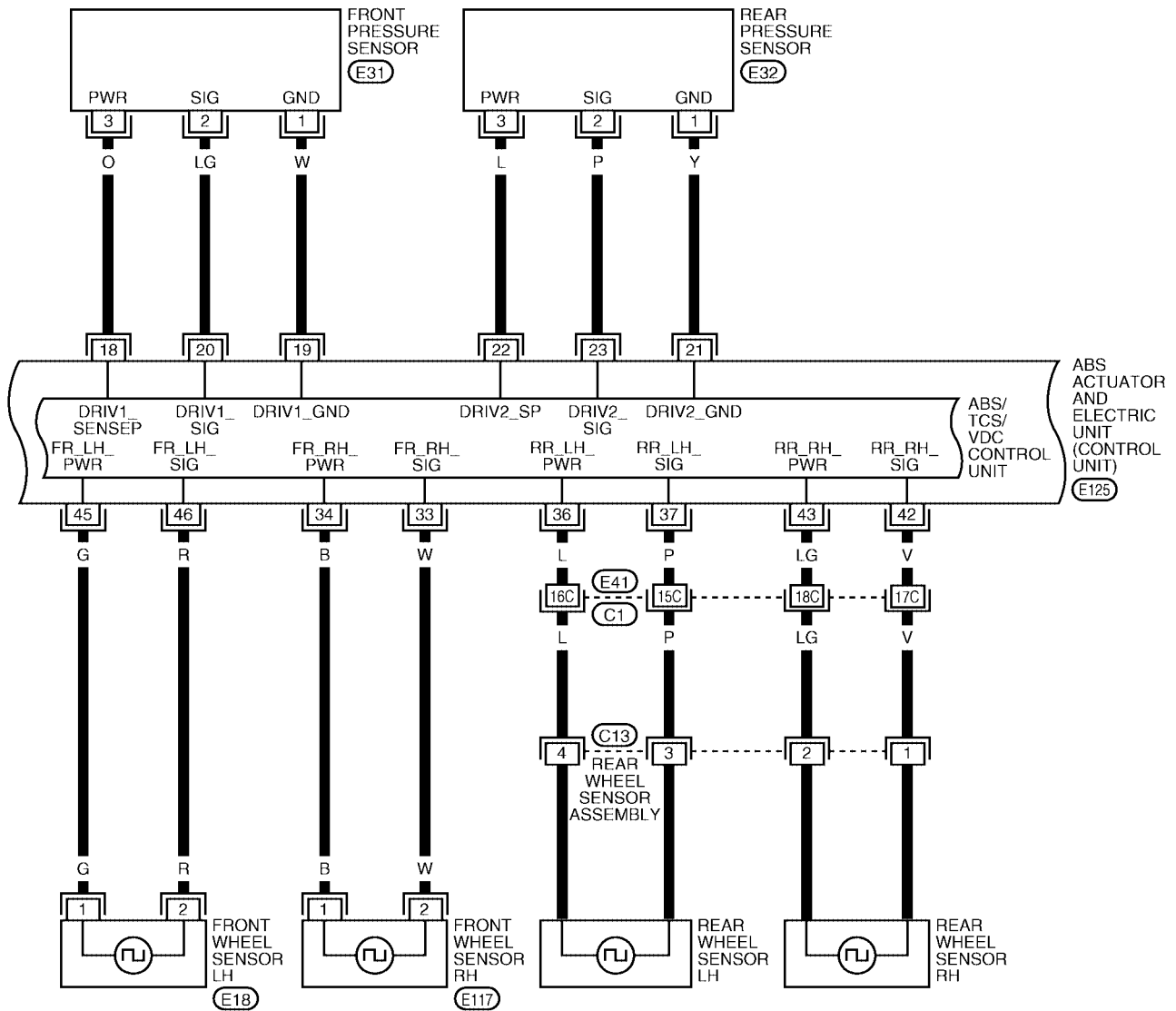


WFWA0371E

# TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

BRC-VDC-03



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

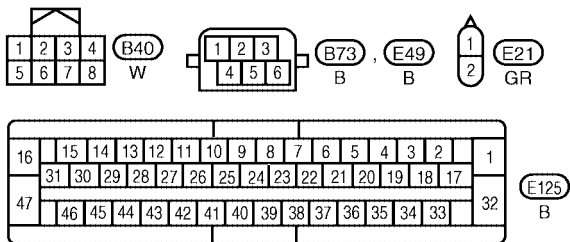
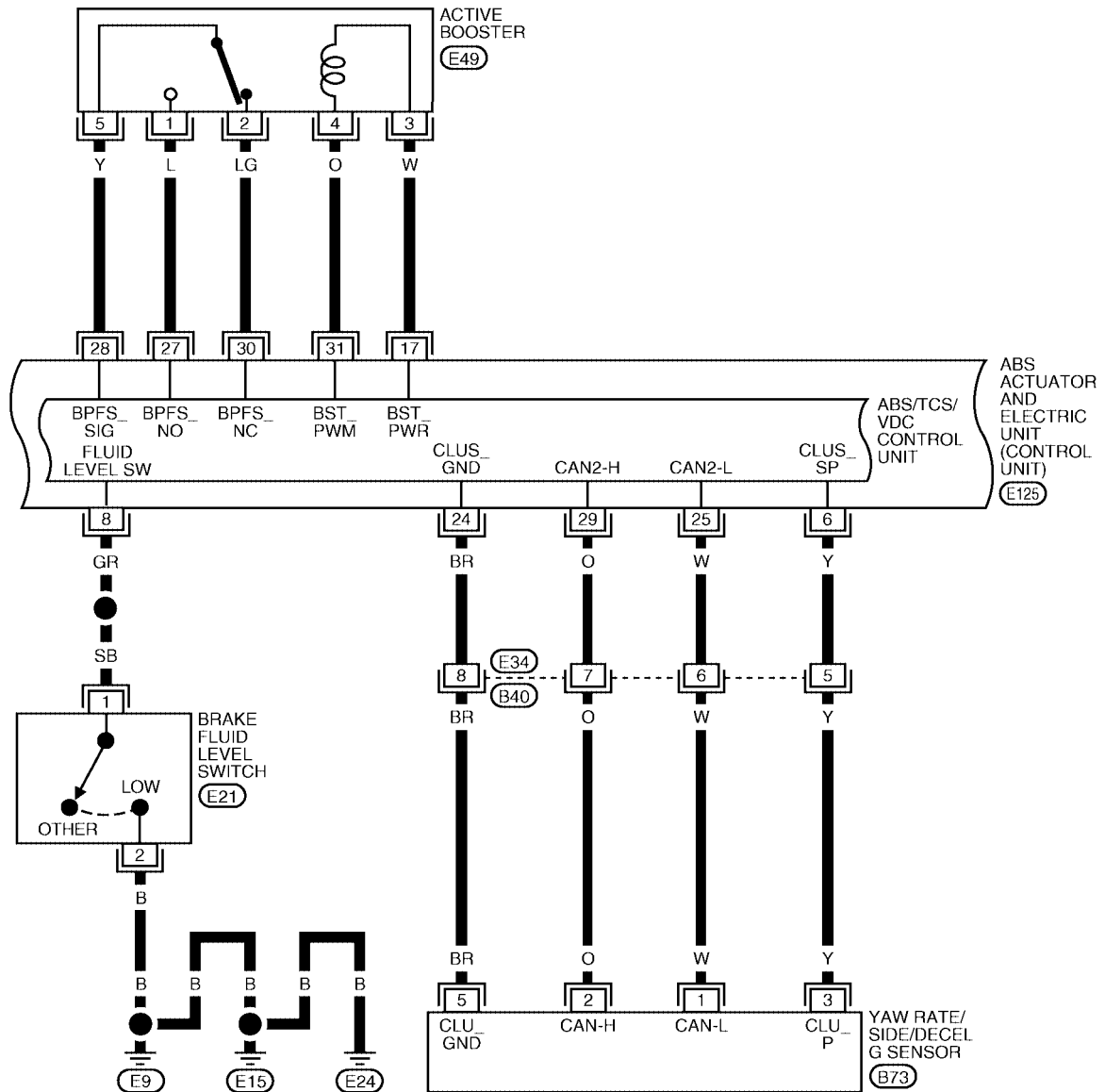
WFWA0372E

# TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

BRC-VDC-04

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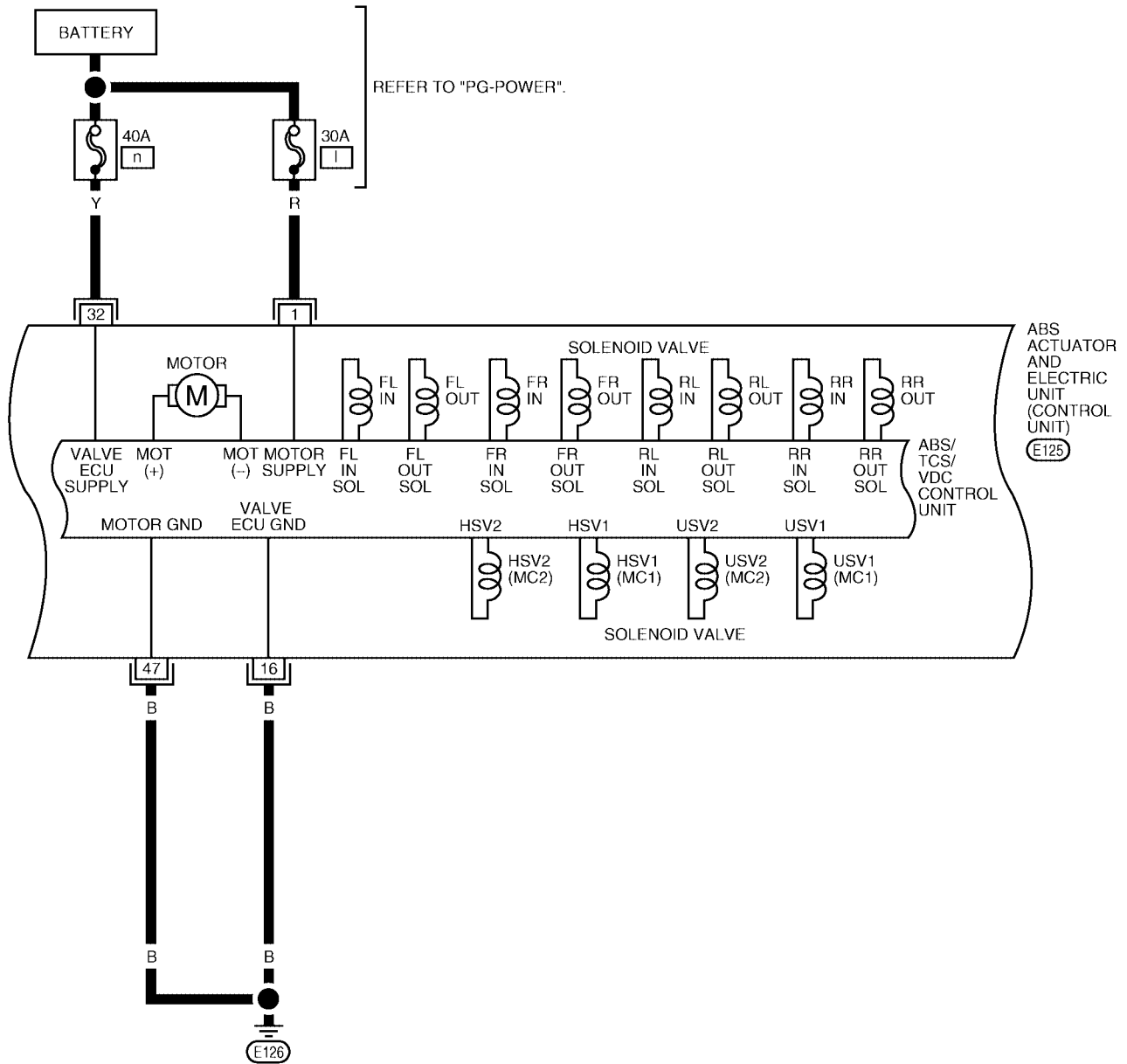


WFWA0373E

# 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

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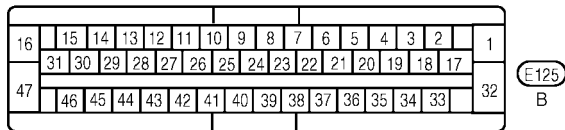
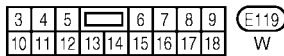
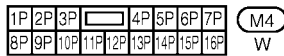
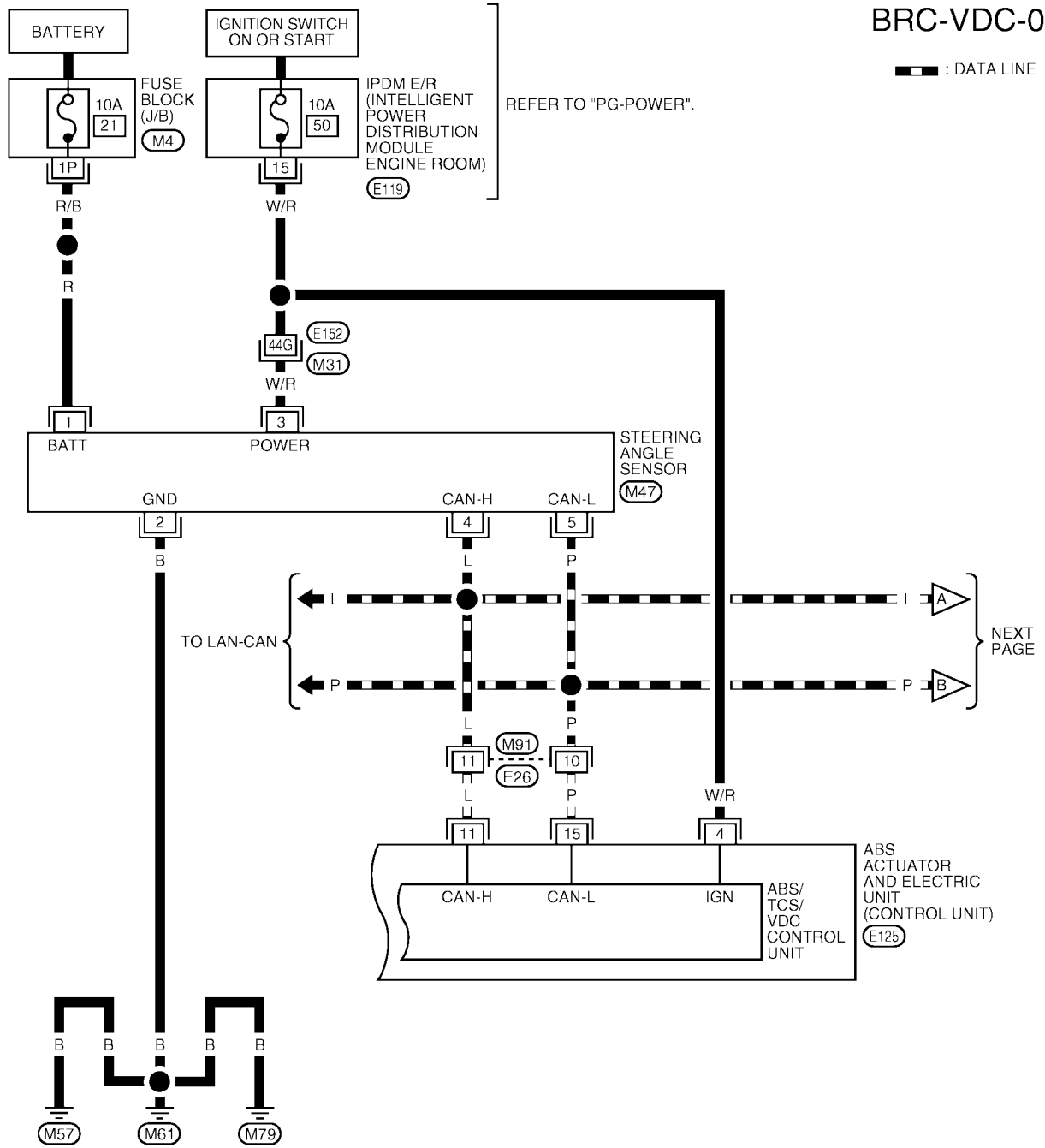
WFWA0374E

# TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

BRC-VDC-06

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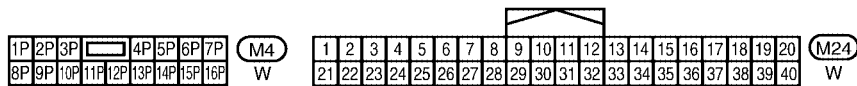
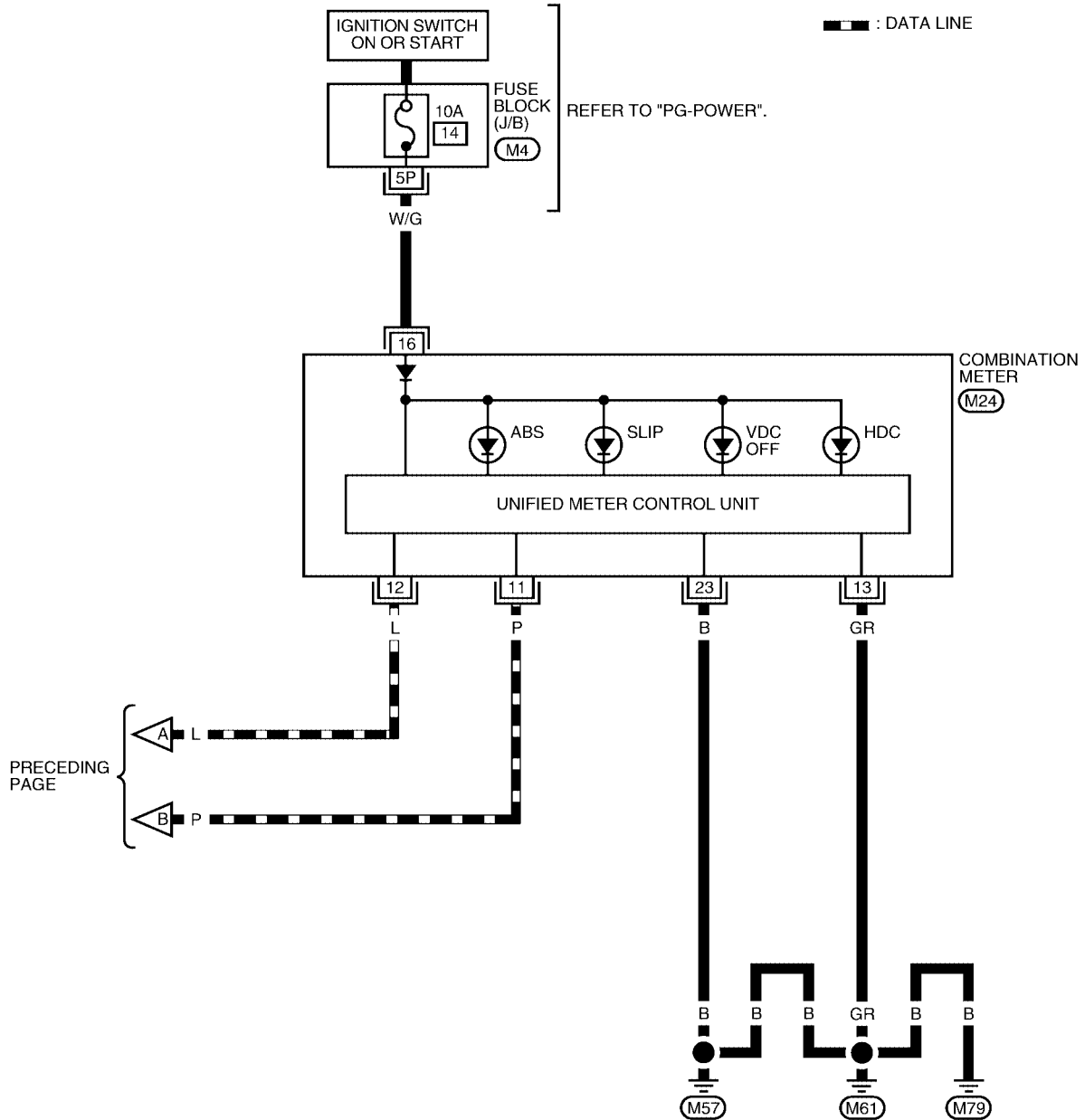
REFER TO THE FOLLOWING.  
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

WFWA0375E

# TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

BRC-VDC-07



WFWA0285E

**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-4, "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 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-94, "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-120, "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-94, "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-93, "CONSULT-II Function \(ABS\)"](#).

# TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

EFS0066P

## For Fast and Accurate Diagnosis

### PRECAUTIONS FOR DIAGNOSIS

- Before performing diagnosis, always read precautions. Refer to [BRC-66, "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-128, "Adjustment of Steering Angle Sensor Neutral Position"](#) .
- After diagnosis is finished, be sure to erase memory. Refer to [BRC-94, "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

EFS0066Q

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. 2 seconds	×	×	×	×	—
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

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

EFS0066R

### 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	<a href="#">BRC-118, "CAN Communication System Inspection"</a>
		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 href="#">BRC-118, "CAN Communication System Inspection"</a>
		A/T shift position = other than 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)]	<a href="#">BRC-103, "Wheel Sensor System Inspection"</a>
		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%	<a href="#">BRC-118, "CAN Communication System Inspection"</a>
		Depress accelerator pedal (ignition switch is ON)	0 to 100%	
2WD/4WD	Drive axle	2WD model	2WD	—
		4WD model	4WD	

# TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

Monitor item	Display content	Data monitor		Note: Error inspection checklist
		Condition	Reference value in normal operation	
ENGINE SPEED	With engine running	With engine stopped	0 RPM	<a href="#">BRC-104. "Engine System Inspection"</a>
		Engine running	Almost in accordance with tachometer display	
STR ANGLE SIG	Steering angle detected by steering angle sensor	Straight-ahead	Approx. 0 deg	<a href="#">BRC-105. "Steering Angle Sensor System"</a>
		Steering wheel turned	-756 to 756 deg	
YAW RATE SEN	Yaw rate detected by yaw rate sensor	Vehicle stopped	Approx. 0 d/s	<a href="#">BRC-107. "Yaw Rate/Side/Decel G Sensor System Inspection"</a>
		Vehicle running	-100 to 100 d/s	
SIDE G-SENSOR	Transverse G detected by side G-sensor	Vehicle stopped	Approx. 0 m/s <sup>2</sup>	<a href="#">BRC-107. "Yaw Rate/Side/Decel G Sensor System Inspection"</a>
		Vehicle running	-16.7 to 16.7 m/s <sup>2</sup>	
BATTERY VOLT	Battery voltage supplied to ABS actuator and electric unit (control unit)	Ignition switch ON	10 to 16V	<a href="#">BRC-112. "ABS/TCS/VDC Control Unit Power and Ground Systems Inspection"</a>
STOP LAMP SW	Stop lamp switch operation	Brake pedal depressed	ON	<a href="#">BRC-111. "Stop Lamp Switch System Inspection"</a>
		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	<a href="#">BRC-120. "VDC OFF SWITCH"</a>
		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	<a href="#">BRC-126. "HDC Switch Inspection"</a>
		HDC switch OFF (When HDC indicator lamp is OFF)	OFF	
STOP LAMP ON RLY	Stop lamp relay operation status	When HDC is operating	ON	<a href="#">BRC-126. "Stop Lamp Relay Inspection"</a>
		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	<a href="#">BRC-110. "Actuator Motor, Motor Relay, and Circuit Inspection"</a>
		Ignition switch ON or engine running (ABS activated)	ON	
ACTUATOR RLY	Actuator relay operation status	Vehicle stopped (Ignition switch ON)	OFF	<a href="#">BRC-110. "Actuator Motor, Motor Relay, and Circuit Inspection"</a>
		Vehicle stopped (Engine running)	ON	
OFF LAMP	VDC OFF indicator lamp status (Note 3)	When VDC OFF indicator lamp is ON	ON	<a href="#">BRC-118. "CAN Communication System Inspection"</a>
		When VDC OFF indicator lamp is OFF	OFF	
SLIP LAMP	SLIP indicator lamp status (Note 4)	When SLIP indicator lamp is ON	ON	<a href="#">BRC-118. "CAN Communication System Inspection"</a>
		When SLIP indicator lamp is 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		
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		A
		When actuator (solenoid) is not active and actuator relay is active (ignition switch ON).	OFF		B
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	<a href="#">BRC-109, "Solenoid and VDC Change-Over Valve System Inspection"</a>	C
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON).	OFF		D
DECEL G-SEN	Longitudinal acceleration detected by Decel G-Sensor	Vehicle stopped	Approx. 0 G	<a href="#">BRC-107, "Yaw Rate/Side/Decel G Sensor System Inspection"</a>	E
		Vehicle running	-1.7 to 1.7 G		G
PRESS SENSOR	Brake fluid pressure detected by pressure sensor	Do not step on the Brake pedal (When ignition switch is ON)	Approx. 0 bar	—	H
		Step on the Brake pedal (When ignition switch is ON)	-40 to 300 bar		I
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	—	J
		Step on the Brake pedal (When ignition switch is ON)	-40 to 300 bar		K
FLUID LEV SW	ON/OFF status of brake fluid level switch	When brake fluid level switch ON	ON	<a href="#">DI-33, "WARNING LAMPS"</a>	L
		When brake fluid level switch OFF	OFF		M
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.

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.

# TROUBLE DIAGNOSIS

**[HDC/HSA/VDC/TCS/ABS]**

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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.

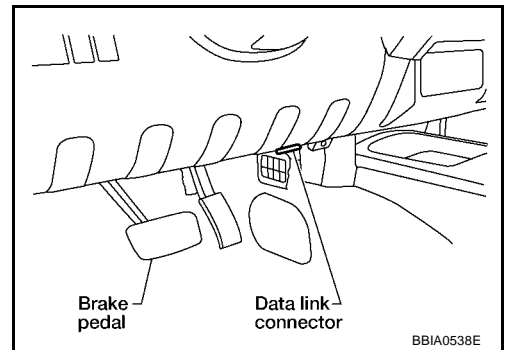
### CONSULT-II BASIC OPERATION PROCEDURE

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

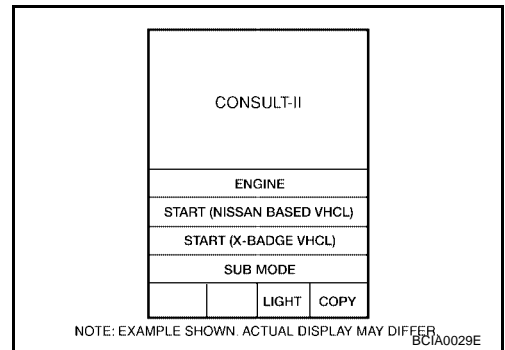
**CAUTION:**

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.

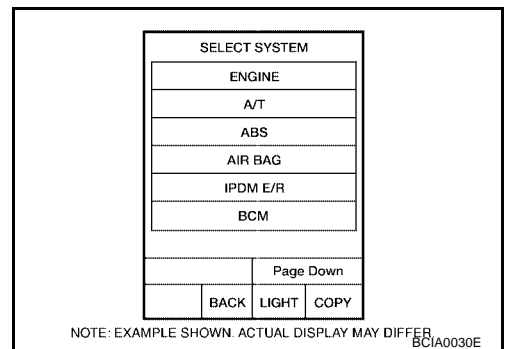
3. Turn ignition switch ON.



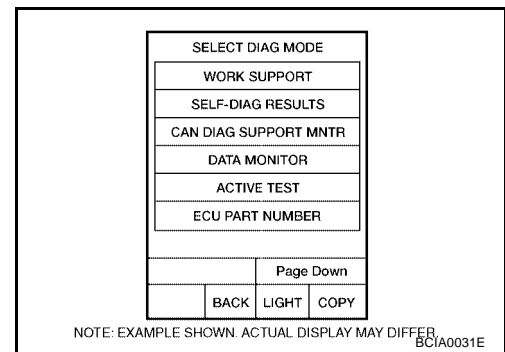
4. Touch "START (NISSAN BASED VHCL)".



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, 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.	<a href="#">BRC-103. "Wheel Sensor System Inspection"</a> (Note 1)
RR LH SENSOR 1 [C1102]	Circuit of rear LH 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.	
FR LH SENSOR 1 [C1104]	Circuit of front LH wheel sensor is open, shorted or sensor power voltage is unusual.	
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.	
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.	
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.	
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.	
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)	<a href="#">BRC-105. "ABS/TCS/VDC Control Unit Inspection"</a>
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.	<a href="#">BRC-110. "Actuator Motor, Motor Relay, and Circuit Inspection"</a>
	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.	<a href="#">BRC-107. "Yaw Rate/Side/Decel G Sensor System Inspection"</a>
STOP LAMP SW [C1116]	Stop lamp switch or circuit malfunction.	<a href="#">BRC-111. "Stop Lamp Switch System Inspection"</a>

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# 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.	<a href="#">BRC-109, "Solenoid and VDC Change-Over Valve System Inspection"</a>
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.	<a href="#">BRC-104, "Engine System Inspection"</a>
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.	<a href="#">BRC-110, "Actuator Motor, Motor Relay, and Circuit Inspection"</a>
PRESS SEN CIRCUIT [C1142]	ABS pressure sensor circuit malfunction.	<a href="#">BRC-115, "Pressure Sensor System Inspection"</a>
ST ANGLE SEN CIRCUIT [C1143]	Neutral position of steering angle sensor is dislocated, or steering angle sensor is malfunctioning.	<a href="#">BRC-105, "Steering Angle Sensor System"</a>
ST ANGLE SEN SIGNAL [C1144]	Neutral position correction of steering angle sensor is not finished.	<a href="#">BRC-119, "Inspection For Self-diagnosis Result "ST ANGLE SEN SIGNAL""</a>
YAW RATE SENSOR [C1145]	Yaw rate sensor has generated an error, or yaw rate sensor signal line is open or shorted.	<a href="#">BRC-107, "Yaw Rate/Side/Decel G Sensor System Inspection"</a>
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.	<a href="#">BRC-113, "Brake Fluid Level Switch System Inspection"</a>
ST ANG SEN COM CIR [C1156]	CAN communication line or steering angle sensor has generated an error.	<a href="#">BRC-105, "Steering Angle Sensor System"</a>



# 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.	<a href="#">BRC-119, "Inspection For Self-diagnosis Result "DECEL G SEN SET"</a>
ST ANGL SEN SAFE [C1163]	When steering angle sensor is in safe mode.	<a href="#">BRC-118, "Steering Angle Sensor Safe Mode Inspection"</a>
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.	<a href="#">BRC-109, "Solenoid and VDC Change-Over Valve System Inspection"</a>
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.	<a href="#">BRC-114, "Active Booster System Inspection"</a>
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 BRAKE BOOSTER DEFECT [C1189]	Brake booster is defective or malfunctioning.	
CAN COMM CIRCUIT [U1000]	<ul style="list-style-type: none"> <li>● CAN communication line is open or shorted.</li> <li>● ABS actuator and electric unit (control unit) internal malfunction</li> <li>● Battery voltage for ECM is suddenly interrupted for approximately 0.5 second or more.</li> </ul>	<a href="#">BRC-118, "CAN Communication System Inspection"</a> (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 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.

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.

# TROUBLE DIAGNOSIS

[HDC/HSA/VDC/TCS/ABS]

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 <sup>2</sup> )	×	–	×	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.
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.

# TROUBLE DIAGNOSIS

**[HDC/HSA/VDC/TCS/ABS]**

Item (Unit)	Data monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
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.
HSA SIGNAL (ON/OFF)	-	-	×	HSA operation (ON/OFF) status is displayed.
STP LAMP ON RLY	-	-	×	Stop lamp relay signal 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	
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.

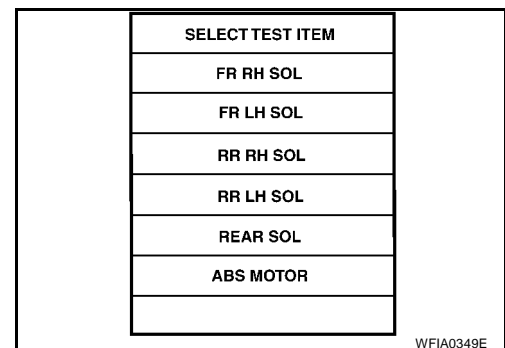
## Operation Procedure

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.



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.

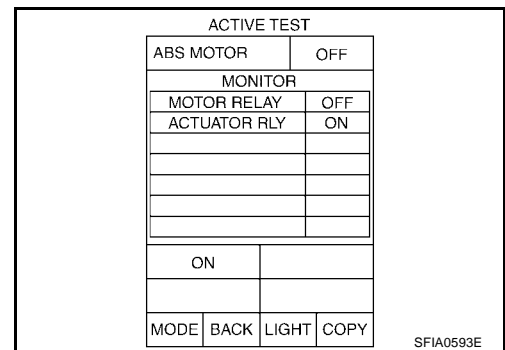
### ABS MOTOR

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

ACTIVE TEST			
BOOSTER DRIVE	UP		
MONITOR			
STOP LAMP SW	OFF		
BST OPER SIG	ON		
PRESS SENSOR	47 bar		
PRESS SEN 2	48 bar		
STP OFF RLY	OFF		
			DOWN
MODE	BACK	LIGHT	COPY

WFIA0350E

**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

EFS0066T

#### INSPECTION PROCEDURE

#### 1. CHECK TIRES

Check for inflation pressure, wear and size of each tire.

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-130, "Removal and Installation"](#).

# TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

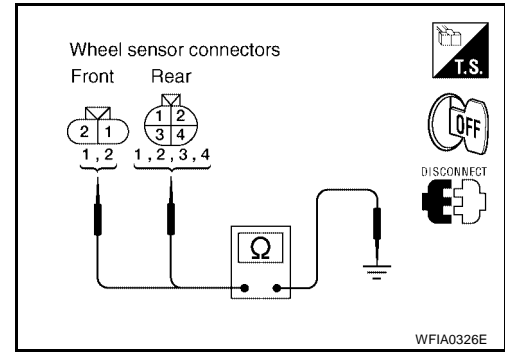
## 5. CHECK WIRING HARNESS FOR SHORT CIRCUIT

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 or C13.

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	C13	3	
		36		4	
Rear RH		42		1	
		43		2	

OK or NG

- OK >> Replace the ABS actuator and electric unit (control unit). Refer to [BRC-132, "Removal and Installation"](#).  
 NG >> Repair the circuit.

## Engine System Inspection

EFS0066U

### 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

EFS0066V

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-132, "Removal and Installation"](#).  
NO >> Inspection End.

### Steering Angle Sensor System

EFS0066W

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.

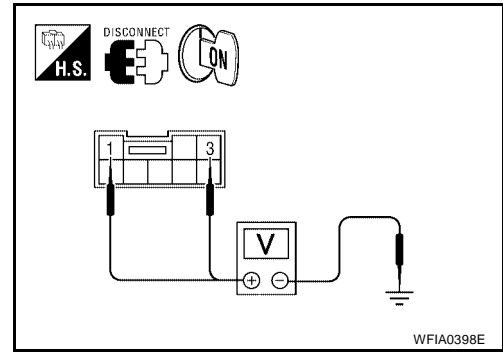
# TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

## 3. CHECKING STEERING ANGLE SENSOR POWER AND GROUND

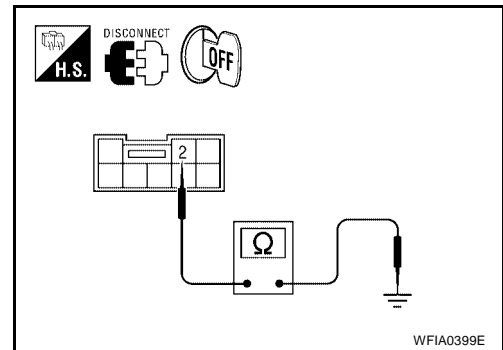
1. Check voltage between steering angle sensor harness connector M47 and body ground.

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



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

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



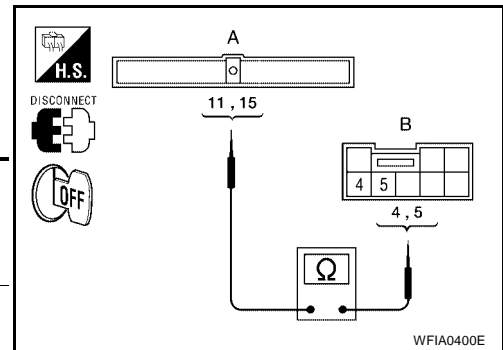
OK or NG

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

## 4. CHECK STEERING ANGLE SENSOR HARNESS

1. Check CAN communication system. Refer to [LAN-25, "CAN COMMUNICATION"](#).
2. Disconnect steering angle sensor connector M47 and 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-128, "Adjustment of Steering Angle Sensor Neutral Position"](#).

### Yaw Rate/Side/Decel G Sensor System Inspection

EFS0066X

**CAUTION:**

**Sudden turns (such as spin turns, acceleration turns), drifting, etc. when VDC function is OFF may cause the yaw rate/side/deccl 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/deccl 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	Yes
25	1	Yes
29	2	Yes

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	-0.11 G to +0.11 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-135, "Removal and Installation"](#) .

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

EFS0066Y

## Solenoid and VDC Change-Over 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
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

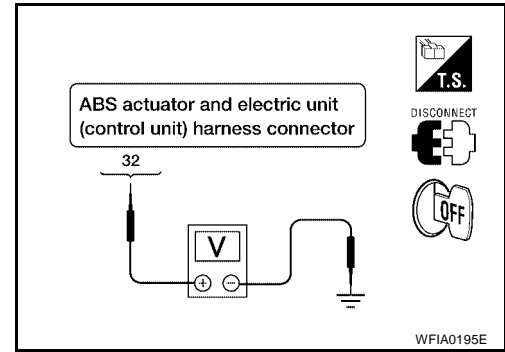
# TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

[HDC/HSA/VDC/TCS/ABS]

## 3. CHECKING SOLENOID POWER AND GROUND

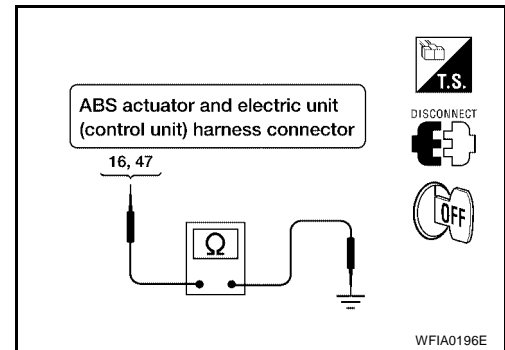
1. Check voltage between ABS actuator and electric unit (control unit) harness connector E125 and body ground.

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 $\Omega$ (Approx.)
16	—	0 $\Omega$
47	—	0 $\Omega$



OK or NG

OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-132, "Removal and Installation"](#).

NG >> Repair the circuit.

## Actuator Motor, Motor Relay, and Circuit Inspection

EFS0066Z

### 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.

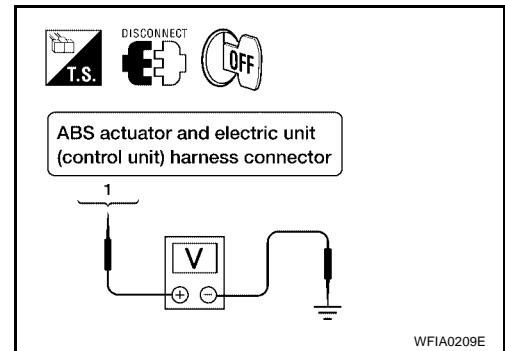
NG >> Repair or replace as necessary.

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

## 3. CHECKING ABS MOTOR AND MOTOR RELAY POWER SYSTEM

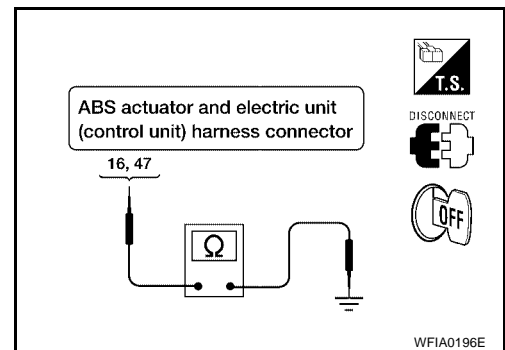
1. Check voltage between ABS actuator and electric unit (control unit) harness connector E125 and body ground.

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 $\Omega$ (Approx.)
16	—	$0\Omega$
47	—	$0\Omega$



OK or NG

- OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-132, "Removal and Installation"](#).
- NG >> Repair the circuit.

## Stop Lamp Switch System Inspection

EFS00670

### 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

- Disconnect the ABS actuator and electric unit (control unit) connector E125 and stop lamp switch connector E38.
- 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.

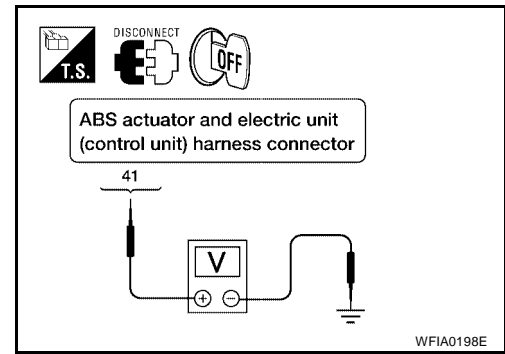
**Brake pedal depressed : Battery voltage (approx. 12V)**

**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-132, "Removal and Installation"](#).

NG >> GO TO 4.



## 4. STOP LAMP RELAY CIRCUIT INSPECTION

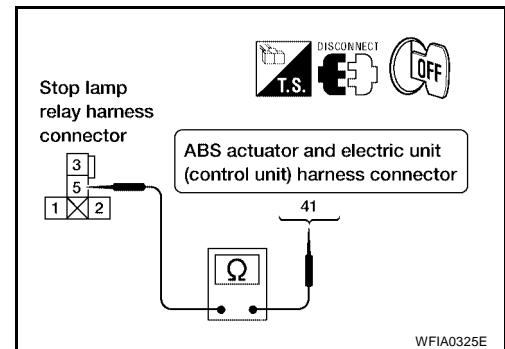
1. Disconnect the stop lamp relay harness connector E12.
2. Check the continuity between the ABS actuator and electric unit (control unit) harness connector E125 terminal 41 and stop lamp relay harness connector E12 terminal 5.

**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-132, "Removal and Installation"](#).

NG >> Refer to [LT-85, "STOP LAMP"](#).



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

EFS00671

### 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

EFS00672

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 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.

# 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-132, "Removal and Installation"](#).

NG >> Replace brake fluid level switch.

## Active Booster System Inspection

EFS00673

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-19, "Removal and Installation"](#).

## Pressure Sensor System Inspection

EFS00674

### 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.

**Steering Angle Sensor Safe Mode Inspection**

## 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-128, "Adjustment of Steering Angle Sensor Neutral Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Check steering angle sensor. Refer to [BRC-105, "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-87, "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**

## 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-25, "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"

EFS00677

### 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-128, "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-134, "Removal and Installation"](#) .  
NO >> Inspection End.

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

EFS00678

### 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-128, "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-135, "Removal and Installation"](#) .  
NO >> Inspection End.

## VDC OFF Indicator lamp Does Not Illuminate

EFS00679

### 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-132, "Removal and Installation"](#) .  
NO >> Replace combination meter. Refer to [IP-14, "COMBINATION METER"](#) .

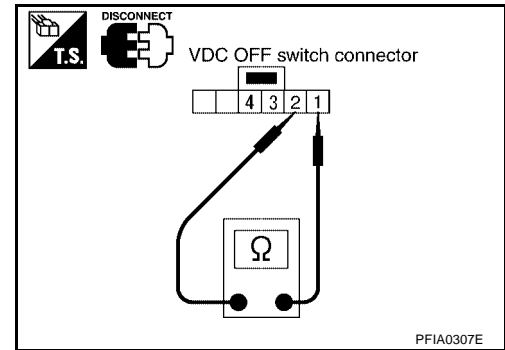
# TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS [HDC/HSA/VDC/TCS/ABS]

EFS0067A

## Component Inspection VDC OFF SWITCH

Check the continuity between terminals 1 and 2.

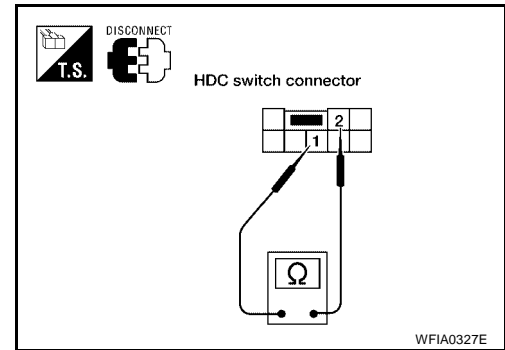
- 1 - 2** : Continuity should exist when pushing the switch.  
Continuity should not exist when releasing the switch.



## HDS 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

[HDC/HSA/VDC/TCS/ABS]

## TROUBLE DIAGNOSES FOR SYMPTOMS

PFP:99999

### ABS Works Frequently

EFS0067B

#### 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-94, "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"](#) or [RAX-5, "WHEEL BEARING INSPECTION"](#) .

OK or NG

OK >> GO TO 4.

NG >> Repair as necessary.

#### 4. CHECK BRAKE FLUID PRESSURE

Check brake fluid pressure distribution.

Refer to [BRC-87, "Basic Inspection"](#) .

Is brake fluid pressure distribution normal?

YES >> Inspection End.

NO >> Perform Basic Inspection. Refer to [BRC-87, "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-94, "SELF-DIAGNOSIS"](#) .

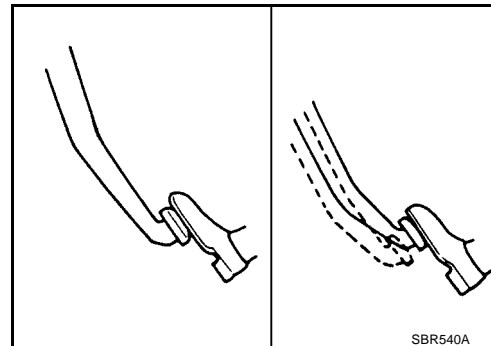
### 2. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke.

Is pedal stroke excessive?

YES >> Perform Basic Inspection. Refer to [BRC-87, "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-25, "CAN COMMUNICATION"](#) .

OK or NG

OK >> GO TO 4.

NG >> Perform Basic Inspection. Refer to [BRC-87, "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**

EFS0067D

**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-25, "CAN COMMUNICATION"](#).

**OK or NG**

- OK >> Go to [BRC-121, "ABS Works Frequently"](#).
- NG >> Perform Basic Inspection. Refer to [BRC-87, "Basic Inspection"](#).

**ABS Does Not Work**

EFS0067E

**CAUTION:**

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

BRC

**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-94, "SELF-DIAGNOSIS"](#).
- NG >> Go to [BRC-124, "ABS Warning Lamp Does Not Come On When Ignition Switch Is Turned On"](#).

**Pedal Vibration or ABS Operation Noise**

EFS0067F

**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-94, "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-121, "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 EFS0067G

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

Check 40A fusible link **n** and 30A 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.

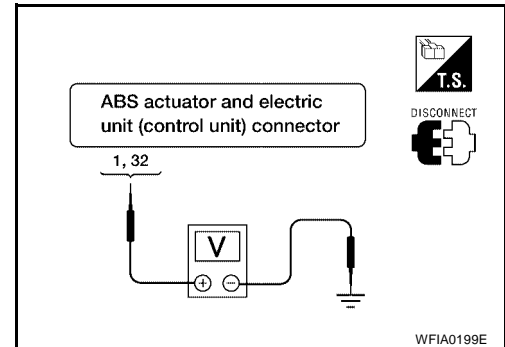
#### 2. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY CIRCUITS

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).



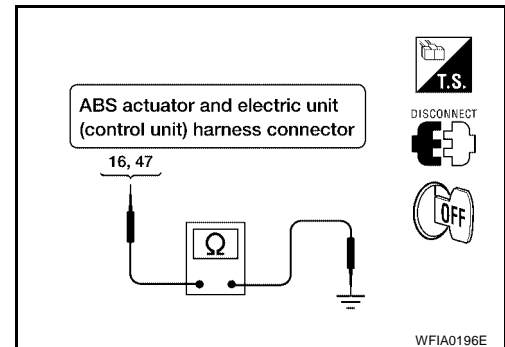
#### 3. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

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-132, "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 EFS0067H

#### 1. CARRY OUT SELF-DIAGNOSIS

Carry out self-diagnosis. Refer to [BRC-94, "SELF-DIAGNOSIS"](#).

Are malfunctions detected in self-diagnosis?

YES >> Refer to [BRC-95, "Display Item List"](#).

NO >> Refer to [DI-33, "WARNING LAMPS"](#).

# TROUBLE DIAGNOSES FOR SYMPTOMS

[HDC/HSA/VDC/TCS/ABS]

## Vehicle Jerks During TCS/VDC Activation

EFS00671

### 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-118, "CAN Communication System Inspection"](#).

OK or NG

- OK >> Inspection End.
- NG >> Refer to [LAN-25, "CAN COMMUNICATION"](#).

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# TROUBLE DIAGNOSES FOR SYMPTOMS

[HDC/HSA/VDC/TCS/ABS]

EFS0067J

## Stop Lamp Relay Inspection

STOP LAMPS TURN ON THOUGH HDC DOES NOT FUNCTION

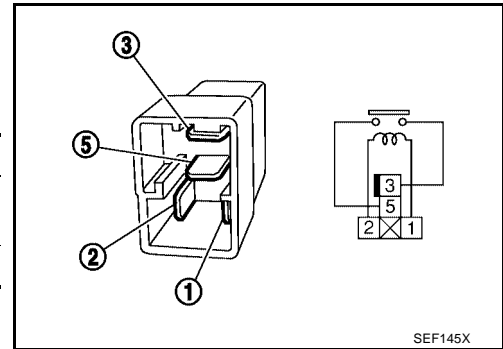
### 1. INSPECTION OF STOP LAMP RELAY

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

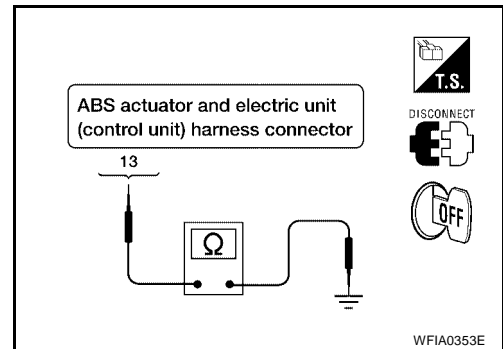
### 2. INSPECTION OF STOP LAMP RELAY CIRCUIT

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-132, "Removal and Installation"](#) .  
 NG >> Repair or replace harness or connector.



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STOP LAMPS DO NOT TURN ON THOUGH HDC FUNCTIONS

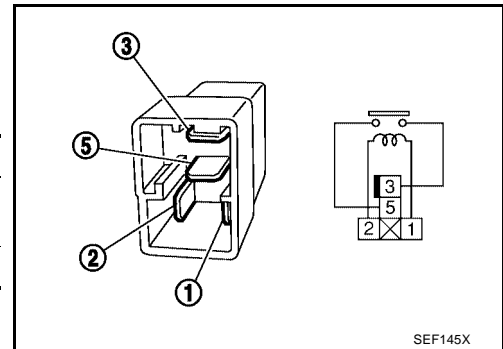
### 1. INSPECTION OF STOP LAMP RELAY

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

EFS0067K

## 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]

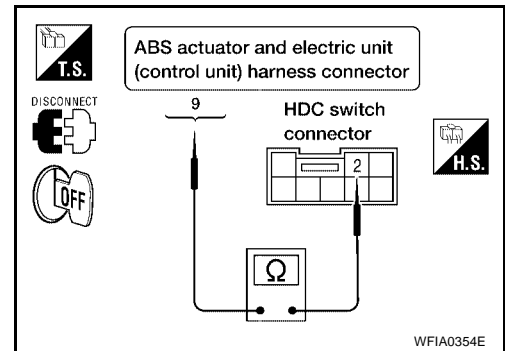
## 2. CHECK HDC SWITCH CIRCUIT

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.



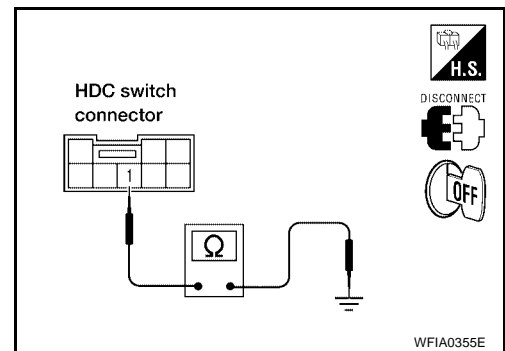
## 3. CHECK HDC SWITCH GROUND

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

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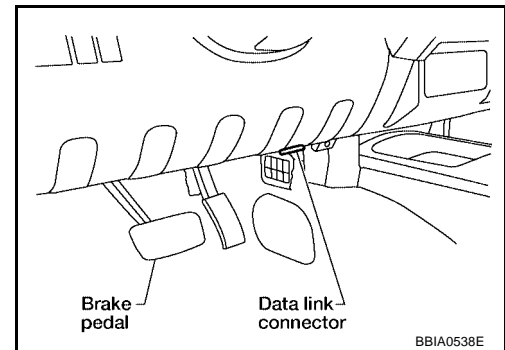
#### Adjustment of Steering Angle Sensor Neutral Position

EFS0067L

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 "START (NISSAN BASED VHCL)", "ABS", "WORK SUPPORT" and "ST ANGLE SENSOR ADJUSTMENT" on CONSULT-II screen in this order.



4. Touch "START".

**CAUTION:**

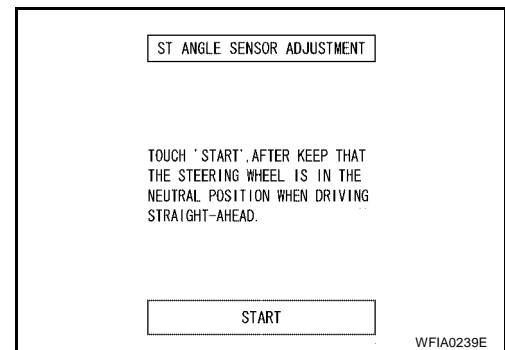
**Do not touch steering wheel while adjusting steering angle sensor.**

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  $0 \pm 3.5$  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

EFS0067M

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 "START (NISSAN BASED VHCL)", "ABS", "WORK SUPPORT" and "DECEL G SEN CALIBRATION" on CONSULT-II screen in this order. Refer to [BRC-93, "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.**

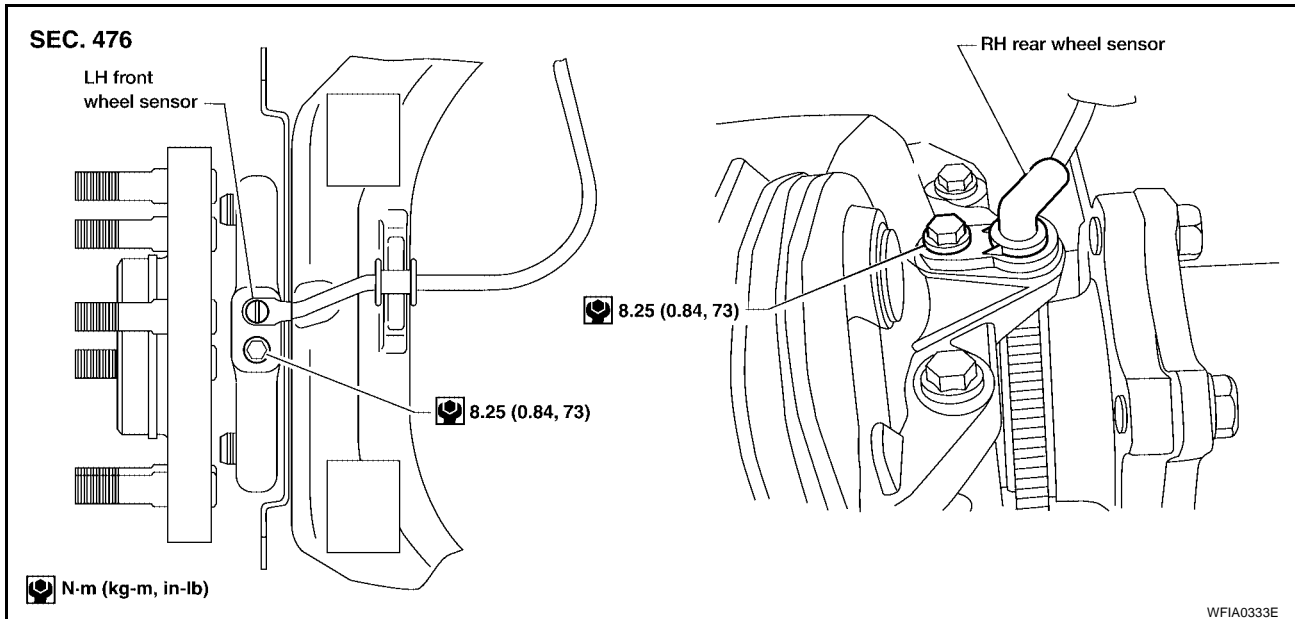
7. Run vehicle with front wheels in straight-ahead position, then stop.
8. Select "DATA MONITOR", "SELECTION FROM MENU", and "DECEL G SEN" on CONSULT-II screen. Then check that "DECEL G SEN" is within  $\pm 0.08G$ . If value is more than specification, repeat steps 3 to 7.
9. Erase memory of ABS actuator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



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## WHEEL SENSORS

### Removal and Installation



#### REMOVAL

1. Remove wheel and tire using power tool.
2. Remove wheel sensor mounting screw.

**NOTE:**

- When removing the front wheel sensor, first remove the disc rotor to gain access to the front wheel sensor mounting bolt. Refer to [BR-25, "Removal and Installation of Brake Caliper and Disc Rotor"](#).
  - When removing rear wheel sensor, first remove spare tire.
3. Pull out the wheel 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.
4. Disconnect wheel sensor harness electrical connector, then remove harness from mounts.

#### INSTALLATION

Installation is in the reverse order of removal. When installing wheel and tire, refer to [WT-7, "Rotation"](#).

**CAUTION:**

- Inspect wheel sensor O-ring, 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.

**NOTE:**

- Apply a coat of suitable grease to the wheel sensor O-ring and mounting hole.
- Tighten wheel sensor bolt to specification.

## SENSOR ROTOR

PFP:47970

### Removal and Installation FRONT

EFS00670

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 side flange from final drive assembly. Refer to [RFD-12, "Removal and Installation"](#).

**CAUTION:**

**Discard side oil seal.**

2. Using tool and a suitable puller, remove sensor rotor from side flange.

**Tool number** : ST30031000 ( — )

#### Installation

1. Install new sensor rotor on side flange using Tools and a press. Make sure sensor rotor is fully seated.

**CAUTION:**

**Do not reuse the old sensor rotor.**

**Tool numbers**

**A: ST30720000 (J-25405)**

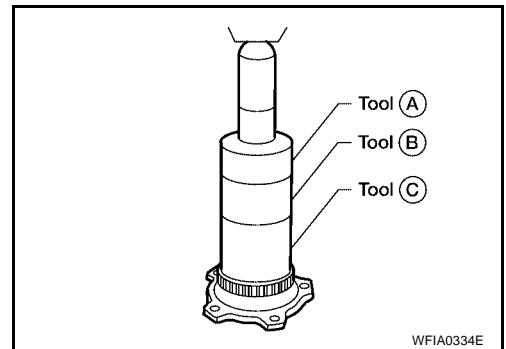
**B: ST27863000 ( — )**

**C: KV40104710 ( — )**

2. Install side flange to final drive assembly. Refer to [RFD-12, "Removal and Installation"](#).

**CAUTION:**

**Do not reuse the side oil seal. The side oil seal must be replaced every time the side flange is removed from the final drive assembly.**



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# ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

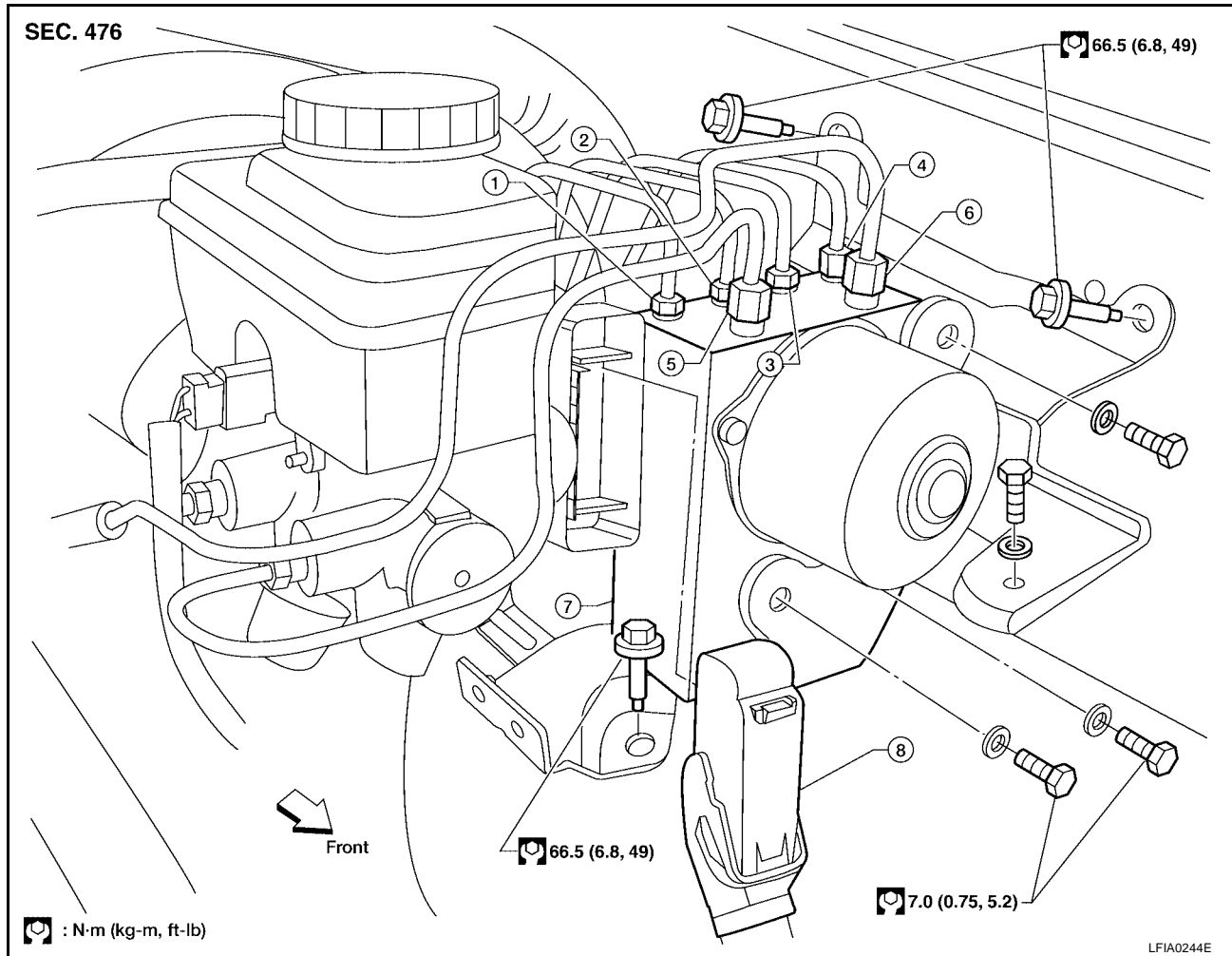
[HDC/HSA/VDC/TCS/ABS]

## ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

PF0:47660

### Removal and Installation

EFS0067P



- |  |  |  |
|--|--|--|
| 1. To rear left disc brake                       | 2. To rear right disc brake                | 3. To front left disc brake              |
| 4. To front right disc brake                     | 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                       |  |

### REMOVAL

1. Disconnect the battery negative terminal.
2. Drain the brake fluid. Refer to [BR-11, "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-13, "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-12, "Bleeding Brake System"](#).

### NOTE:

In the case that ABS actuator and electric unit (control unit) is replaced, make sure to adjust position of steering angle sensor. Refer to [BRC-128, "Adjustment of Steering Angle Sensor Neutral Position"](#).

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## STEERING ANGLE SENSOR

PF2:25554

### Removal and Installation

EF500670

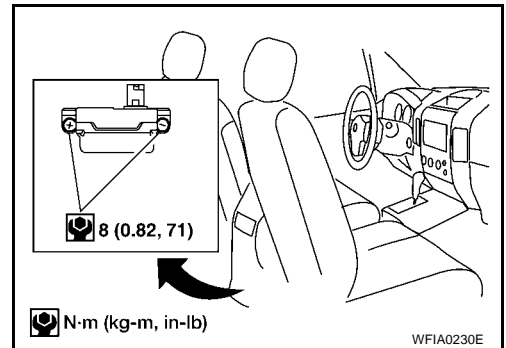
The steering angle sensor is an integral part of the spiral cable. Refer to [SRS-47, "Removal and Installation"](#) .

**CAUTION:**

In the case that the ABS actuator and electronic unit (control unit) is replaced, make sure to adjust position of steering angle sensor. Refer to [BRC-128, "Adjustment of Steering Angle Sensor Neutral Position"](#) .

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

1. Remove center console. Refer to [IP-16, "CENTER CONSOLE"](#) .
  2. Remove yaw rate/side/decel G sensor 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-128, "Calibration of Decel G Sensor"](#) .

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