

# 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.

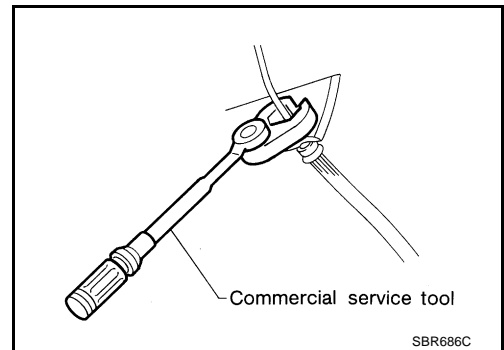
**WARNING:**

- 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**

EFS004YG

- Recommended fluid is brake fluid “DOT 3”.
- Do not reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas. If brake fluid is splashed, wipe it off and flush area with water immediately.
- Do not use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use flare nut wrench when removing brake tube and use flare nut torque wrench when installing brake tube.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Before working, turn ignition switch OFF and disconnect connector of VDC/TCS/ABS control unit or battery negative terminal.
- When installing brake piping, be sure to check torque.



**WARNING:**

Clean brakes with a vacuum dust collector to minimize risk of health hazard from powder caused by friction.

**Precautions for Brake Control**

EFS004YH

- Just after starting vehicle after ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine room. This is a normal status of operation check.
- When an error is indicated by ABS or another warning lamp, collect all necessary information from customer (what symptoms are present under what conditions) and check for simple causes before starting diagnostic servicing. Besides electrical system inspection, check booster operation, brake fluid level, and oil leaks.
- If tire size and type are used in an improper combination, or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- If there is a radio, antenna, or antenna lead-in wire (including 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, and improper wiring.

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## PRECAUTIONS

[VDC/TCS/ABS]

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- If non-standard suspension parts (shock absorber, strut, spring, bushing, etc.) and reinforcements (roll bar, tower bar, etc.) are attached, or if suspension parts deteriorate significantly, VDC may not operate normally, VDC OFF indicator lamp and SLIP indicator lamp may turn on.
  - If non-standard engine components (muffler, etc.) are attached, VDC may not operate normally, VDC OFF indicator lamp and SLIP indicator lamp may turn on.

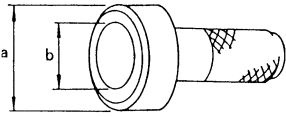
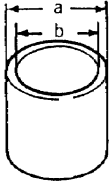
**PREPARATION**

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**Special Service Tools**

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

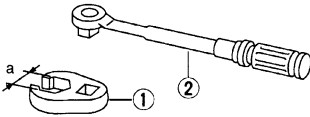
Tool number (Kent-Moore No.) Tool name	Description
ST3072000 (J25405) Drift a: 76.5 mm (3.012 in) dia. b: 55.0 mm (2.17 in) dia.	 <p style="text-align: right;">ZZC0760D</p> Installing rear sensor rotor.
ST27863000 (—) Drift a: $\phi$ 75 mm (2.95 in) dia. b: $\phi$ 62 mm (2.44 in) dia.  KV40104710 (—) Drift a: $\phi$ 76 mm (2.99 in) dia. b: $\phi$ 68.5 mm (2.697 in) dia.	 <p style="text-align: right;">ZZA0832D</p> Installing rear sensor rotor.

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**Commercial Service Tools**

EF50020D

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

ON-VEHICLE SERVICE

PFP:00000

Adjustment of Steering Angle Sensor Neutral Position

EFS004Y1

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

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

×: Required

–: Not required

**CAUTION:**

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

1. Stop vehicle with front wheels in straight-ahead position.
2. Connect CONSULT-II and CONSULT-II converter to data link connector on vehicle.
3. Turn ignition switch ON (do not start engine) and touch “ABS”, “WORK SUPPORT” and “ST ANGLE SENOR ADJUSTMENT” on CONSULT-II screen in this order.

4. Touch “START”.

**CAUTION:**

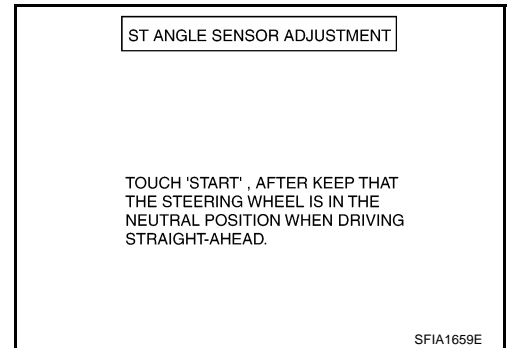
Do not touch steering wheel while adjusting steering angle sensor.

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:**

Be sure to perform above operation.

7. Run vehicle with front wheels in straight-ahead position, then stop.
8. Select “DATA MONITOR”, “ECU INPUT SIGNALS”, and “STR ANGLE SIG” on CONSULT-II screen. Then make sure that “STR ANGLE SIG” is within  $0 \pm 2.5^\circ$ . If value is more than specification, repeat steps 1 to 7.
9. Erase memory of VDC/TCS/ABS control unit and ECM. Refer to [BRC-25, "Erase memory"](#) , [EC-93, "TROUBLE DIAGNOSIS"](#) .
10. Turn ignition switch OFF.

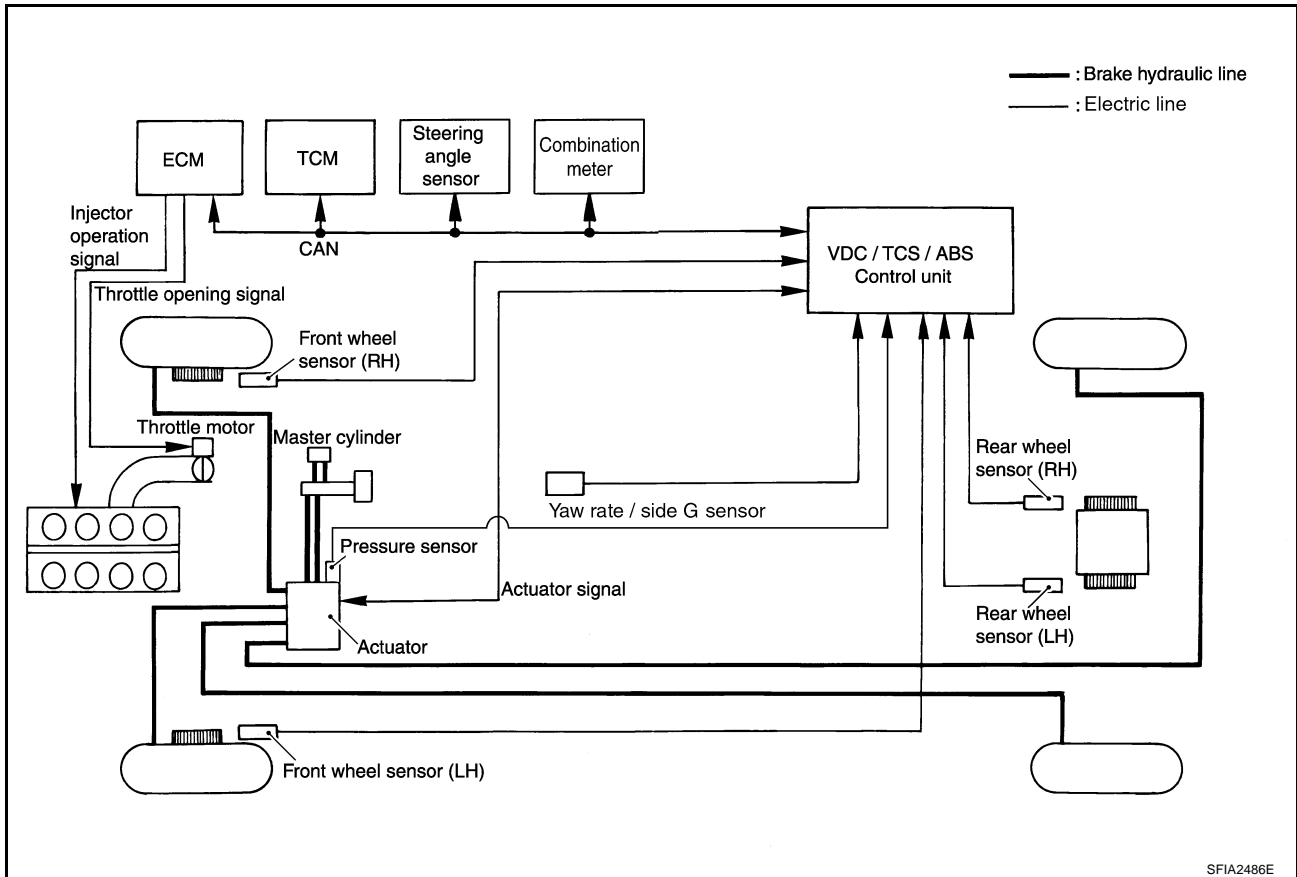


SYSTEM DESCRIPTION

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System Diagram

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Functions

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VDC

- In addition to TCS/ABS function, VDC detects driver's steering operation amount and brake pedal travel from steering angle sensor and pressure sensor. Using information from yaw rate/side G sensor and wheel sensor, VDC judges driving condition (conditions of under steer and over steer) to improve stability by controlling brake application to 4 wheels and engine output.
- During VDC operation, SLIP indicator lamp flashes to inform driver of VDC operation.
- Electrical System Diagnosis by CONSULT-II is available.

TCS

- VDC/TCS/ABS control unit detects a spin at drive wheels by comparing wheel speed signals from all 4 wheels. At this time, output from control unit controls brake fluid pressure to both LH and RH rear wheels while cutting fuel to engine and closing throttle valve to reduce engine torque. Furthermore, throttle position is continuously controlled to insure appropriate engine torque at all times.
- During TCS operation, it informs driver of system operation by flashing SLIP indicator lamp.
- Electrical System Diagnosis by CONSULT-II is available.

ABS

- The Anti-Lock Brake System is a function that detects wheel revolution while braking, and it improves handling stability during sudden braking by electrically preventing 4 wheels lock. Maneuverability is also improved for avoiding obstacles.
- Electrical System Diagnosis by CONSULT-II is available.

EBD

- Electronic Brake Distributor is a function that detects subtle slippages between the front and rear tire during braking, and it improves handling stability by electronically controlling the brake fluid pressure which results in reduced rear tire slippage.

- Electrical System Diagnosis by CONSULT-II is available.

## Operation that is not "System Error"

EFS004YL

### VDC

- During VDC operation, body and brake pedal lightly vibrate and mechanical noises may be heard. This is normal.
- If vehicle is rotated on turn table, or rolled and rocked on ship, ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp may turn on. In this case, start engine on normal road again. If ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp turn off after restart, it is normal.
- When starting TCS or VDC under rapid acceleration or hard turn, operating noise by brake pedal is generated. However, this is not abnormal. This is because TCS and VDC are functioning normally.
- When driving in steep slope such as bank, ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp may turn on. In this case, start engine on normal road again. If ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp turn off after restart, it is normal.
- A malfunction oriented Yaw rate / side G sensor may occur under hard turn like spin turn, rapid acceleration turn, drift run, etc when VDC function is OFF(VDC OFF switch on). It is not abnormal if it is possible to return to a normal position after restarting engine. Then erase the memory of Self-Diagnosis. Refer to [BRC-25, "Erase memory"](#) .

### TCS

- During TCS operation, body and brake pedal lightly vibrate and mechanical noises may be heard. This is normal.
- Depending on road circumstances, driver may have a sluggish feel. This is normal, because optimum traction has highest priority under TCS operation.
- When vehicle is passing through a road where surface friction coefficient varies, downshifting or depressing accelerator pedal fully may activate TCS temporarily.

### ABS

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

## Fail-Safe Function

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### VDC/TCS SYSTEM

In case of VDC/TCS 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 VDC/TCS equipment. In case of electrical malfunction with the VDC/TCS system, the ABS control continues to operate normally without VDC/TCS control.

#### CAUTION:

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

### ABS, EBD SYSTEM

In case of electrical incidents with the ABS, ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp will turn on. In case of electrical incidents with EBD, ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp will turn on. Simultaneously, the VDC/ TCS/ABS become one of the following conditions of the Fail-Safe function.

1. For ABS malfunction, only the EBD is activated and the condition of the vehicle is the same condition of vehicles without VDC/TCS/ABS equipment.

#### NOTE:

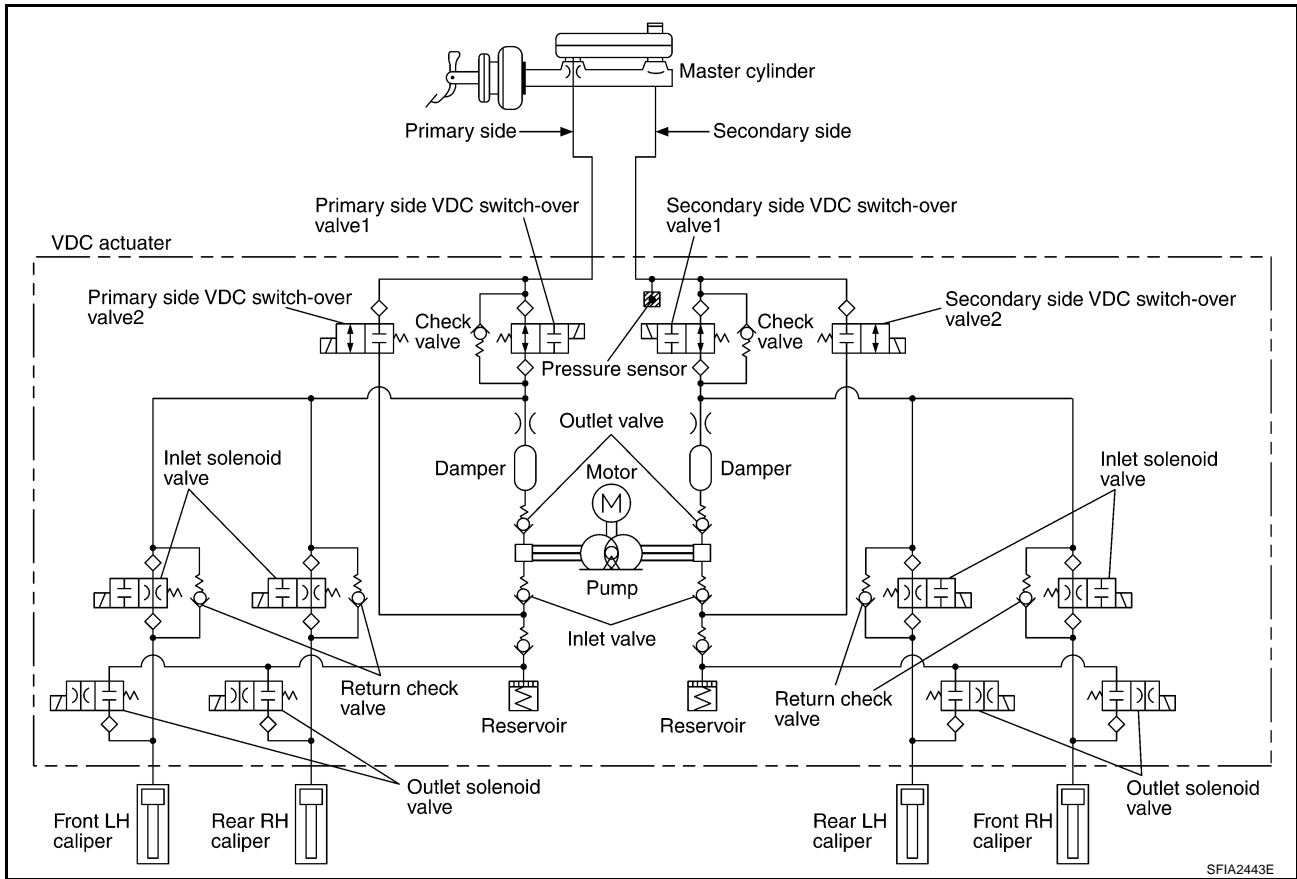
In condition 1 described above, an ABS self diagnosis sound may be heard. That is a normal condition because a self diagnosis for "Ignition Switch ON" and "the First Starting" are being performed.

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 VDC/TCS/ABS, EBD equipment.



Hydraulic Circuit Diagram

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## CAN COMMUNICATION

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### System Description

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CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. Refer to [LAN-36. "CAN Communication Unit"](#).

## TROUBLE DIAGNOSIS

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## How to Perform Trouble Diagnosis For Quick and Accurate Repair

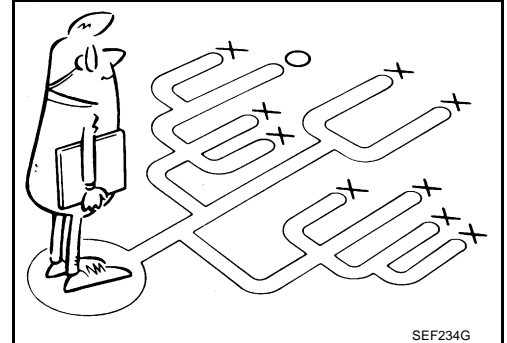
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## INTRODUCTION

- Most important point to perform diagnosis is to understand systems (control and mechanism) in vehicle thoroughly.
- It is also important to clarify customer complaints before inspection.  
First of all, reproduce symptom, and understand it fully.  
Ask customer about his/her complaints carefully. In some cases, it will be necessary to check symptom by driving vehicle with customer.

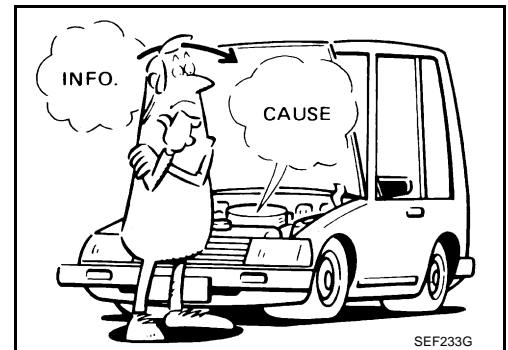
**NOTE:**

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



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- It is essential to check symptoms right from beginning in order to repair a malfunction completely.  
For an intermittent malfunction, it is important to reproduce symptom based on interview with customer and past examples. Do not perform inspection on ad hoc basis. Most intermittent malfunctions are caused by poor contacts. In this case, it will be effective to shake suspected harness or connector by hand. When repairs are performed without any symptom check, no one can judge if malfunction has actually been eliminated.
- After diagnosis, make sure to perform "erase memory". Refer to [BRC-25, "Erase memory"](#) .
- For an intermittent malfunction, move harness or harness connector by hand to check poor contact or false open circuit.
- Always read "GI section" to confirm general precautions. Refer to [GI-4, "General Precautions"](#) .



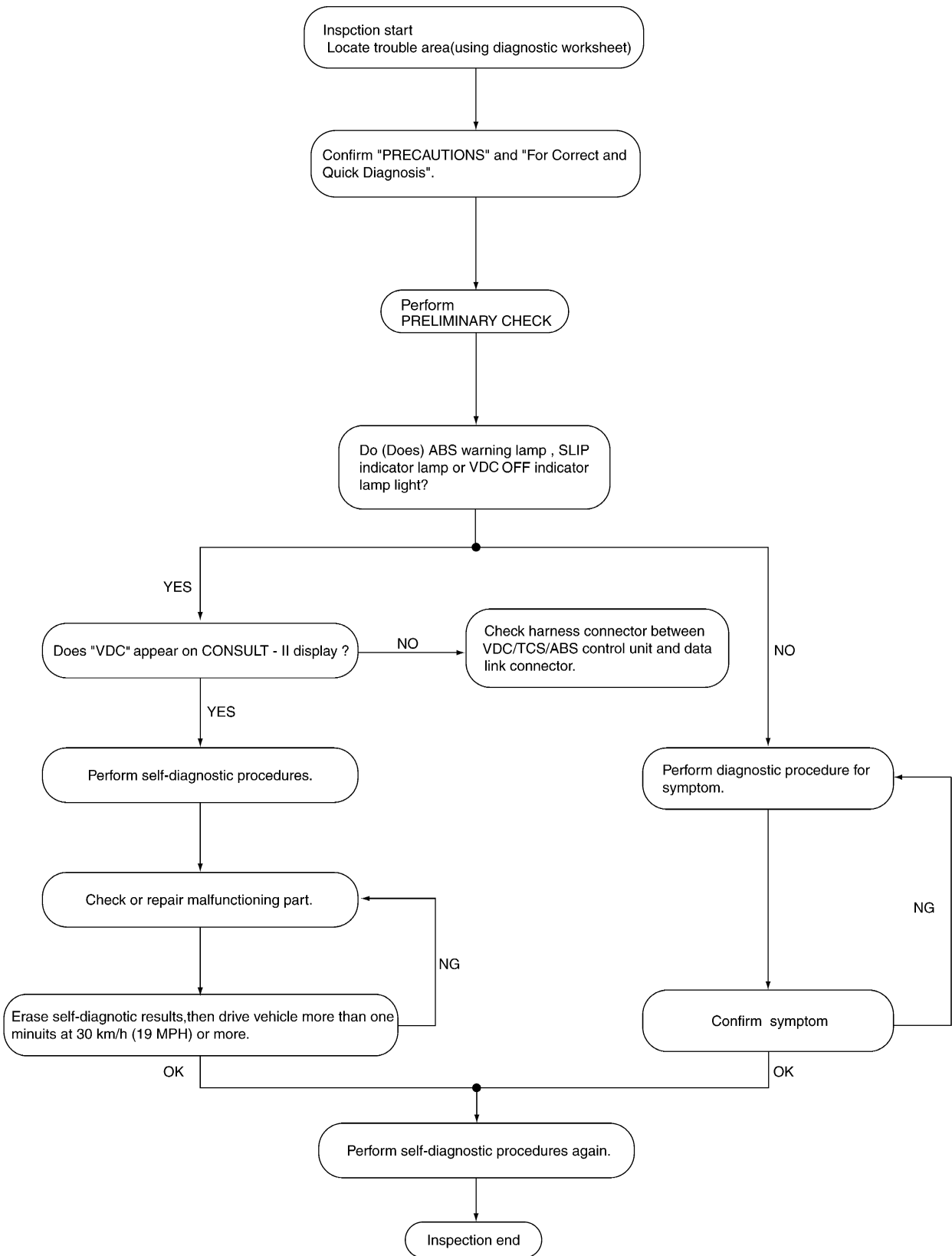
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## DIAGNOSIS FLOW CHART



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## ASKING COMPLAINTS

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

**KEY POINTS**

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

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## EXAMPLE OF DIAGNOSIS SHEET

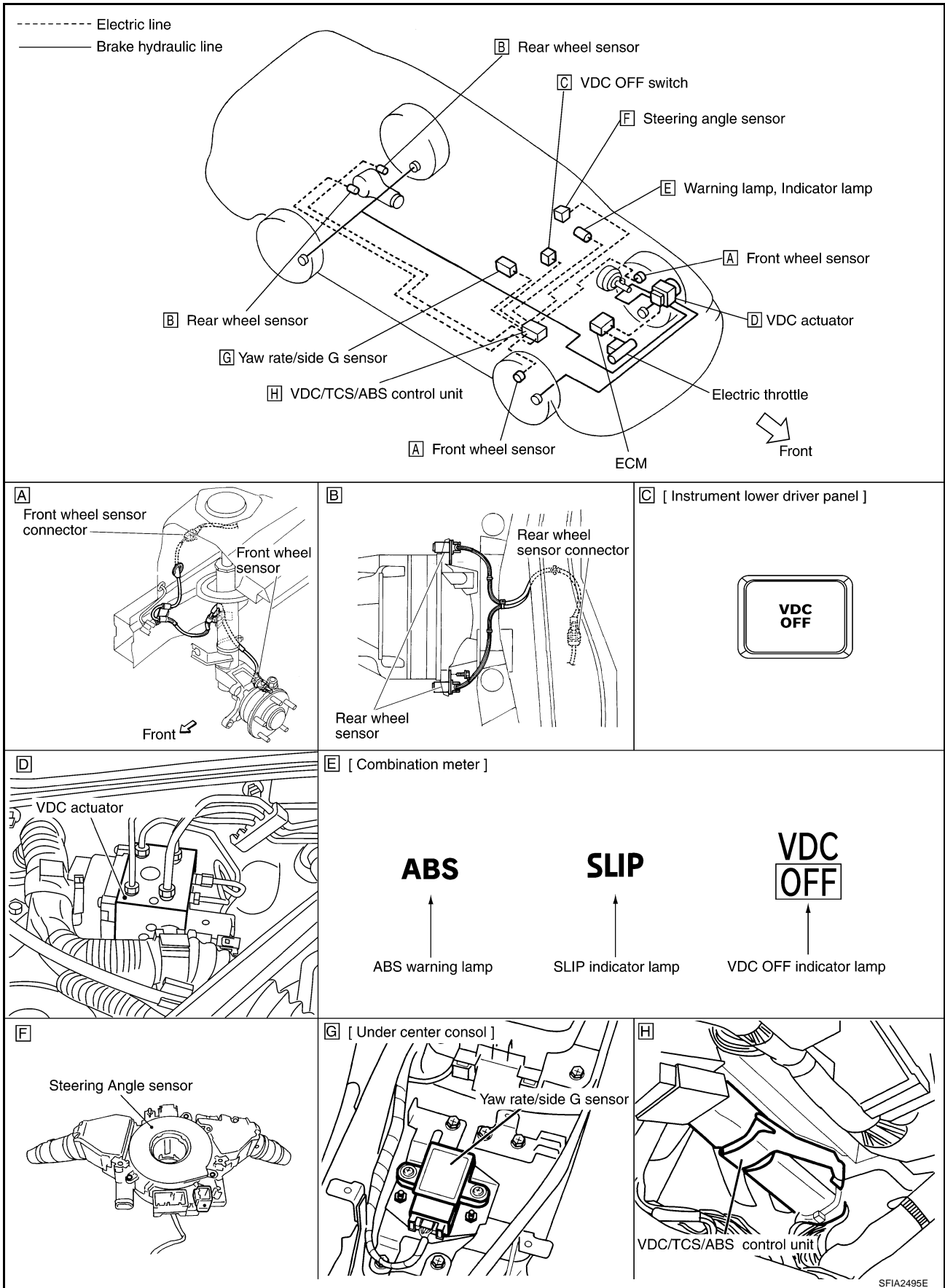
Customer name MR/MS	Model & Year	VIN	
Engine #	Trans.	Mileage	
Incident Date	Manuf. Date	In Service Date	
Symptoms	<input type="checkbox"/> Noise and vibration (from engine compartment) <input type="checkbox"/> Noise and vibration (from axle)	<input type="checkbox"/> Warning / Indicator activate	<input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

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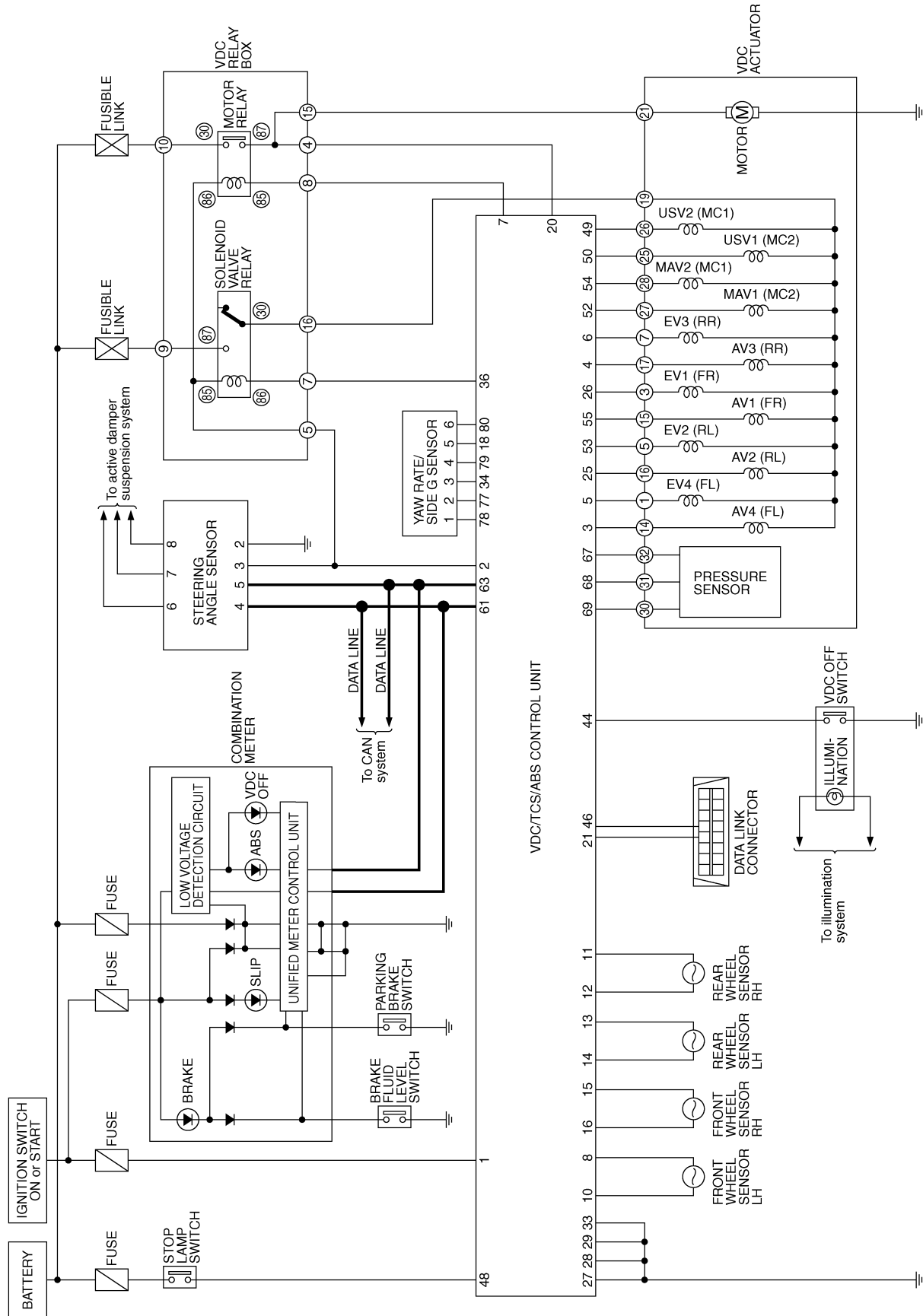
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### Component Installation Location



Schematic

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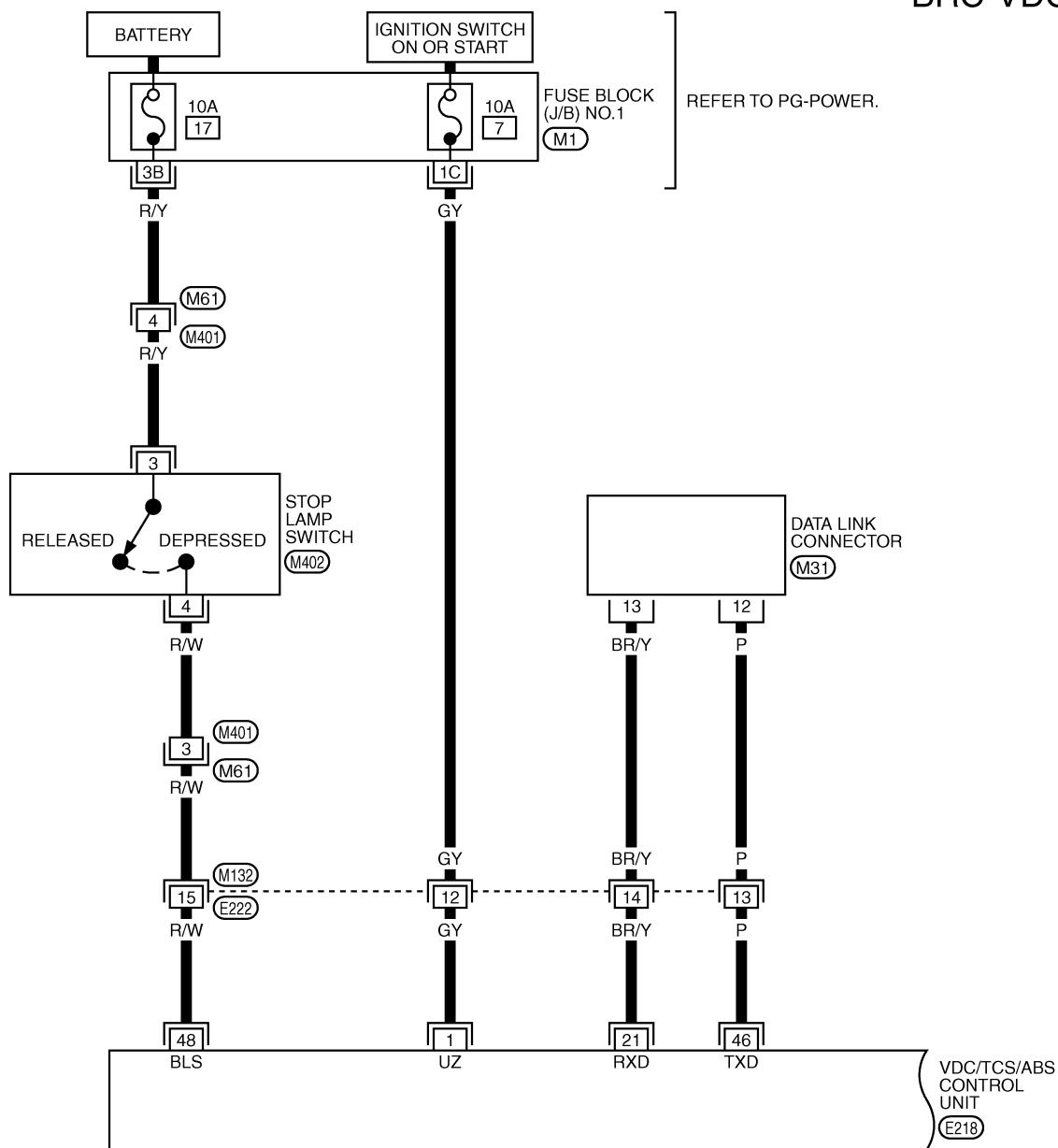
# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

## Wiring Diagram — VDC —

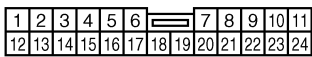
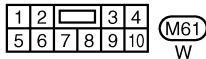
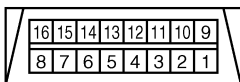
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BRC-VDC-01



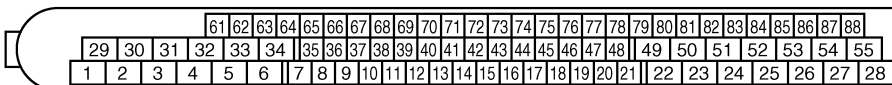
REFER TO PG-POWER.

VDC/TCS/ABS CONTROL UNIT (E218)



REFER TO THE FOLLOWING.

(M1) - FUSE BLOCK-JUNCTION BOX (J/B) NO.1



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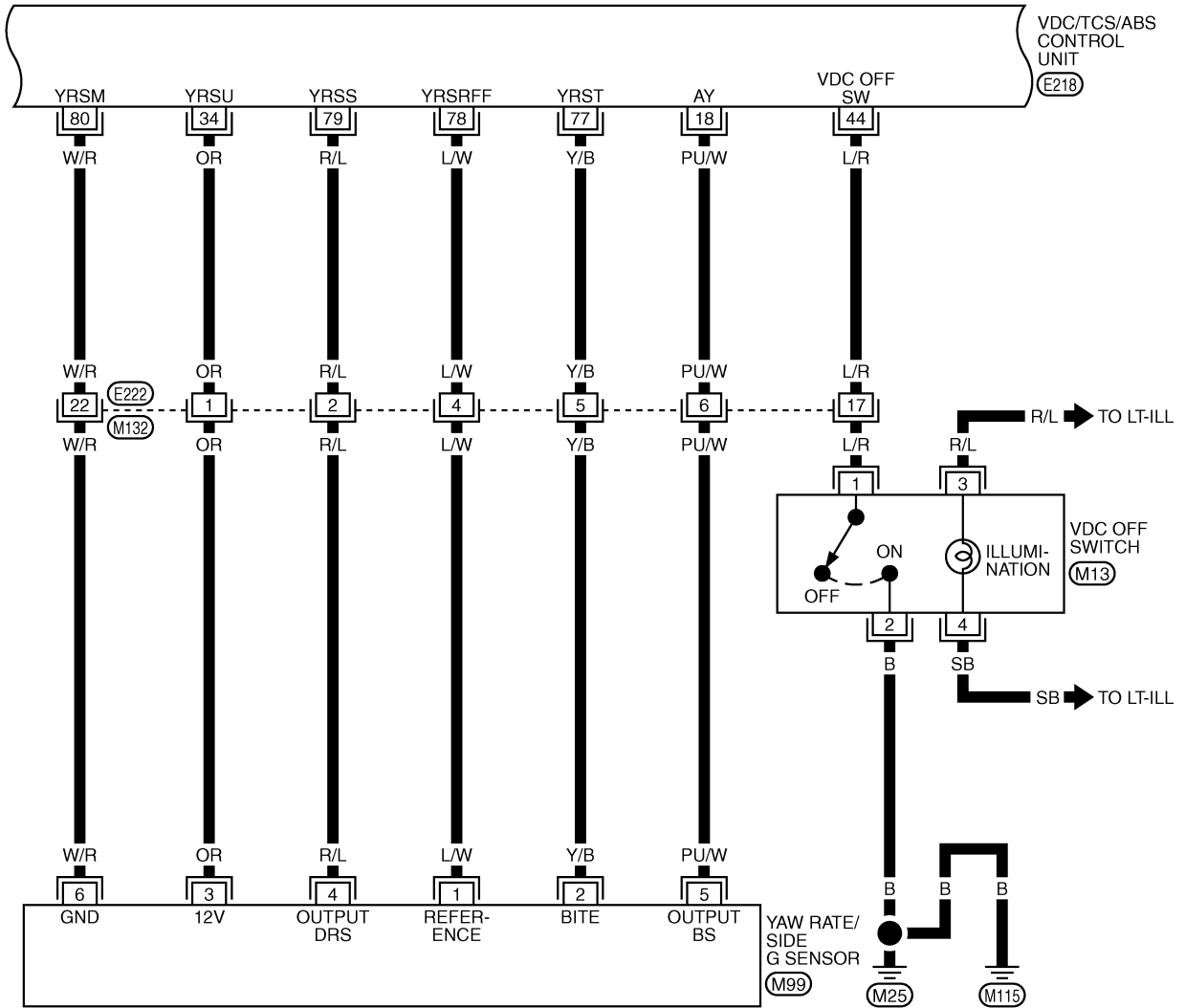


# TROUBLE DIAGNOSIS

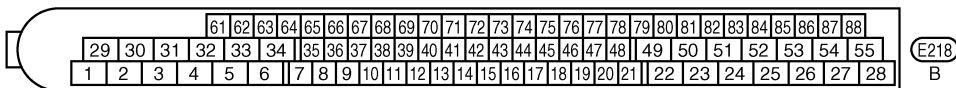
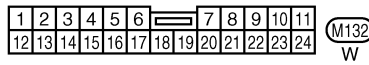
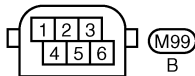
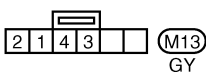
[VDC/TCS/ABS]

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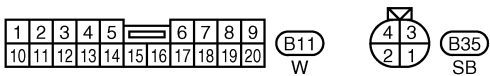
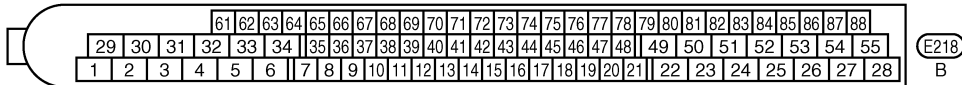
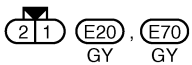
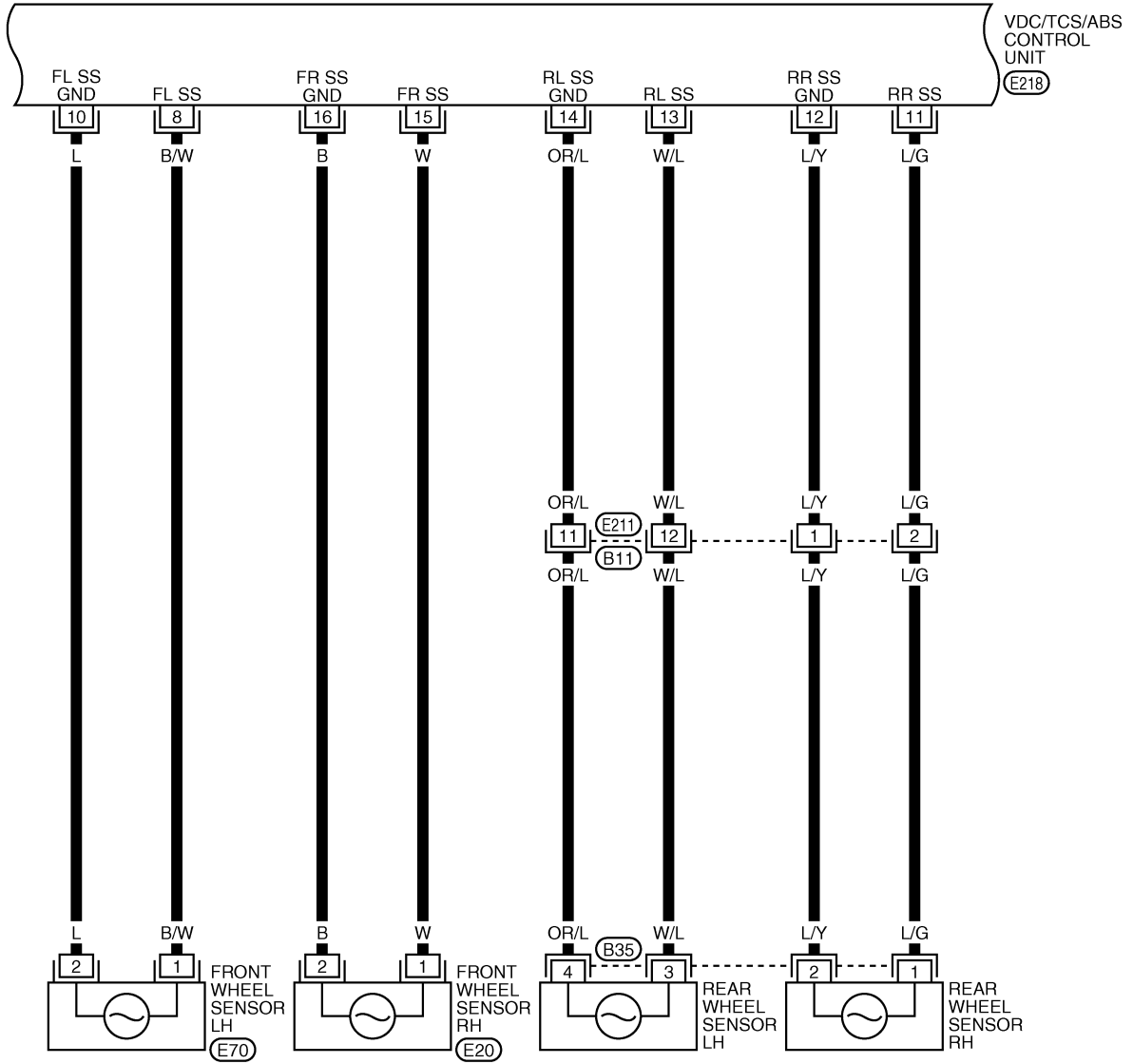


TFWM0088E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-03



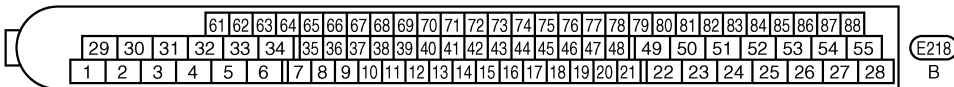
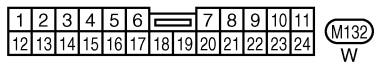
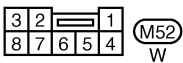
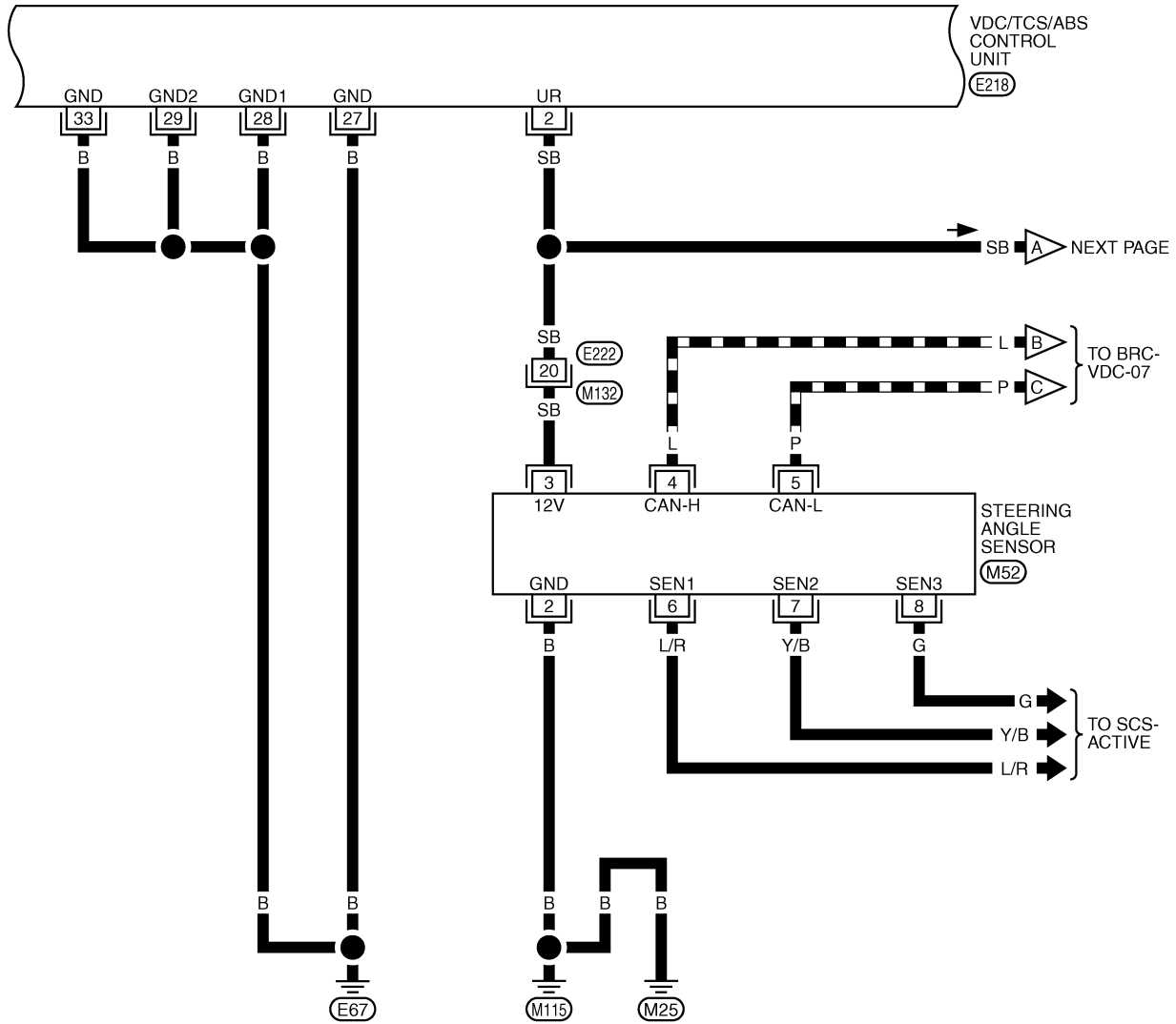
TFWM0089E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-04

▬ : DATA LINE

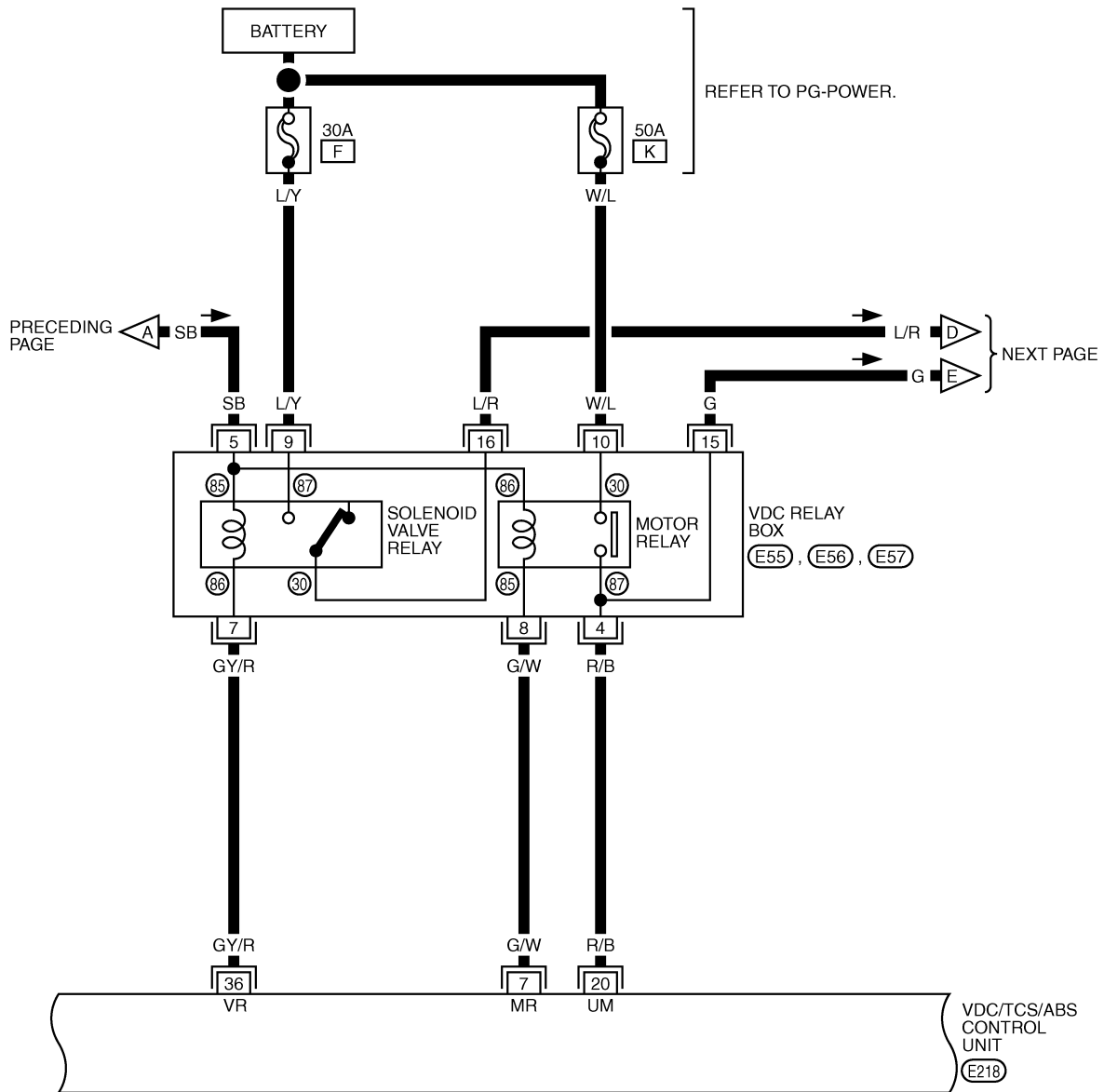


TFWM0090E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-05



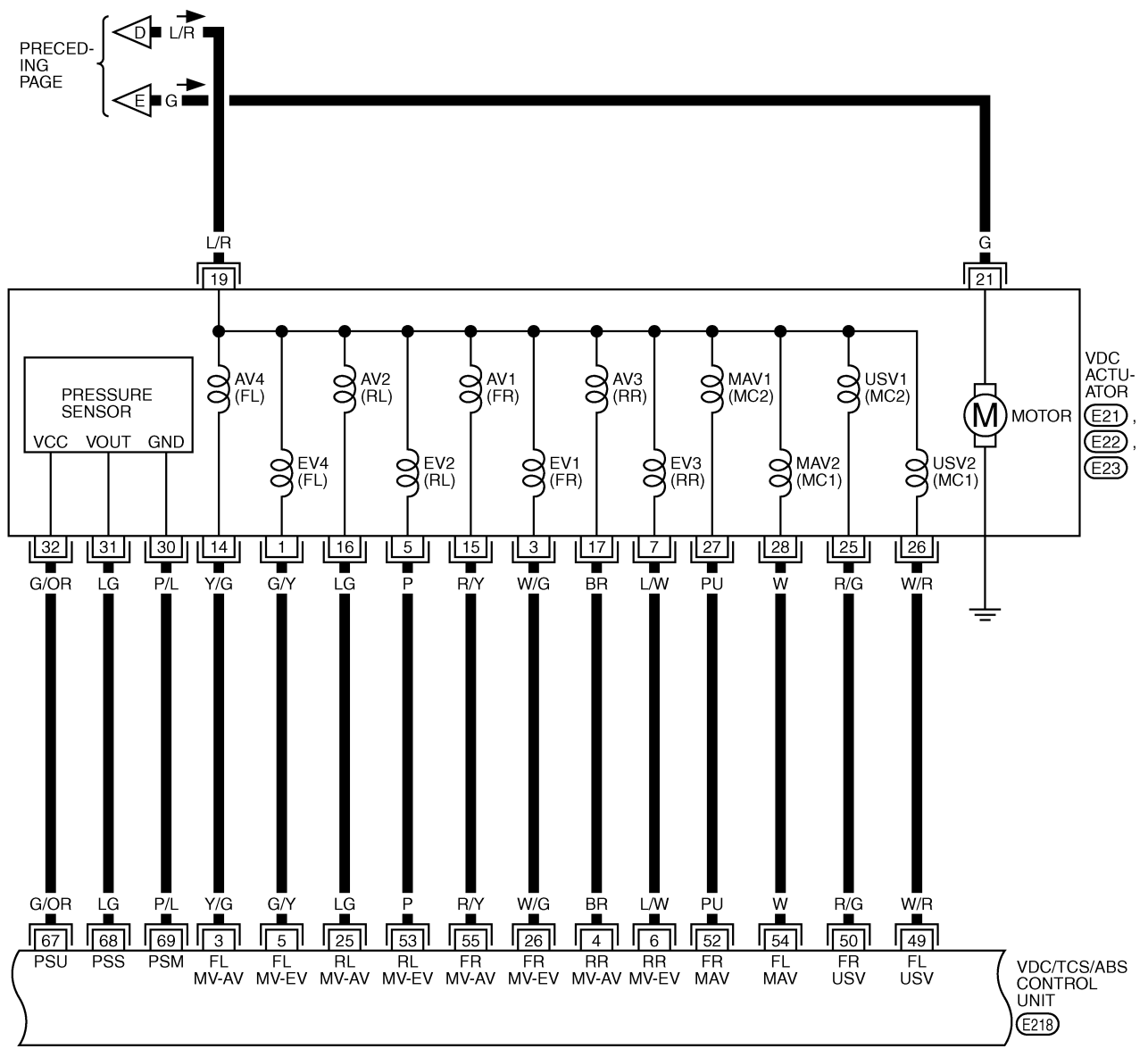
TFWM0091E

# TROUBLE DIAGNOSIS

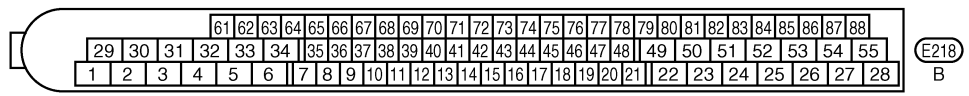
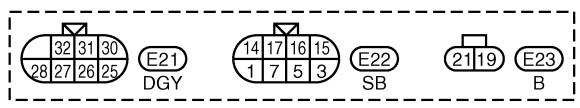
[VDC/TCS/ABS]

BRC-VDC-06

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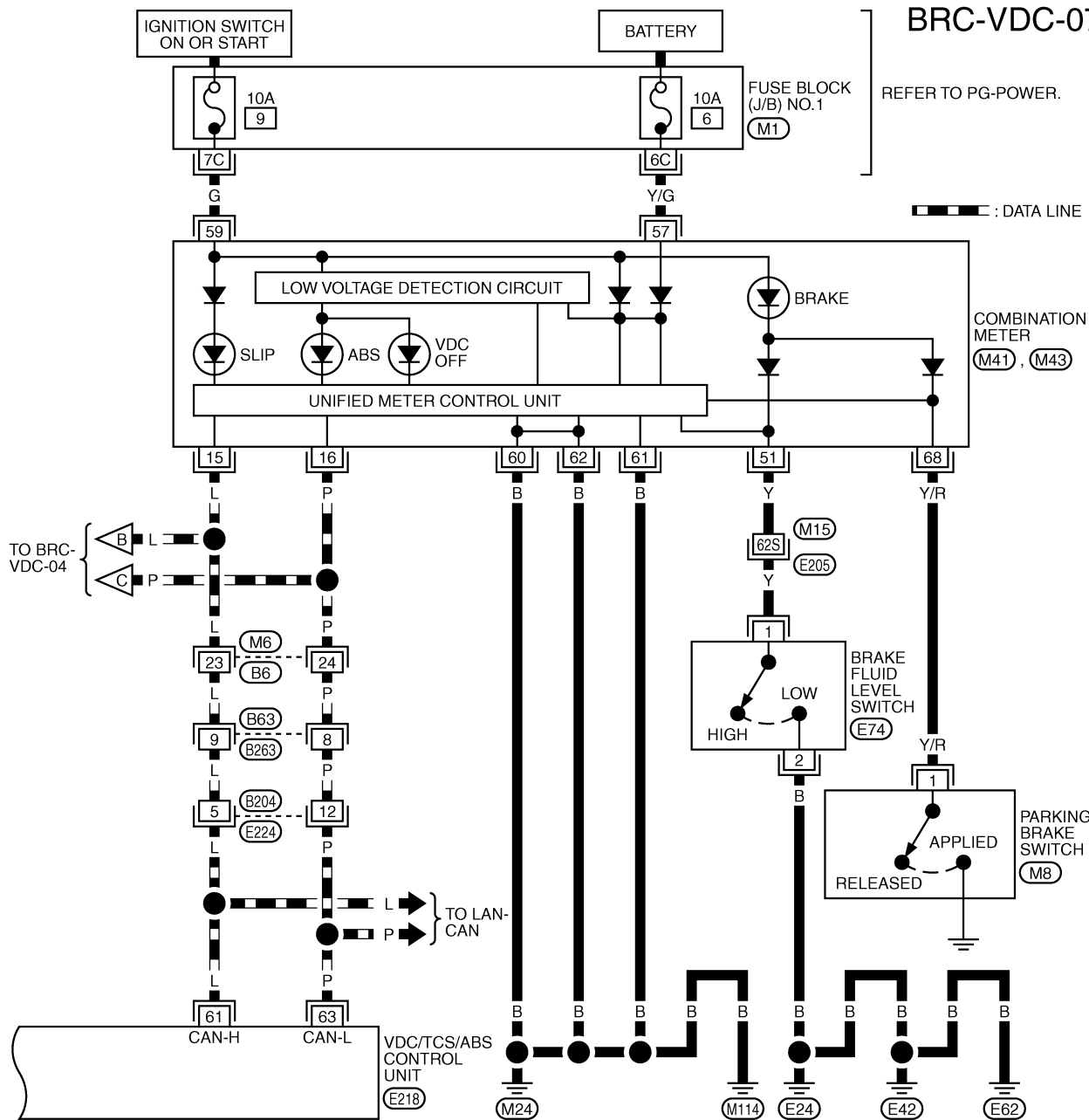


TFWM0092E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-07



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

(M6) GY  
(M8) B

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

(M41) BR  
(M43) W  
(E74) GY

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

(E218) B

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

(E224) W

1	2	3	4		
5	6	7	8	9	10

(B63) W

REFER TO THE FOLLOWING.

- (E205) -SUPER MULTIPLE JUNCTION (SMJ)
- (M1) -FUSE BLOCK-JUNCTION BOX (J/B) NO.1

TFWM0093E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

## Control Unit Input/Output Signal Standard STANDARDS BY CONSULT-II

EF5001Z8

### CAUTION:

Items displayed are data calculated by control unit and may indicate normal operation even if output circuit (harness) is open or shorted.

Monitor item	Display content	Data monitor		Note: Error inspection checklist
		Condition	Reference value in normal operation	
N-POSITION SIGNAL	Conditions of N, R and P position signals	N position	ON	<a href="#">BRC-53. "Inspection 12 Park/Neutral Position Switch System"</a>
		Any position other than N	OFF	
R-POSITION SIGNAL		When R position	ON	
		Not R position	OFF	
P-POSITION SIGNAL		When P position	ON	
		Not P position	OFF	
GEAR POSITION	A/T gear position	1st gear	1	—
		2nd gear	2	
		3rd gear	3	
		4th gear	4	
		5th gear	5	
VHCL SPEED	Wheel speed	Vehicle stopped	0 [km/h]	<a href="#">BRC-35. "Inspection 1 Wheel Sensor System"</a>
		Vehicle running (Note 1)	Almost in accordance with speedometer display (within ±10 %)	
THRTL OPENING	Throttle actuator opening/closing is displayed (linked with accelerator pedal).	Accelerator pedal not depressed (ignition switch is ON)	0 %	<a href="#">BRC-38. "Inspection 2 Engine System"</a>
		Depress accelerator pedal (ignition switch is ON)	0 to 100 %	
ENGINE RPM	With engine running	With engine stopped	0 rpm	Almost in accordance with tachometer display
		Engine running		
STEERING ANGLE SIG	Steering angle detected by steering angle sensor	Straight-ahead	Approx. 0°	<a href="#">BRC-40. "Inspection 5 Steering Angle Sensor System"</a>
		Steering wheel turned	-720 to 720°	
YAW RATE SEN	Yaw rate detected by yaw rate sensor	Vehicle stopped	Approx. 0 d/s	<a href="#">BRC-42. "Inspection 6 Yaw Rate/Side G Sensor System"</a>
		Vehicle running	-70 to 70 d/s	
SIDE G-SEN	Transverse G detected by side G sensor	Vehicle stopped	Approx. 0 m/s <sup>2</sup>	-24.3 to 24.1 m/s <sup>2</sup>
		Vehicle running		
PRESS SENSOR	Brake fluid pressure detected by pressure sensor	With ignition switch turned ON and brake pedal released	Approx. 0 bar	<a href="#">BRC-38. "Inspection 4 Pressure Sensor System"</a>
		With ignition switch turned ON and brake pedal depressed	-40 to 300 bar	
ABS CONT VOLT	Battery voltage supplied to VDC/TCS/ABS control unit	Ignition switch ON	10 to 16 V	<a href="#">BRC-51. "Inspection 11 VDC/TCS/ABS Control Unit Power And Ground System"</a>
STOP LAMP SW	Brake pedal operation	Brake pedal depressed	ON	<a href="#">BRC-50. "Inspection 10 Stop Lamp Switch System"</a>
		Brake pedal not depressed	OFF	

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Monitor item	Display content	Data monitor		Note: Error inspection checklist
		Condition	Reference value in normal operation	
PARK BRAKE SW	Parking brake status	Parking brake depressed	ON	<a href="#">BRC-55, "PARKING BRAKE SWITCH"</a>
		Parking brake not depressed	OFF	
OFF SW	OFF switch ON/OFF status	VDC OFF switch on (When VDC OFF indicator lamp is on)	ON	<a href="#">BRC-54, "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	<a href="#">BRC-35, "BASIC INSPECTION 3: ABS WARNING LAMP, VDC OFF INDICATOR LAMP, BRAKE WARNING LAMP AND SLIP INDICATOR LAMP"</a>
		ABS warning lamp off	OFF	
VDC OFF LAMP	VDC OFF indicator lamp status (Note 3)	When VDC OFF indicator lamp is on	ON	<a href="#">BRC-35, "BASIC INSPECTION 3: ABS WARNING LAMP, VDC OFF INDICATOR LAMP, BRAKE WARNING LAMP AND SLIP INDICATOR LAMP"</a>
		When VDC OFF indicator lamp is off	OFF	
EV SIGNAL AV SIGNAL	Solenoid valve operation	Actuator (solenoid) is active ("ACTIVE TEST" with CONSULT-II).	ON	<a href="#">BRC-44, "Inspection 7 Solenoid and VDC Switching Valve System"</a>
		When actuator (solenoid) is not active.	OFF	
USV SIGNAL MAV SIGNAL	VDC switch-over valve status	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-II).	ON	<a href="#">BRC-44, "Inspection 7 Solenoid and VDC Switching Valve System"</a>
		When actuator (switch-over valve) is not active.	OFF	
M/R OUTPUT	Actuator motor and motor relay status (ON/OFF)	When actuator motor and motor relay are active ("ACTIVE TEST" with CONSULT-II).	ON	<a href="#">BRC-46, "Inspection 8 Actuator Motor and Motor Relay System"</a>
		When actuator motor and motor relay are inactive.	OFF	

Note 1: Confirm tire pressure is normal.

Note 2: ON/OFF timing of ABS warning lamp

ON: When ignition switch is turned ON, or when a malfunction is detected.

OFF: After ignition switch is turned ON (when system is in normal operation).

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

ON: When ignition switch is turned ON, or when a malfunction is detected and VDC OFF switch is ON.

OFF: After ignition switch is turned ON (when system is in normal operation.) And when VDC OFF switch is OFF.

## CONSULT-II Functions CONSULT-II MAIN FUNCTION

EFS001Z9

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

Diagnostic test mode	Function	Reference
WORK SUPPORT	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-II.	<a href="#">BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"</a>
SELF-DIAGNOSTIC RESULTS	Self-diagnostic results can be read and erased quickly.	<a href="#">BRC-25, "SELF-DIAGNOSIS"</a>
DATA MONITOR	Input/Output data in the VDC/TCS/ABS control unit can be read.	<a href="#">BRC-28, "DATA MONITOR"</a>



# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Diagnostic test mode	Function	Reference
CAN DIAG SUPPORT MNTR	The results of transmit/receive diagnosis of communication can be read.	<a href="#">LAN-32, "CAN Diagnostic Support Monitor"</a>
ACTIVE TEST	Diagnostic Test Mode in which CONSULT-II drives some actuators apart from the VDC/TCS/ABS control unit and also shifts some parameters in a specified range.	<a href="#">BRC-30, "ACTIVE TEST"</a>
FUNCTION TEST	Conducted by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".	—
ECU PART NUMBER	VDC/TCS/ABS control unit part number can be read.	—

## SELF-DIAGNOSIS

### Description

If a malfunction is detected in system, ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp on meter turn on. In this case, perform self-diagnosis as follows:

### Operation Procedure

1. Perform [BRC-35, "Basic Inspection"](#) using information from customer.
2. After ignition switch is turned OFF, connect CONSULT-II and CONSULT-II CONVERTER to 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 carry out CAN communication.**

3. Start engine and drive at approximately 30 km/h (19MPH) (19MPH) for approximately 1 minute.
4. After stopping vehicle, with engine still idling, touch "START (NISSAN BASED VHCL)", "VDC", and "SELF-DIAG RESULTS" on CONSULT-II screen in this order. If "VDC" is not indicated, go to [GI-38, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

#### CAUTION:

**Just after starting engine, or turning ignition switch ON, "VDC" may not be displayed on system selection screen even if "START (NISSAN BASED VHCL)" is touched. In this case, start self-diagnosis again from step 2. If it cannot be shown after several attempts, VDC/TCS/ABS control unit may have malfunctioned. Repair or replace control unit.**

5. Self-diagnosis result is displayed. (If necessary, touch "PRINT" to print self-diagnosis result.)
  - When "NO FAILURE" is shown, check ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp. Refer to [BRC-34, "For Fast and Accurate Diagnosis"](#).
  - CONSULT-II self-diagnosis results are displayed without regard to occurrence timing. In some cases later ones (timing value is small) appear on next screen.
6. Go to appropriate "Inspection" chart according to "Display Item List", and repair or replace as necessary.
7. Start engine and drive at approximately 30 km/h (19MPH) for approximately 1 minute.

#### CAUTION:

- Check again to make sure that there is no malfunction on other parts.

### Erase memory

1. Turn ignition switch OFF to prepare for erasing memory.
2. Start engine and touch "START (NISSAN BASED VHCL)", "VDC", "SELF-DIAGNOSIS RESULTS", and "ERASE MEMORY" on CONSULT-II screen in this order to erase memory.

#### CAUTION:

**If memory cannot be erased, go to step 3.**

3. Drive vehicle at approximately 30 km/h (19MPH) and check that ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp stay off.

#### CAUTION:

**VDC "OFF" switch should not stay in the "ON" position.**

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

## Display Item List

Diagnostic item	Malfunction is detected when...	Check circuit	
FR LH SENSOR- 1	Circuit of front LH wheel sensor is open		
RR RH SENSOR- 1	Circuit of rear RH wheel sensor is open		
FR RH SENSOR- 1	Circuit of front RH wheel sensor is open		
RR LH SENSOR- 1	Circuit of rear LH wheel sensor is open		
FR LH SENSOR- 2	When the circuit in the front LH wheel sensor is short-circuited. Or when the sensor power voltage is outside the standard. When the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.		
RR RH SENSOR- 2	When the circuit in the rear RH wheel sensor is short-circuited. Or when the sensor power voltage is outside the standard. When the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.		<a href="#">BRC-35, "Inspection 1 Wheel Sensor System"</a> Note 1
FR RH SENSOR- 2	When the circuit in the front RH wheel sensor is short-circuited. Or when the sensor power voltage is outside the standard. When the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.		
RR LH SENSOR- 2	When the circuit in the rear LH wheel sensor is short-circuited. Or when the sensor power voltage is outside the standard. When the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.		
MAIN RELAY	During solenoid valve relay operating with off, when actuator relay turns on, or when control line for relay is shorted to ground.		<a href="#">BRC-46, "Inspection 8 Actuator Motor and Motor Relay System"</a>
	During solenoid valve relay operating with on, when actuator relay turns off, or when control line for relay is open.		
STOP LAMP SW	Stop lamp switch circuit is open.	<a href="#">BRC-50, "Inspection 10 Stop Lamp Switch System"</a>	
PRESS SEN CIRCUIT	Pressure sensor signal line is open or shorted, or pressure sensor is malfunctioning.	<a href="#">BRC-38, "Inspection 4 Pressure Sensor System"</a>	
ST ANGLE SEN CIRCUIT	Neutral position of steering angle sensor is dislocated, or steering angle sensor is malfunctioning.	<a href="#">BRC-40, "Inspection 5 Steering Angle Sensor System"</a>	
YAW RATE SENSOR	Yaw rate sensor is malfunctioning, or the yaw rate sensor signal line is open or shorted.	<a href="#">BRC-42, "Inspection 6 Yaw Rate/Side G Sensor System"</a>	

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Diagnostic item	Malfunction is detected when...	Check circuit	
FR LH IN ABS SOL	When the control unit detects a malfunction in the front left inlet solenoid circuit.	<a href="#">BRC-44, "Inspection 7 Solenoid and VDC Switching Valve System"</a>	
FR LH OUT ABS SOL	When the control unit detects a malfunction in the front left outlet solenoid circuit.		
RR RH IN ABS SOL	When the control unit detects a malfunction in the rear right inlet solenoid circuit.		
RR RH OUT ABS SOL	When the control unit detects a malfunction in the rear right outlet solenoid circuit.		
FR RH IN ABS SOL	When the control unit detects a malfunction in the front right inlet solenoid circuit.		
FR RH OUT ABS SOL	When the control unit detects a malfunction in the front right outlet solenoid circuit.		
RR LH IN ABS SOL	When the control unit detects a malfunction in the rear left inlet solenoid circuit.		
RR LH OUT ABS SOL	When the control unit detects a malfunction in the rear left outlet solenoid circuit.		
PRIMARY SIDE USV CIRCUIT	VDC switch-over solenoid valve 1 on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.		<a href="#">BRC-44, "Inspection 7 Solenoid and VDC Switching Valve System"</a>
SECONDARY SIDE USV CIRCUIT	VDC switch-over solenoid valve 1 on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.		
PRIMARY SIDE HSV CIRCUIT	VDC switch-over solenoid valve 2 on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.		
SECONDARY SIDE HSV CIRCUIT	VDC switch-over solenoid valve 2 on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.		
PUMP MOTOR ACTUATOR RLY	During the actuator motor operating with on, when the actuator motor turns off, or when the control line for motor relay is open.	<a href="#">BRC-46, "Inspection 8 Actuator Motor and Motor Relay System"</a>	
	During the actuator motor operating with off, when the actuator motor turns on, or when the control line for motor relay is shorted to ground.		
LOW POWER VOLTAGE	When the VDC/TCS/ABS control unit power voltage is lower than normal.	<a href="#">BRC-51, "Inspection 11 VDC/TCS/ABS Control Unit Power And Ground System"</a>	
ST ANGLE SEN SIGNAL	Neutral position correction of steering angle sensor is not finished.	<a href="#">BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"</a>	
ST ANG SEN COM CIR	CAN communication line or steering angle sensor has generated an error.	<a href="#">BRC-54, "Inspection 14: CAN Communication Lines System"</a>	
SIDE G-SEN CIRCUIT	Side G sensor is malfunctioning, or signal line of side G sensor is open or shorted.	<a href="#">BRC-42, "Inspection 6 Yaw Rate/Side G Sensor System"</a>	
EMERGENCY BRAKE	VDC/TCS/ABS control unit malfunction (pressure increase is too much or too little.)	<a href="#">BRC-38, "Inspection 3: VDC/TCS/ABS Control Unit Circuit"</a>	
CONTROLLER FAILURE	Internal malfunction of VDC/TCS/ABS control unit	<a href="#">BRC-38, "Inspection 3: VDC/TCS/ABS Control Unit Circuit"</a>	
SHIFT POSITION ERROR	P-position switch stuck to ON or TCM internal malfunction, VDC/TCS/ABS control unit internal malfunction.	<a href="#">BRC-53, "Inspection 12 Park/Neutral Position Switch System"</a>	

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# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Diagnostic item	Malfunction is detected when...	Check circuit
CAN COMM CIRCUIT	<ul style="list-style-type: none"> <li>● CAN communication line is open or shorted.</li> <li>● VDC/TCS/ABS control unit internal malfunction</li> <li>● Battery voltage for EMC is suddenly interrupted for approximately 0.5 seconds or more.</li> </ul>	<a href="#">BRC-54, "Inspection 14: CAN Communication Lines System"</a> Note 2
BR FLUID LEVEL LOW	<ul style="list-style-type: none"> <li>● Brake fluid level drops or communication line between VDC/TCS/ABS control unit and brake fluid level switch is open or shorted.</li> </ul>	<a href="#">BRC-53, "Inspection 13 Brake Fluid Level Switch System"</a>
ENGINE SIGNAL 2-6	<ul style="list-style-type: none"> <li>● Major engine components are malfunctioning.</li> </ul>	<a href="#">BRC-38, "Inspection 2 Engine System"</a>

Note 1. If wheel sensor 2 for each wheel is indicated, check control unit power supply voltage in addition to wheel sensor circuit check.

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

## DATA MONITOR

### Operation Procedure

1. Turn ignition switch OFF.
2. Connect CONSULT-II to and CONSULT-II CONVERTER 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 carry out CAN communication.

3. Turn ignition switch ON.
4. Touch "START (NISSAN BASED VHCL)" on display.
5. Touch "VDC" on display. If "VDC" is not indicated, go to [GI-38, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

**CAUTION:**

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

6. Touch "DATA MONITOR".
7. Return to monitor item selection screen, and touch any of "CONTROL UNIT INPUT ITEM", "MAIN ITEM" or "ITEM MENU SELECTION". Refer to [BRC-28, "Display Item List"](#).
8. Touch "START".
9. Screen of data monitor is displayed.

### Display Item List

Data monitor item (UNIT)	MONITOR ITEM SELECTION			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
N-POSI SIG (ON/OFF)	--	-	×	N position signal status (ON/OFF) judged by the CAN communication signal is displayed.
R-POSI SIG (ON/OFF)	-	-	×	R position signal status (ON/OFF) judged by the CAN communication signal is displayed.
P-POSI SIG (ON/OFF)	-	-	×	P position signal status (ON/OFF) judged by the CAN communication signal is displayed.
GEAR POSITION	×	×	×	Gear position judged by the Park/Neutral position switch signal is displayed.
VHCL SPEED FR (km/h)	×	×	×	Wheel speed calculated by front RH wheel sensor signal is displayed.
VHCL SPEED FL (km/h)	×	×	×	Wheel speed calculated by front LH wheel sensor signal is displayed.

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Data monitor item (UNIT)	MONITOR ITEM SELECTION			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
VHCL SPEED RR (km/h)	×	×	×	Wheel speed calculated by rear RH wheel sensor signal is displayed.
VHCL SPEED RL (km/h)	×	×	×	Wheel speed calculated by rear LH wheel sensor signal is displayed.
THRTL OPENING (%)	×	×	×	Throttle valve open/close status judged by the CAN communication signal is displayed.
ENGINE RPM (rpm)	×	×	×	Engine speed judged by the CAN communication signal is displayed.
START CAN COMM (ON/OFF)	-	-	×	Communication status of CAN communication is displayed.
ASCD SIGNAL (ON/OFF)	-	-	×	ON/OFF status of the VDC/TCS operation signal to ASCD is displayed.
STR ANGLE SIG (°)	×	-	×	Steering angle detected by the steering angle sensor is displayed.
YAW RATE SEN (D/S)	×	-	×	Yaw rate detected by the yaw rate sensor is displayed.
SIDE G-SEN (m/s <sup>2</sup> )	×	-	×	Transverse acceleration detected by the Side G sensor is displayed.
PRESS SENSOR (bar)	×	-	×	Brake fluid pressure detected by the pressure sensor is displayed.
ABS CONT VOLT (V)	×	×	×	Voltage supplied to VDC/TCS/ABS control unit is displayed.
STOP LAMP SW (ON/OFF)	×	×	×	Stop lamp switch (ON/OFF) status is displayed.
PARK BRAKE SW (ON/OFF)	×	-	×	Parking brake 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.
VDC OFF LAMP (ON/OFF)	-	×	×	VDC OFF indicator lamp (ON/OFF) status is displayed.
SLIP LAMP (ON/OFF)	-	-	×	SLIP indicator lamp (ON/OFF) status is displayed.
EV SIGNAL-FL (ON/OFF)	-	×	×	Front LH ABS inlet solenoid valve (ON/OFF) status is displayed.
AV SIGNAL-FL (ON/OFF)	-	×	×	Front LH ABS outlet solenoid valve (ON/OFF) status is displayed.
EV SIGNAL-RR (ON/OFF)	-	×	×	Rear RH ABS inlet solenoid valve (ON/OFF) status is displayed.
AV SIGNAL-RR (ON/OFF)	-	×	×	Rear RH ABS outlet solenoid valve (ON/OFF) status is displayed.
EV SIGNAL-FR (ON/OFF)	-	×	×	Front RH ABS inlet solenoid valve (ON/OFF) status is displayed.
AV SIGNAL-FR (ON/OFF)	-	×	×	Front RH ABS outlet solenoid valve (ON/OFF) status is displayed.
EV SIGNAL-RL (ON/OFF)	-	×	×	Rear LH ABS inlet solenoid valve (ON/OFF) status is displayed.
AV SIGNAL-RL (ON/OFF)	-	×	×	Rear LH ABS outlet solenoid valve (ON/OFF) status is displayed.

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# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Data monitor item (UNIT)	MONITOR ITEM SELECTION			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
USV SIGNAL-P (ON/OFF)	–	×	×	Primary-side USV solenoid valve (ON/OFF) status is displayed.
USV SIGNAL-S (ON/OFF)	–	×	×	Secondary-side USV solenoid valve (ON/OFF) status is displayed.
MAV SIGNAL-P (ON/OFF)	–	×	×	Primary-side MAV solenoid valve (ON/OFF) status is displayed.
MAV SIGNAL-S (ON/OFF)	–	×	×	Secondary-side MAV solenoid valve (ON/OFF) status is displayed.
V/R SIGNAL (ON/OFF)	–	–	×	Solenoid valve relay operation signal (ON/OFF) status is displayed.
M/R OUTPUT (ON/OFF)	–	×	×	Front motor relay activation signal (ON/OFF) status is displayed.
VDC FAIL SIG (ON/OFF)	–	–	×	VDC fuel signal (ON/OFF) status is displayed.
TCS FAIL SIG (ON/OFF)	–	–	×	TCS fuel signal (ON/OFF) status is displayed.
ABS FAIL SIG (ON/OFF)	–	–	×	ABS fuel signal (ON/OFF) status is displayed.
EBD FAIL SIG (ON/OFF)	–	–	×	EBD fuel signal (ON/OFF) status is displayed.
FLUID LEV SW (ON/OFF)	–	–	×	Brake fluid level warning lamp 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.

×: Applicable

–: Not applicable

## ACTIVE TEST

### CAUTION:

- Do not perform active test while driving vehicle.
- Make sure to completely bleed air from brake system.
- Active test cannot be performed when ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp is on.
- ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp turn on during ACTIVE TEST.

## Operation Procedure

1. Connect CONSULT-II and CONSULT-II CONVERTER data link connector and 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 carry out CAN communication.

2. Touch "START (NISSAN BASED VHCL)", "VDC", "ACTIVE TEST" in order on the CONSULT-II screen. If "VDC" is not indicated, go to [G1-38. "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

### CAUTION:

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



# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

## Solenoid Valve Operation Chart

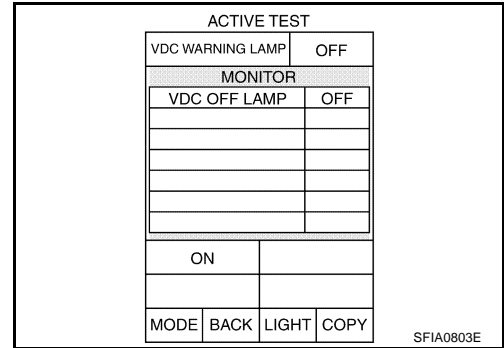
Operation	TEST 1			TEST 2		
	UP	KEEP	DOWN	UP	ACT UP	ACT KEEP
EV SIGNAL FR	OFF	ON	ON	OFF	OFF	OFF
AV SIGNAL FR	OFF	OFF	ON*	OFF	OFF	OFF
USV SIGNAL S	OFF	OFF	OFF	OFF	ON	ON
MAV SIGNAL S	OFF	OFF	OFF	OFF	ON*	OFF

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

### VDC OFF Indicator Lamp

Touch "ON" and "OFF" on the screen. Check that VDC OFF indicator lamp operates as shown in table below.

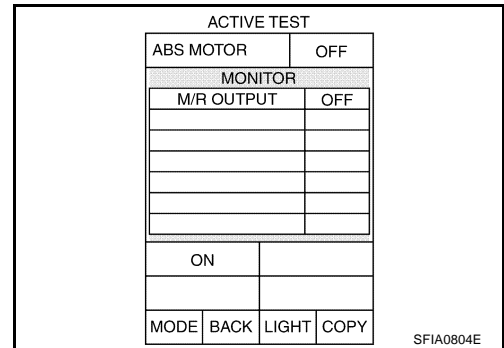
Operation	ON	OFF
VDC OFF LAMP	ON	OFF



### ABS Motor

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

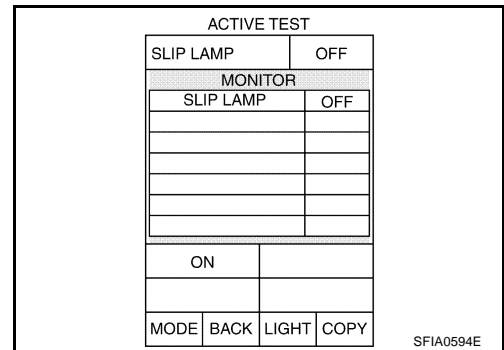
Operation	ON	OFF
M/R OUTPUT	ON	OFF



### SLIP Indicator Lamp

Touch "ON" and "OFF" on the screen. Check that SLIP indicator lamp operates as shown in table below.

Operation	ON	OFF
SLIP LAMP	ON	OFF



### ABS Warning Lamp

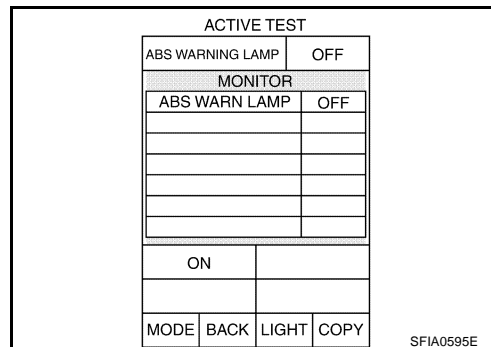
Touch "ON" and "OFF" on the screen. Check that ABS warning lamp operates as shown in table below.



# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Operation	ON	OFF
ABS WARN LAMP	ON	OFF

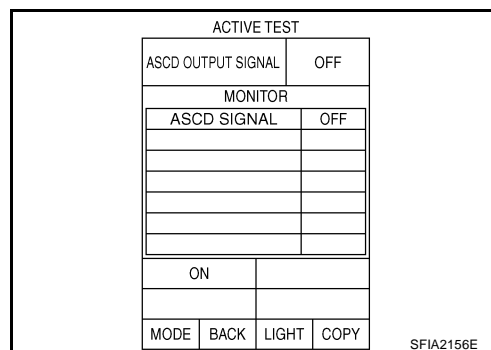


A  
B  
C  
D

## ASCD Output

Touch "ON" and "OFF" on the screen. Check that ASCD output is as shown in table below.

Operation	ON	OFF
ASCD SIGNAL	ON	OFF



**BRC**

E  
G  
H  
I  
J  
K  
L  
M

### For Fast and Accurate Diagnosis

EFS001ZA

#### PRECAUTIONS FOR DIAGNOSIS

- Before performing diagnosis, always read GI section to confirm general precautions. Refer to [GI-3, "PRECAUTIONS"](#) .
- If steering angle sensor, steering system parts, suspension system parts, or tires have been replaced, or if alignment has been adjusted, be sure to adjust neutral position of steering angle sensor before driving. Refer to [BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"](#) .
- When replacing VDC/TCS/ABS control unit, be sure labels on control units are same color.
- After diagnosis is finished, be sure to erase memory. Refer to [BRC-25, "Erase memory"](#) .
- When checking continuity and voltage between units, be sure to check for disconnection, looseness, bend, or collapse of connector terminals. If any malfunction is found, repair or replace connector terminals.
- For intermittent symptoms, possible cause is malfunction in harness, harness connector, or terminals. Move harness, harness connector, and terminals to check for poor connections.
- If a circuit tester is used for the check, be careful not to forcibly extend any connector terminal.
- To use CONSULT-II to perform self-diagnosis of VDC/TCS/ABS control unit, active tests, or work support, first stop work, then connect CONSULT-II and CONSULT-II CONVERTER to data link connector and select "VDC".
- 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.
- While self-diagnosis results of CONSULT-II shows a malfunction, if CONSULT-II active test is performed, an engine system error may be indicated. In this case, start engine to resume normal screen.
- VDC/TCS/ABS system electronically controls brake operation and engine output. Following symptoms may be caused by normal operations:

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

#### ON and OFF Timing for ABS Warning Lamp, VDC OFF Indicator Lamp, and SLIP Indicator Lamp

x: ON    -: OFF

Condition	ABS warning lamp	VDC OFF indicator lamp	SLIP indicator lamp
Ignition SW OFF	-	-	-
When ignition SW is turned ON	x	x	x

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Condition	ABS warning lamp	VDC OFF indicator lamp	SLIP indicator lamp
After ignition switch ON.	–	–	–
VDC OFF switch turned ON. (VDC function is OFF.)	–	×	–
VDC/TCS/ABS error.	×	×	×
When VDC/TCS is not functioning normally.	–	×	×
EBD error.	×	×	×

## Basic Inspection

EFS004YP

### BASIC INSPECTION 1: BRAKE FLUID LEVEL, LEAKAGE AND BRAKE PAD

1. Check fluid level in the brake fluid reservoir tank. Refill the brake fluid if fluid level is low.
2. Check the area around the brake piping and VDC actuator for leakage. If leakage or oozing is detected, check as follows:
  - If actuator connections are loose, tighten piping to the specified torque. Check again for leakage, and make sure that there is no fluid leakage.
  - If the flare nuts at the connections and the threads of the VDC actuator are damaged, replace the damaged parts. Then check again for leakage, and make sure that there is no fluid leak.
  - If leakage or oozing is detected on parts other than VDC actuator connections, wipe with a clean cloth and check again. If there is still leakage or oozing, replace the damaged part.
  - If leakage or oozing is detected on VDC actuator body, wipe with a clean cloth and check again. If there is still leakage or oozing, replace VDC actuator.

#### CAUTION:

**VDC actuator cannot be disassembled.**

3. Check brake disc rotor and pads. Front disc rotor: [BR-27, "DISC ROTOR INSPECTION"](#) , Front pad: [BR-23, "PAD WEAR INSPECTION"](#) , Rear disk rotor: [BR-33, "DISC ROTOR INSPECTION"](#) , Rear pad: [BR-30, "PAD WEAR INSPECTION"](#) .

### BASIC INSPECTION 2: POWER SUPPLY CIRCUIT TERMINAL LOOSENESS AND BATTERY

Check battery for looseness on the battery positive/negative terminal and ground connection. Also make sure that battery voltage does not drop.

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

1. Make sure that when the ignition switch is turned ON, the ABS warning lamp, VDC OFF indicator lamp (when VDC OFF switch is off), and SLIP indicator lamp turn on, and that the brake warning lamp turns on. If they do not turn on, perform CAN communication system diagnosis. Refer to [BRC-54, "Inspection 14: CAN Communication Lines System"](#) . Be sure to check VDC OFF switch before checking VDC OFF indicator lamp. Refer to [BRC-54, "VDC OFF SWITCH"](#) . Check VDC OFF indicator lamp if there is no malfunction in CAN communication system and VDC OFF switch. Refer to [DI-7, "COMBINATION METERS"](#) .
2. Check if the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp turn off after the ignition switch is turned ON, and if the brake warning lamp turns off after the engine is started. If they do not turn off, perform self-diagnosis.
3. With the engine running, make sure that the VDC OFF indicator lamp turns on and off when the VDC OFF switch turns ON and OFF. If it does not operate in accordance with the switch, check the VDC OFF switch system. Refer to [BRC-54, "VDC OFF SWITCH"](#) .
4. Perform self-diagnosis of VDC actuator if ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp do not turn off 10 seconds after engine is started.
5. Always erase self-diagnostic results after completing self-diagnosis. Refer to [BRC-25, "Erase memory"](#) .

#### NOTE:

Brake warning lamp turns on during parking brake operation (when switch is "ON") and brake fluid level switch operation (insufficient brake fluid).

## Inspection 1 Wheel Sensor System

EFS004ZO

After using the CONSULT-II SELF-DIAG RESULTS to determine the location of the malfunctioning wheel sensor, check all areas to determine the component to be replaced.

## INSPECTION PROCEDURE

**1. CHECK TIRE**

Check air pressure, wear and size.

Are air pressure, wear, and size within the standard values?

YES >> GO TO 2.

NO >> Adjust air pressure, or replace tire.

**2. CHECK SENSOR AND SENSOR ROTOR**

- Check the condition of the sensor mount (for looseness, etc.).
- Check the surface of front sensor rotor for damage. Refer to [BRC-64, "SENSOR ROTOR"](#).
- Check rear sensor rotor for damage. Refer to [BRC-64, "SENSOR ROTOR"](#).

OK or NG

OK >> GO TO 3.

NG >> Repair sensor mount or replace sensor rotor.

**3. CHECK SELF-DIAGNOSTIC RESULTS**

Check the self-diagnostic results.

Self-diagnosis results
FR RH SENSOR -1, -2
FR LH SENSOR -1, -2
RR RH SENSOR -1, -2
RR LH SENSOR -1, -2

Is above displayed in the self-diagnosis display item?

YES >> GO TO 4.

NO >> INSPECTION END.

**4. CHECK CONNECTOR**

1. Disconnect VDC/TCS/ABS control unit connector and malfunctioning wheel sensor connector. Check terminal for deformation, open circuit, poor contact, etc., and repair or replace if any malfunctioning condition is found.
2. Reconnect connectors, drive at a speed of approximately 30 km/h (19 MPH) or more for approximately 1 minute, and perform self-diagnosis.

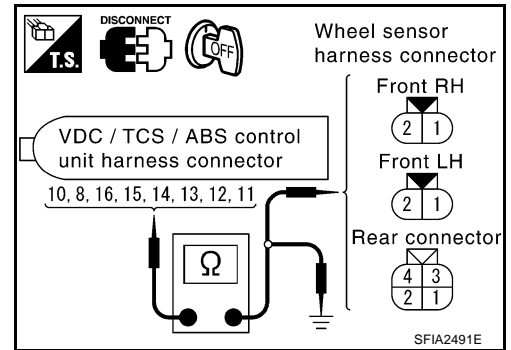
OK or NG

OK >> Connector terminal contact is loose, damaged, open or shorted.

NG >> GO TO 5.

**5. CHECK WHEEL SENSOR HARNESS**

1. Turn ignition switch OFF and disconnect malfunctioning wheel sensor connector and VDC/TCS/ABS control unit harness connector.
2. Check continuity between terminals. (Also check the continuity when steering wheel is turned right and left and when sensor harness inside wheel well is moved.)



Wheel	Power system		Signal system		Ground system	
	VDC/TCS/ABS control unit harness connector E218	Wheel sensor harness connector	VDC/TCS/ABS control unit harness connector E218	Wheel sensor harness connector	VDC/TCS/ABS control unit harness connector E218	Body ground
Front RH (E20)	15 (W)	1 (W)	16 (B)	2 (B)	15 (W), 16 (B)	—
Front LH (E70)	8 (B/W)	1 (B/W)	10 (L)	2 (L)	8 (B/W), 10 (L)	
Rear RH (B35)	11 (L/G)	1 (L/G)	12 (L/Y)	2 (L/Y)	11 (L/G), 12 (L/Y)	
Rear LH (B35)	13 (W/L)	3 (W/L)	14 (OR/L)	4 (OR/L)	13 (W/L), 14 (OR/L)	

- Power system** : Continuity should exist.
- Signal system** : Continuity should exist.
- Ground system** : Continuity should not exist.

OK or NG

OK >> GO TO 6.

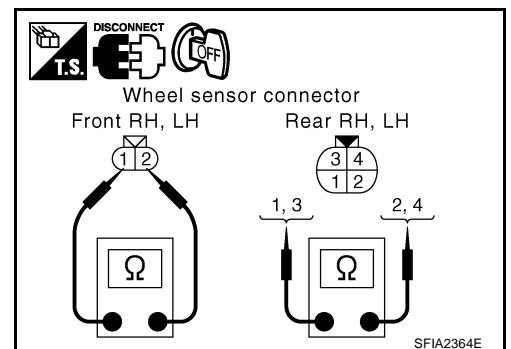
NG >> Repair harness and connector between VDC/TCS/ABS control unit and wheel sensor.

**6. CHECK WHEEL SENSOR POWER SUPPLY CIRCUIT**

1. Check resistance value of malfunctioning wheel sensor.

**Resistance value**

	1	2	0.8-1.85 kΩ
Front RH wheel sensor	1	2	
Front LH wheel sensor	1	2	
Rear RH wheel sensor	1	2	
Rear LH wheel sensor	3	4	



OK or NG

OK >> Replace wheel sensor.

NG >> Replace VDC/TCS/ABS control unit.

**Inspection 2 Engine System**

EFS004Z1

Inspection Procedure

**1. CHECK SELF-DIAGNOSIS RESULTS**

Check self-diagnosis results.

Self-diagnosis results
ENGINE SIGNAL 2
ENGINE SIGNAL 3
ENGINE SIGNAL 4
ENGINE SIGNAL 5
ENGINE SIGNAL 6

Is above displayed in the self-diagnosis display item?

YES &gt;&gt; GO TO 2.

NO &gt;&gt; INSPECTION END.

**2. CHECK ENGINE SYSTEM**

1. Perform ECM self-diagnosis. Repair or replace items indicated, then perform ECM self-diagnosis again.
2. Perform VDC/TCS/ABS control unit self-diagnosis again.

OK or NG

OK &gt;&gt; INSPECTION END.

NG &gt;&gt; Repair or replace items indicated. Then perform self-diagnosis again.

**Inspection 3: VDC/TCS/ABS Control Unit Circuit**

EFS004ZF

Inspection Procedure

**1. CHECK SELF-DIAGNOSTIC RESULTS**

Check self-diagnostic results.

Self-diagnostic results
CONTROLLER FAILURE
EMERGENCY BRAKE

**CAUTION:****Replace VDC/TCS/ABS control unit when self-diagnostic result shows items other than those above.**Is above displayed in the self-diagnosis display item?

YES &gt;&gt; 1. Replace VDC/TCS/ABS control unit, and perform self-diagnosis again.

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

NO &gt;&gt; INSPECTION END.

**Inspection 4 Pressure Sensor System**

EFS004Z3

Inspection Procedure

**1. CHECK SELF-DIAGNOSIS RESULTS**

Check self-diagnosis results.

Self-diagnosis results
PRESS SEN CIRCUIT

Is above displayed in self-diagnosis display item?

YES &gt;&gt; GO TO 2.

NO &gt;&gt; INSPECTION END.

### 2. CHECK CONNECTOR

1. Disconnect VDC actuator connector E21 and VDC/TCS/ABS control unit connector, check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found. repair or replace terminal.
2. Reconnect connectors and Re-perform VDC/TCS/ABS control unit self-diagnosis.

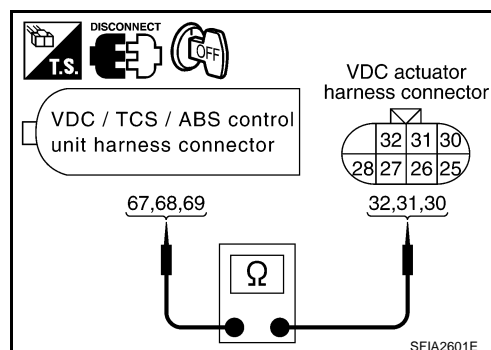
OK or NG

OK >> Connector terminal contact is loose, damaged, open or shorted.

NG >> GO TO 3.

### 3. CHECK PRESSURE SENSOR CIRCUIT

1. Disconnect VDC actuator connector E21 and VDC/TCS/ABS control unit connector.
2. Check continuity between VDC/TCS/ABS control unit harness connector E218 and VDC actuator harness connector E21.



VDC/TCS/ABS control unit (Harness connector E218)	Pressure sensor (VDC actuator harness connector E21)	Continuity
69 (P/L)	30 (P/L)	Yes
68 (LG)	31 (LG)	
67 (G/OR)	32 (G/OR)	

OK or NG

OK >> GO TO 4.

NG >> Open or short in harness. Repair or replace the suspect harness.

### 4. CHECK PRESSURE SENSOR

1. Connect VDC actuator connector E21 and VDC/TCS/ABS control unit connector.
2. Check pressure sensor value on "DATA MONITOR".

Condition	Data monitor display
Brake pedal depressed	Positive value
When brake pedal is released.	Approx. 0 bar

OK or NG

OK >> Perform VDC/TCS/ABS control unit self-diagnosis again.

NG >> Pressure sensor malfunction. Replace VDC actuator (inside pressure sensor).

**Inspection 5 Steering Angle Sensor System**

Inspection Procedure

**1. CHECK SELF-DIAGNOSIS RESULTS**

Check self-diagnosis results.

Self-diagnosis results
ST ANGLE SEN CIRCUIT

Is the above displayed in the self-diagnosis item?

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

**2. CHECK CONNECTOR**

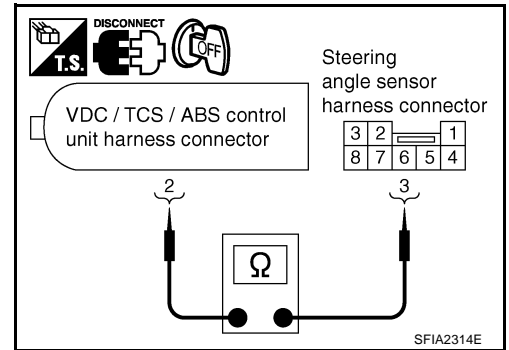
1. Disconnect steering angle sensor connector and VDC/TCS/ABS control unit connector. And check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connectors and re-perform a VDC/TCS/ABS control unit self-diagnosis.

OK or NG

- OK >> Connector terminal contact is loose, damaged, open or shorted.
- NG >> GO TO 3.

**3. CHECK STEERING ANGLE SENSOR CIRCUIT**

1. Check CAN communication system. Refer to [BRC-54, "Inspection 14: CAN Communication Lines System"](#)
2. Disconnect VDC/TCS/ABS control unit connector and steering angle sensor connector.
3. Check continuity between VDC/TCS/ABS control unit harness connector E218 and steering angle sensor harness connector M52.



VDC/TCS/ABS control unit (Harness connector E218)	Steering angle sensor (Harness connector M52)	Continuity
2 (SB)	3 (SB)	Yes

OK or NG

- OK >> GO TO 4.
- NG >> Open or short in harness. Repair or replace suspect harness.



**4. DATA MONITOR CHECK**

Execute "DATA MONITOR" for "STEERING ANGLE SIGNAL". Check that results are normal.

Steering condition	Data monitor
Driving straight	-5° to +5°
Turn 90° to right	Approx. +90°
Turn 90° to left	Approx. -90°

**OK or NG**

- OK >> Perform VDC/TCS/ABS control unit self-diagnosis again.
- NG >> Replace spiral cable (steering angle sensor) and adjust neutral position of steering angle sensor. Refer to [BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"](#).

A  
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M

**BRC**

**Inspection 6 Yaw Rate/Side G Sensor System**

EFS004Z5

**CAUTION:**

Sudden turns (such as spin turns, acceleration turns), drifting, etc. When VDC function is off (VDC OFF switch "ON") may cause yaw rate/side G sensor system to indicate a malfunction. However, this is not a malfunction, if normal operation can be resumed after restarting engine. Then erase memory of self-diagnosis.

Inspection Procedure

**1. CHECK SELF-DIAGNOSIS RESULTS**

Check self-diagnosis results.

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

**CAUTION:**

If vehicle is on turn-table at entrance to parking garage, or on other moving surface, VDC OFF indicator lamp may illuminate and CONSULT-II self-diagnosis may indicate yaw rate sensor system malfunction. However, in this case there is no malfunction in yaw rate sensor system. Take vehicle off of turn-table or other moving surface, and start engine. Results will return to normal. And after doing spin turns or acceleration turns with VDC function is off (VDC OFF switch "ON"), too, the results will return to a normal state by re-starting vehicle.

Is above displayed in the self-diagnosis display item?

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

**2. CHECK CONNECTOR**

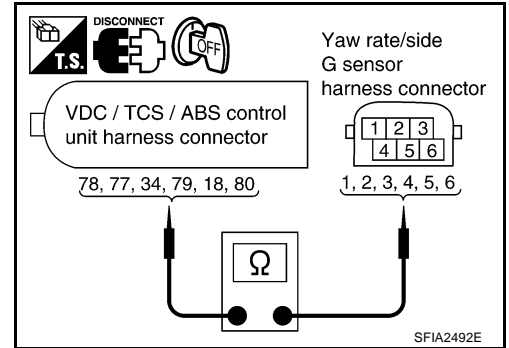
1. Disconnect Yaw rate/Side G sensor connector and VDC/TCS/ABS control unit connector and check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connectors and re-perform a VDC/TCS/ABS control unit self-diagnosis.

OK or NG

- OK >> Connector terminal contact is loose, damaged, open or shorted.  
NG >> GO TO 3.

**3. CHECK YAW RATE/SIDE G SENSOR HARNESS**

1. Turn ignition switch OFF and disconnect yaw rate/side G sensor connector and VDC/TCS/ABS control unit connector.
2. Check continuity between VDC/TCS/ABS control unit harness connector E218 and yaw rate/side G sensor harness connector M99.



VDC/TCS/ABS control unit (Harness connector E218)	Yaw rate/ Side G sensor (Harness connector M99)	Continuity
78 (L/W)	1 (L/W)	Yes
77 (Y/B)	2 (Y/B)	
34 (OR)	3 (OR)	
79 (R/L)	4 (R/L)	
18 (PU/W)	5 (PU/W)	
80 (W/R)	6 (W/R)	

OK or NG

- OK >> GO TO 4.
- NG >> Open or short in harness. Repair or replace suspect harness.

**4. DATA MONITOR CHECK**

Check "DATA MONITOR" for yaw rate /side G sensor. Check that results are normal.

Vehicle condition	Yaw rate sensor (Data monitor standard)	Side G sensor (Data monitor standard)
Stopped	Approx. 0 deg/s	Approx. 0 m/s <sup>2</sup>
Turning right	Negative value	Negative value
Turning left	Positive value	Positive value

OK or NG

- OK >> Perform VDC/TCS/ABS control unit self-diagnosis again.
- NG >> Malfunction of yaw rate/side G sensor. Replace sensor and perform VDC/TCS/ABS control unit self-diagnosis again.

**Inspection 7 Solenoid and VDC Switching Valve System**

EFS004Z6

Inspection Procedure

**1. CHECK SELF-DIAGNOSIS RESULTS**

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
PRIMARY SIDE USV CIRCUIT
SECONDARY SIDE USV CIRCUIT
PRIMARY SIDE MAV CIRCUIT
SECONDARY SIDE MAV CIRCUIT

Is above displayed in the self-diagnosis display item?

YES &gt;&gt; GO TO 2.

NO &gt;&gt; INSPECTION END.

**2. CHECK CONNECTOR**

1. Turn ignition switch OFF and disconnect VDC/TCS/ABS control unit connector and VDC actuator connector. Then reconnect them securely.
2. Reconnect connectors securely and perform self-diagnosis again.

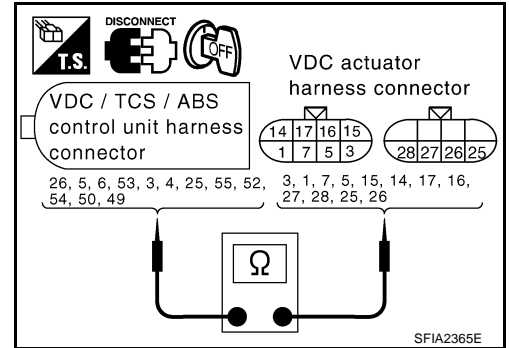
Do any self-diagnosis items appear?

YES &gt;&gt; GO TO 3.

NO &gt;&gt; Poor connection. Repair or replace applicable connector.

**3. CHECK SOLENOID AND VDC SWITCHING VALVE CIRCUIT**

1. Disconnect VDC actuator connector E21,E22 and VDC/TCS/ABS control unit connector.
2. Check continuity between VDC/TCS/ABS control unit harness connector E218 and VDC actuator harness connector E21,E22.



Item	VDC/TCS/ABS control unit (Harness connector E218)	VDC actuator (Harness connector E21, E22)	Continuity
FR LH IN ABS SOL	5 (G/Y)	1 (G/Y)	Yes
FR LH OUT ABS SOL	3 (Y/G)	14 (Y/G)	
RR RH IN ABS SOL	6 (L/W)	7 (L/W)	
RR RH OUT ABS SOL	4 (BR)	17 (BR)	
FR RH IN ABS SOL	26 (W/G)	3 (W/G)	
FR RH OUT ABS SOL	55 (R/Y)	15 (R/Y)	
RR LH IN ABS SOL	53 (P)	5 (P)	
RR LH OUT ABS SOL	25 (LG)	16 (LG)	
PRIMARY SIDE USV CIRCUIT	49 (W/R)	26 (W/R)	
SECONDARY SIDE USV CIRCUIT	50 (R/G)	25 (R/G)	
PRIMARY SIDE MAV CIRCUIT	54 (W)	28 (W)	
SECONDARY SIDE MAV CIRCUIT	52 (PU)	27 (PU)	

OK or NG

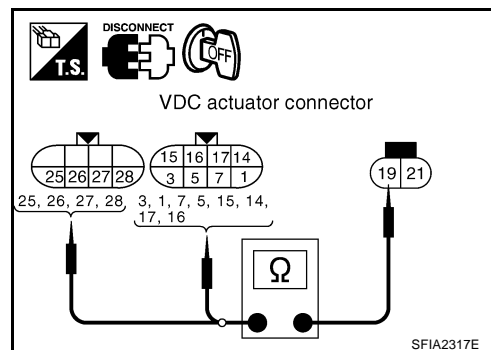
OK >> GO TO 4.

NG >> Open or short in harness between VDC/TCS/ABS control unit and VDC actuator

A  
B  
C  
D  
E  
BRC  
G  
H  
I  
J  
K  
L  
M

## 4. CHECK SOLENOID AND VDC SWITCHING VALVE INPUT SIGNAL

1. Disconnect VDC actuator connector.
2. Check resistance of VDC actuator solenoid.



VDC actuator connector	VDC actuator connector	Resistance value
1, 3, 5, 7, 25, 26	19	6.0 - 11 Ω
14, 15, 16, 17, 27, 28		3.0 - 5.0 Ω

OK or NG

- OK >> Perform VDC/TCS/ABS control unit self-diagnosis again.  
 NO >> Replace VDC actuator assembly.

## Inspection 8 Actuator Motor and Motor Relay System

EFS004Z7

Inspection Procedure

### 1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
PUMP MOTOR ACTUATOR RLY

Is above displayed in the self-diagnosis display item?

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

### 2. CHECK CONNECTOR

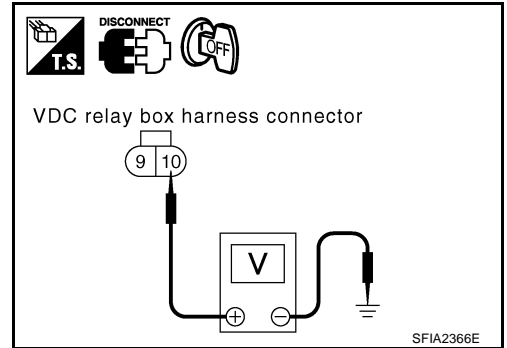
1. Disconnect VDC/TCS/ABS control unit connector, VDC actuator connector and VDC relay box connector.
2. Reconnect connectors securely and perform self-diagnosis again.

Do any self-diagnosis items appear?

- YES >> GO TO 3.  
 NO >> Poor connection. Repair or replace applicable connector.

**3. CHECK ABS MOTOR AND MOTOR RELAY POWER SYSTEM**

1. Disconnect VDC relay box connector E57.
2. Check voltage between VDC relay box harness connector E57 and body ground.



VDC relay box (Harness connector E57)	Body ground	Voltage
10 (W/L)	—	Battery voltage (Approx. 12 V)

BRC

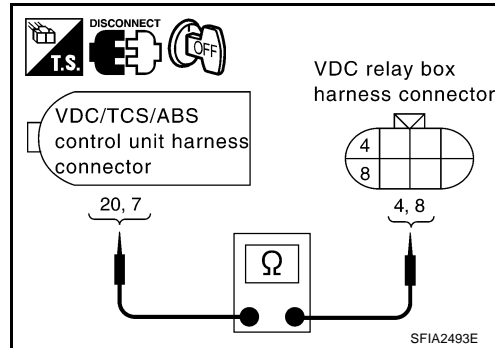
OK or NG

- OK >> GO TO 4.
- NG >> ● Check fuse 50 A.
  - Check that there is continuity between battery and VDC relay box terminal No. 10 (W/L).

A  
B  
C  
D  
E  
G  
H  
I  
J  
K  
L  
M

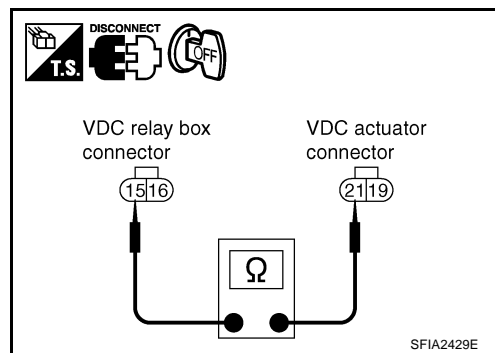
### 4. CHECK MOTOR RELAY CIRCUIT

1. Turn ignition switch OFF and disconnect VDC/TCS/ABS control unit connector E218, VDC actuator connector E23 and VDC relay box connector E55 and E56.
2. Check continuity between VDC/TCS/ABS control unit harness connector E218 and VDC relay box harness connector E56.



VDC/TCS/ABS control unit (Harness connector E218)	VDC relay box (Harness connector E56)	Continuity
20 (R/B)	4 (R/B)	Yes
7 (G/W)	8 (G/W)	

3. Check continuity between VDC relay box harness connector E55 and VDC actuator harness connector E23.



VDC relay box (Harness connector E55)	VDC actuator (Harness connector E23)	Continuity
15 (G)	21 (G)	Yes

OK or NG

OK >> GO TO 5.

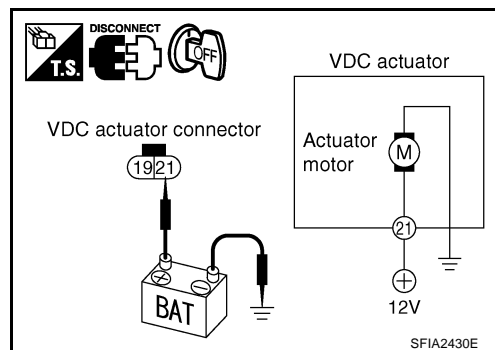
NG >> Check harness for open or short between VDC relay box and VDC/TCS/ABS control unit or VDC actuator.

### 5. CHECK ABS MOTOR CIRCUIT

1. Check actuator motor by listening for its operation sound while applying battery voltage to the VDC actuator terminal 21.

**CAUTION:**

**To prevent overheating, do not operate actuator motor more than 4 seconds.**





OK or NG

- OK >> GO TO 6.
- NG >> Check body ground condition of VDC actuator. If condition is OK, replace VDC actuator.

**6. CHECK MOTOR RELAY UNIT**

Check motor relay as a unit. Refer to [BRC-55, "VDC RELAY BOX"](#) .

OK or NG

- OK >> Check VDC/TCS/ABS control unit power circuit.
- NG >> Replace motor relay.

**Inspection 9 Actuator Relay System**

EFS004Z8

Inspection Procedure

**1. CHECK SELF-DIAGNOSIS RESULTS**

Check self-diagnosis results.

Self-diagnosis results
MAIN RELAY

Is above displayed in the self-diagnosis display item?

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

**2. CHECK CONNECTOR**

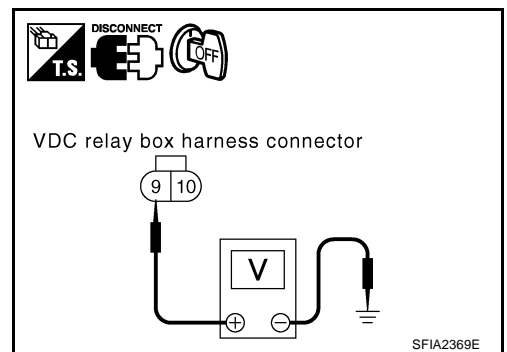
1. Disconnect VDC/TCS/ABS control unit connector and VDC relay box connector. Then reconnect it securely.
2. Perform VDC/TCS/ABS control unit self-diagnosis again.

Do any self-diagnosis items appear?

- YES >> GO TO 3.
- NO >> Poor connection. Repair or replace applicable connector.

**3. CHECK ACTUATOR RELAY POWER SYSTEM**

1. Disconnect VDC relay box connector E57.
2. Check voltage between VDC relay box harness connector E57 and body ground.



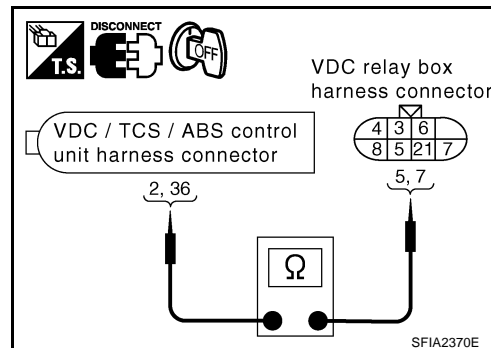
VDC relay box (Harness connector E57)	Body ground	Voltage
9 (L/Y)	—	Battery voltage (Approx. 12 V)

OK or NG

- OK >> GO TO 4.
- NG >> ● Check fuse 30A.
  - Check continuity between battery and VDC relay box harness connector E57 terminal No. 9 (L/Y). If it is not OK, replace fuse or harness.

## 4. CHECK ACTUATOR RELAY POWER CIRCUIT

1. Disconnect VDC/TCS/ABS control unit connector and VDC relay box connector E56.
2. Check continuity between VDC/TCS/ABS control unit harness connector E218 and VDC relay box harness connector E56.



VDC/TCS/ABS control unit (Harness connector E218)	VDC relay box (Harness connector E56)	Continuity
2 (SB)	5 (SB)	Yes
36 (GY/R)	7 (GY/R)	

OK or NG

- OK >> GO TO 5.
- NG >> Open or short in harness between VDC/TCS/ABS control unit and VDC relay box.

## 5. CHECK ACTUATOR RELAY UNIT

Check solenoid valve relay as a unit. Refer to [BRC-55, "VDC RELAY BOX"](#).

OK or NG

- OK >> Check VDC/TCS/ABS control unit power circuit.
- NG >> Replace solenoid valve relay.

## Inspection 10 Stop Lamp Switch System

EFS004Z9

Inspection Procedure

### 1. CHECKING SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
STOP LAMP SW

Is above displayed in the self-diagnosis display item?

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

### 2. CHECK CONNECTOR

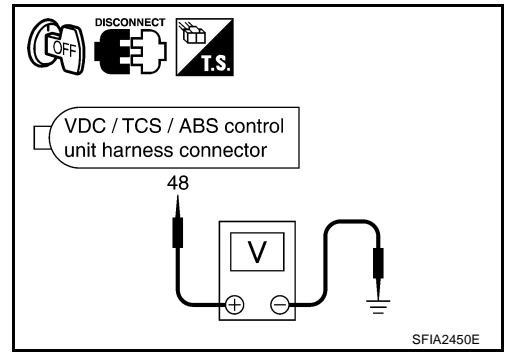
1. Disconnect stop lamp switch connector and VDC/TCS/ABS control unit connector.
2. Reconnect connectors securely.
3. Start engine.
4. Repeat pumping brake pedal carefully several times, then perform self-diagnosis again.

Do any self-diagnosis items appear?

- YES >> GO TO 3.
- NO >> Poor connection. Repair or replace applicable connector.

**3. CHECK STOP LAMP SWITCH CIRCUIT**

1. Turn ignition switch OFF and disconnect VDC/TCS/ABS control unit harness connector.
2. Check continuity between VDC/TCS/ABS control unit harness connector E218 terminal 48 (R/W) and ground.



VDC/TCS/ABS control unit (Harness connector E218)	Ground	Measurement condition	Voltage (V) (Approx.)
48 (R/W)	—	Brake pedal depressed	12V
		Brake pedal not depressed	0V

OK or NG

- OK >> Perform VDC/TCS/ABS control unit self-diagnosis again.
- NG >> Open or short in harness between VDC/TCS/ABS control unit and stop lamp switch

**Inspection 11 VDC/TCS/ABS Control Unit Power And Ground System**

EFS004ZA

Inspection Procedure

**1. CHECKING SELF-DIAGNOSIS RESULT**

Check self-diagnosis results.

Self-diagnosis results
LOW POWER VOLTAGE

Is above displayed in self-diagnosis display item?

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

**2. CHECK CONNECTOR**

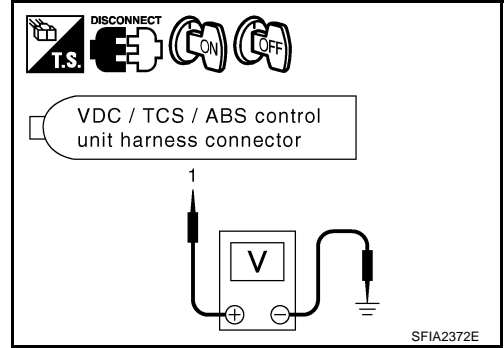
1. Disconnect VDC/TCS/ABS control unit connector. Then reconnect it securely.
2. Perform self-diagnosis.

Do any self-diagnosis items appear?

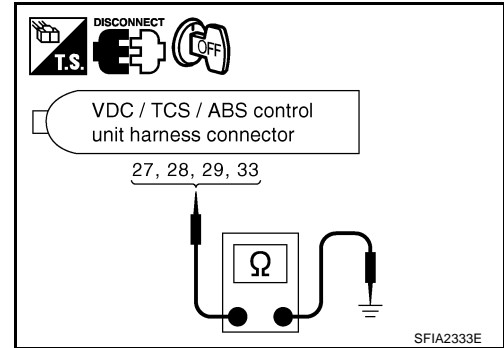
- YES >> GO TO 3.
- NO >> Poor connection. Repair or replace applicable connector.

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

1. Disconnect VDC/TCS/ABS control unit connector.
2. Turn ignition switch ON or OFF and check voltage and continuity between VDC/TCS/ABS control unit harness connector E218 and body ground.



Signal name	VDC/TCS/ABS control unit (Harness connector E218)	Body ground	Condition	Voltage
Power supply	1 (GY)	—	Ignition switch turn ON	Battery voltage (Approx. 12 V)
			Ignition switch turn OFF	Approx. 0 V



Signal name	VDC/TCS/ABS control unit (Harness connector E218)	Body ground	Condition	Continuity
Ground	27 (B)	—	Ignition switch turn OFF	Yes
	28 (B)			
	29 (B)			
	33 (B)			

OK or NG

- OK >> Check battery for loose terminal and low voltage malfunction. Repair if necessary.  
 NG >> Corresponding harness circuit malfunction. Repair circuit.

**Inspection 12 Park/Neutral Position Switch System**

EFS004ZB

Inspection Procedure

**1. CHECKING SELF-DIAGNOSIS RESULTS**

Check self-diagnosis results.

Self-diagnosis results

SHIFT POSITION ERROR

Is above displayed in the self-diagnosis display item?

YES &gt;&gt; GO TO 2.

NO &gt;&gt; INSPECTION END.

**2. DATA MONITOR CHECK**

1. Connect CONSULT-II. Start engine.
2. In "DATA MONITOR" select "ITEM MENU" and then check P position.

Selector lever position	Position (Data monitor)
P position	ON
Other than P position.	OFF

OK or NG

OK &gt;&gt; Perform VDC/TCS/ABS control unit self-diagnosis again.

NG &gt;&gt; GO TO 3.

**3. CHECK A/T PARK/NEUTRAL POSITION SWITCH**Perform Park/Neutral position switch inspection. Refer to [AT-117, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#).

Do any self-diagnosis items appear?

YES &gt;&gt; Repair indicated items and perform VDC/TCS/ABS control unit self-diagnosis again.

NO &gt;&gt; Perform VDC/TCS/ABS control unit self-diagnosis again.

**Inspection 13 Brake Fluid Level Switch System**

EFS004ZD

**CAUTION:****Check brake fluid level before inspection start.**

Inspection Procedure

**1. CHECK SELF-DIAGNOSIS RESULTS**

Check self-diagnosis results.

Self-diagnosis results

BR FLUID LEVEL LOW

Is above displayed in the self-diagnosis display item?

YES &gt;&gt; GO TO 2.

NO &gt;&gt; INSPECTION END.

**2. CHECK CONNECTOR**

1. Turn ignition switch OFF and disconnect brake fluid level switch connector and VDC/TCS/ABS control unit connector.
2. Reconnect connectors securely, then perform VDC/TCS/ABS control unit self-diagnosis again.

Does anything appear on self-diagnosis results display?

YES &gt;&gt; Poor connector connections. Repair or replace connectors.

NO &gt;&gt; GO TO 3.

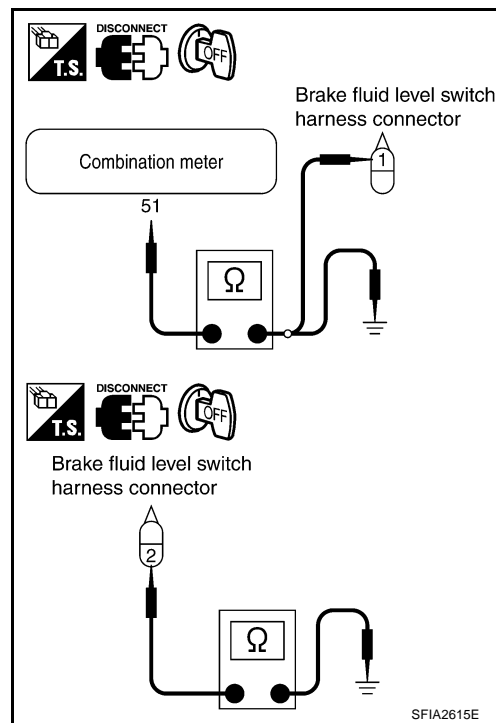
## 3. CHECK HARNESS BETWEEN BRAKE FLUID LEVEL SWITCH AND COMBINATION METER

1. Disconnect combination meter connector M43.
2. Check continuity between brake fluid level switch harness connector and combination meter harness connector M43.

Combination meter (harness connector M43)	Brake fluid level switch (harness connector E73)	Continuity
51(Y)	1 (Y)	Yes
51 (Y)	Ground	No
Ground	2 (B)	Yes

### OK or NG

- OK >> Brake fluid level switch is malfunctioning. Replace reservoir tank assembly Refer to [BR-14, "Disassembly and Assembly"](#).
- NG >> If open or short in harness, repair or replace the harness.



## Inspection 14: CAN Communication Lines System

EFS004ZG

### Inspection Procedure

#### 1. CHECK CONNECTOR

1. Turn ignition switch OFF and disconnect VDC/TCS/ABS control unit connector and steering angle sensor connector. Check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Securely reconnect connectors and perform self-diagnosis.

Self-diagnostic results
CAN COMM CIRCUIT
ST ANG SEN COM CIR

### Is above displayed in the self-diagnosis display item?

- YES >> Print out self-diagnostic results and go to [LAN-20, "Precautions When Using CONSULT-II"](#).
- NO >> Connector terminal connection is loose, damaged, open or shorted.

## Inspecting Components

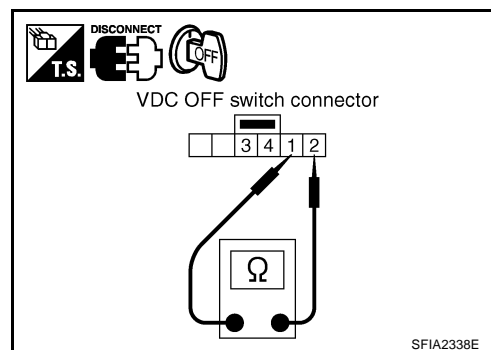
### VDC OFF SWITCH

EFS004ZH

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

#### No. 1 to No. 2:

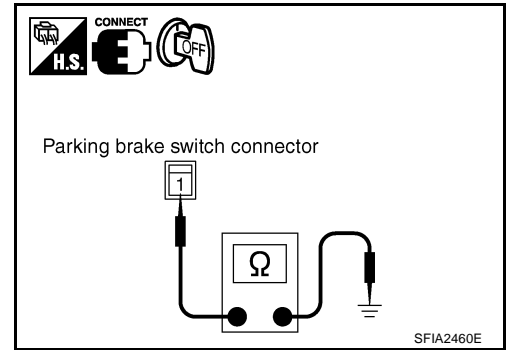
**Pressing switch will establish continuity, releasing it will break continuity.**



## PARKING BRAKE SWITCH

- Turn ignition switch OFF. Check continuity between parking brake switch connector M8 and ground

Parking brake switch connector M8	Ground	Measurement condition	Continuity
1 (Y/R)	—	Depressing the parking brake pedal	With continuity
		Releasing the parking brake pedal	Without continuity

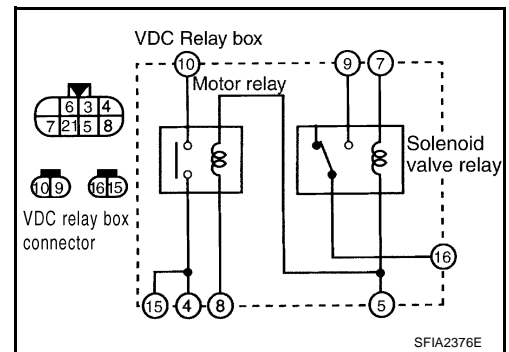


## BRAKE FLUID LEVEL SWITCH

- Refer to [BRC-53, "Inspection 13 Brake Fluid Level Switch System"](#).

## VDC RELAY BOX

Turn ignition switch is OFF and disconnect VDC relay box connector. Check continuity, resistance value, and insulation between any pair of terminals in VDC relay box.



## Continuity and Resistance

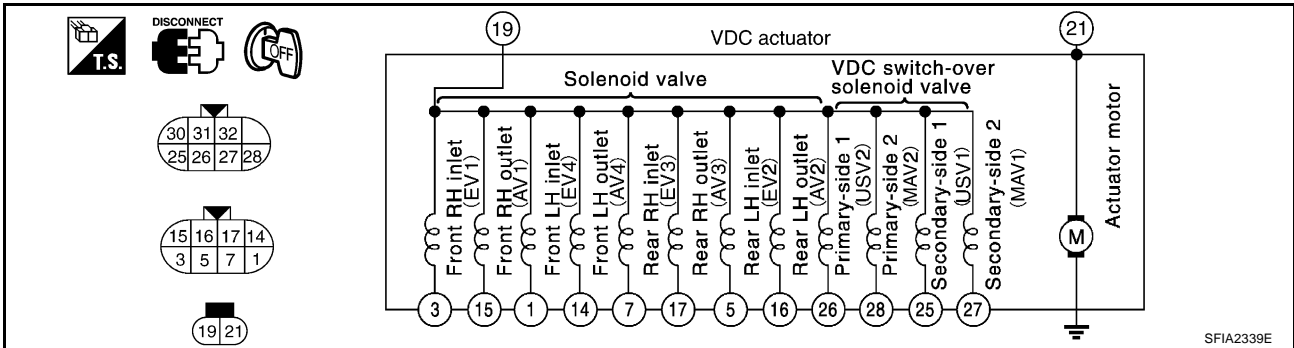
Item	VDC relay box						Condition	
	16	2	4	1	9	4 15 10 5 7 8		
Solenoid valve relay	○ — x — ○						Open (0V)	Between terminal No. 5 and No. 7
	○ — ○						12V	Open (0V) Add 12V
Motor relay	○ — ○						—	—
	○ — x — ○						Open (0V)	Between terminal No. 5 and No. 8
	○ — ○						12V	Open (0V) Add 12V
Relay coil	○ — Ω — ○						Approx. 100 Ω	—
	○ — Ω — ○						Approx. 80 Ω	—

○ — ○ : Conductivity      ○ — 0V — ○ : Open between terminals (0V)      ○ — Ω — ○ : Resistance between terminals  
 ○ — x — ○ : Not conductivity      ○ — 12V — ○ : Add 12V between terminals

SFIA2424E

### VDC/TCS/ABS ACTUATOR

Disconnect VDC actuator connectors. Check continuity and resistance value between any pair of terminals on the actuator.



**CAUTION:**

Make sure actuator motor is correctly grounded.  
Continuity and resistance

Item	VDC actuator connector terminal number	Continuity and Resistance value	Condition
Solenoid valve	1, 3, 5, 7	6.0- 11 Ω	Check the resistance
	14, 15, 16, 17	3.0- 5.0 Ω	
VDC switch-over solenoid valve	25, 26	6.0- 11 Ω	
	27, 28	3.0- 5.0 Ω	
Actuator motor	21	Body ground	Yes

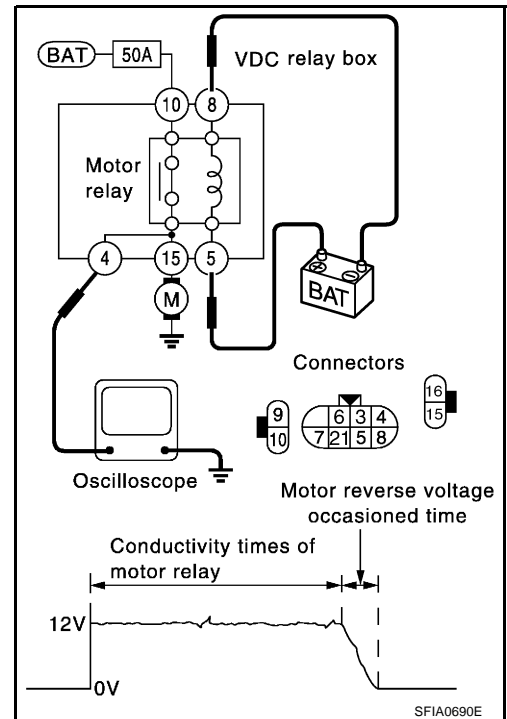
### Actuator Operation Inspection

- Turn ignition switch OFF, apply a voltage of 12 V between VDC relay box connector E56 terminal 5 and 8, use an oscilloscope to measure motor voltage at this time (between terminal 4 and ground), and check motor reverse voltage occurrence time when operation is stopped.

**Motor counter-electromotive force duration:**  
**0.1 second or more**

**CAUTION:**

- Above check should be performed after motor relay unit inspection to make sure relay operates normally.
- To prevent overheating, do not drive actuator motor more than 4 seconds.
- Motor reverse voltage occurrence time is standard when battery voltage is 12 V and the air temperature is 20°C (68°F), and this time is a little shorter when battery voltage is low or the air temperature is low.





**Symptom 1 ABS Works Frequently.**

EFS004ZI

**1. INSPECTION START**

Check brake force distribution with brake tester.

OK or NG

OK >> GO TO 2.

NG >> Check brake system.

**2. CHECK FOR LOOSENESS**

Check for looseness of front and rear axle. Refer to front axle [FAX-4, "WHEEL BEARING INSPECTION"](#), rear axle. [RAX-5, "WHEEL BEARING INSPECTION"](#)

OK or NG

OK >> GO TO 3.

NG >> Axle inspection and repair

**3. WHEEL SENSOR INSPECTION**

Inspection wheel sensor system.

- Sensor mounting inspection
- Sensor pick-up inspection for iron chips
- Sensor rotor mount and damage inspection.
- Sensor connector engagement inspection

OK or NG

OK >> GO TO 4.

NG >> Repair wheel sensor and rotor system.

**4. ABS WARNING LAMP DISPLAY CHECK**

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

OK or NG

OK >> Normal

NG >> Perform self-diagnosis. Refer to [BRC-25, "SELF-DIAGNOSIS"](#).

**Symptom 2 Unexpected Pedal Reaction**

EFS004ZJ

**1. BRAKE PEDAL STROKE INSPECTION**

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

Is the stroke too big?

YES >> ● Bleed air from brake piping. Refer to [BR-9, "Bleeding Brake System"](#)

- Check brake pedal, brake booster, and master cylinder mount for play, looseness, and brake system for fluid leaks, etc. If any malfunctions are found, make repairs. Brake pedal: [BR-7, "Removal and Installation"](#). Brake master cylinder and Brake booster: [BR-20, "Removal and Installation"](#).

NO >> GO TO 2.

**2. PERFORMANCE CHECK**

Disconnect VDC/TCS/ABS control unit connector, and make sure the braking force is sufficient when the ABS is not operating. After the inspection, reconnect connector.

OK or NG

OK >> GO TO 3. WHEEL SENSOR INSPECTION in [BRC-57, "Symptom 1 ABS Works Frequently."](#)

NG >> Check brake system.

**Symptom 3 The Braking Distance Is Long**

EFS004ZK

**CAUTION:**

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

**1. PERFORMANCE CHECK**

Disconnect VDC/TCS/ABS control unit connector to deactivate ABS. In this condition, check stopping distance. After inspection, connect connector.

**OK or NG**

- OK >> GO TO 3.WHEEL SENSOR INSPECTION in [BRC-57, "Symptom 1 ABS Works Frequently."](#) .  
 NG >> ● Bleed air from brake piping. [BR-9, "Bleeding Brake System"](#) .  
 ● Check brake system.

**Symptom 4 The ABS Function Does Not Operate**

EFS004ZL

**CAUTION:**

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

**1. ABS WARNING LAMP DISPLAY CHECK**

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

**OK or NG**

- OK >> GO TO 3.WHEEL SENSOR INSPECTION in [BRC-57, "Symptom 1 ABS Works Frequently."](#) .  
 NG >> Perform self-diagnosis. Refer to [BRC-25, "SELF-DIAGNOSIS"](#) .

**Symptom 5 Pedal Vibration or ABS Operation Sound Occurs**

EFS004ZM

**CAUTION:**

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

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

**1. SYMPTOM CHECK 1**

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

**OK or NG**

- OK >> GO TO 2.  
 NG >> Perform self-diagnosis. Refer to [BRC-25, "SELF-DIAGNOSIS"](#) .

**2. SYMPTOM CHECK 2**

Check the symptom when electrical component (headlamps, etc.) Switches are operated.

Does the symptom occur when the electrical component (head lamp, etc.) Switches are operated?

- YES >> Check if there is a radio, antenna, antenna lead wire, or wiring close to control unit (or its wiring), and if there is, move it farther away.  
 NO >> GO TO 3.WHEEL SENSOR INSPECTION in [BRC-57, "Symptom 1 ABS Works Frequently."](#)

**Symptom 6: Vehicle Jerks During VDC/TCS/ABS Control**

EFS004ZO

**1. SYMPTOM CHECK**

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

**OK or NG**

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

## 2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnostic of VDC/TCS/ABS control unit.

Are self-diagnostic results indicated?

- YES >> Check the corresponding items, make repairs, and perform VDC/TCS/ABS control unit self-diagnosis.
- NO >> GO TO 3.

## 3. CHECK CONNECTOR

1. Turn ignition switch OFF, disconnect the VDC/TCS/ABS control unit connector and check the terminal for deformation, disconnection, looseness, and so on.
2. Securely connect connectors. Perform VDC/TCS/ABS control unit self-diagnosis.

Are self-diagnostic results indicated?

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

## 4. CHECK ECM AND TCM SELF-DIAGNOSTIC RESULTS

Perform ECM and TCM self-diagnosis.

Are self-diagnostic results indicated?

- YES >> ● Check the corresponding items.
- ECM: Refer to [EC-93, "TROUBLE DIAGNOSIS"](#) .
  - TCM: Refer to [AT-42, "TROUBLE DIAGNOSIS"](#) .
- NO >> Replace VDC actuator.

## Symptom 7: ABS Warning Lamp Indication Is Not Normal

EFS004ZP

### NOTE:

Lighting condition of ABS warning lamp refer to [BRC-34, "ON and OFF Timing for ABS Warning Lamp, VDC OFF Indicator Lamp, and SLIP Indicator Lamp"](#) .

### 1. CHECK COMBINATION METER INDICATION

Check the combination meter indication and operation. Refer to [DI-16, "Self-Diagnosis Mode of Combination Meter"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Combination meter is malfunctioning. Check combination meter. Refer to [DI-7, "COMBINATION METERS"](#) .

## 2. CHECK SELF DIAGNOSTIC RESULTS

Check the self-diagnostic results of VDC/TCS/ABS control unit. Refer to [BRC-25, "SELF-DIAGNOSIS"](#) .

OK or NG

- OK >> GO TO procedure 1 of symptom 7.
- NG >> Check the items indicated with self-diagnosis.

## Symptom 8: Slip Indicator Lamp Indication Is Not Normal

EFS004ZQ

### NOTE:

Lighting condition of slip indicator lamp refer to [BRC-34, "ON and OFF Timing for ABS Warning Lamp, VDC OFF Indicator Lamp, and SLIP Indicator Lamp"](#) .

---

## 1. CHECK COMBINATION METER INDICATION

---

Check the combination meter indication and operation. Refer to [DI-16, "Self-Diagnosis Mode of Combination Meter"](#) .

OK or NG

OK >> GO TO 2.

NG >> Combination meter is malfunctioning. Replace combination meter.

---

## 2. CHECK SELF DIAGNOSTIC RESULTS

---

Check the self-diagnostic results of VDC/TCS/ABS control unit. Refer to [BRC-25, "SELF-DIAGNOSIS"](#) .

OK or NG

OK >> GO TO procedure 1 of symptom 8.

NG >> Check the items indicated with self-diagnosis.

---

### Symptom 9: VDC OFF Indicator Lamp Indication Is Not Normal

EF5004ZR

#### NOTE:

- Lighting condition of VDC OFF indicator lamp refer to [BRC-34, "ON and OFF Timing for ABS Warning Lamp, VDC OFF Indicator Lamp, and SLIP Indicator Lamp"](#) .
- Make sure that VDC OFF switch is normal. Refer to [BRC-54, "VDC OFF SWITCH"](#) .

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## 1. CHECK COMBINATION METER INDICATION

---

Check the combination meter indication and operation. Refer to [DI-16, "Self-Diagnosis Mode of Combination Meter"](#) .

OK or NG

OK >> GO TO 2.

NG >> Combination meter is malfunctioning. Check combination meter. Refer to [DI-7, "COMBINATION METERS"](#) .

---

## 2. CHECK SELF DIAGNOSTIC RESULTS

---

Check the self-diagnostic results of VDC/TCS/ABS control unit. Refer to [BRC-25, "SELF-DIAGNOSIS"](#) .

OK or NG

OK >> GO TO procedure 1 of symptom 9.

NG >> Check the items indicated with self-diagnosis.

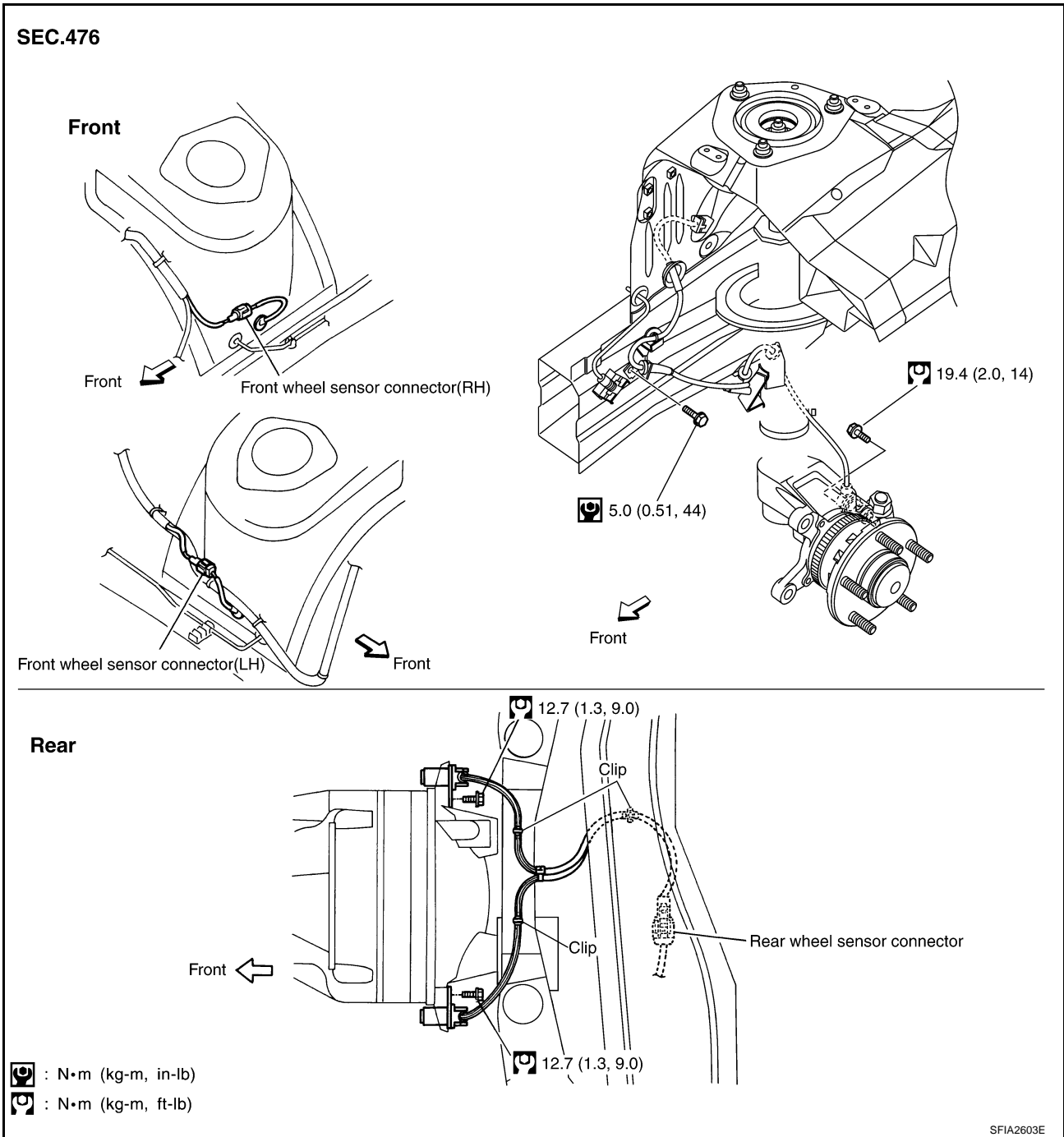
## WHEEL SENSORS

PFP:47910

### Removal and Installation

EFS0042T

A  
B  
C  
D  
E  
BRC  
G  
H  
I  
J  
K  
L  
M



### REMOVAL

Be careful of the following.

**CAUTION:**

**When removing the sensor, do not rotate it, if possible, and also do not forcibly pull the sensor harness.**

### INSTALLATION

Be careful of the following. Tighten the mounting bolts and nuts to the specified torque. Refer to [BRC-61](#), "[Removal and Installation](#)"

**CAUTION:**

- When installing, make sure there is no foreign material such as iron chips on pick-up and mounting hole of sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.
- When installing front sensor, be sure to press rubber grommets in until they lock at the three locations shown in the figure (2 at shock absorbers and 1 at body panel). When installed, harness must not be twisted. White line on harness must be visible from front.
- When installing rear sensor, attach harness at rear suspension member securely. Besides, harness must not be twisted when installed.

## VDC/TCS/ABS CONTROL UNIT

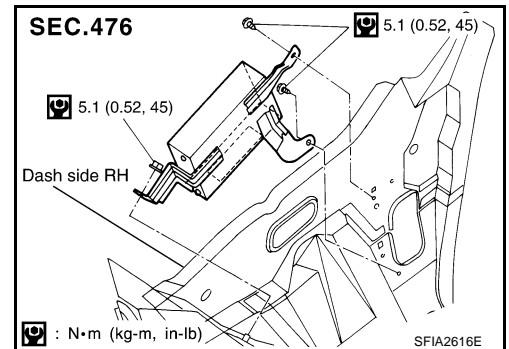
PFP:47660

EFS004ZU

## Removal and Installation

## REMOVAL

1. Remove instrument lower cover. Refer to [IP-15, "\(O\) Instrument Lower Cover"](#) .
2. Remove instrument finisher. Refer to [IP-16, "\(Q\) Instrument Finisher"](#) .
3. Remove grove box assembly. Refer to [IP-15, "\(P\) Grove Box"](#) .
4. Remove grove box cover. Refer to [IP-16, "\(R\) Grove Box Cover"](#) .
5. Remove instrument panel bracket.
6. Remove ECM. Refer to [EC-116, "ECM Terminals and Reference Value"](#) .
7. Remove VDC/TCS/ABS control unit.



## INSTALLATION

Install in the reverse order of removal.

A  
B  
C  
D  
E  
G  
H  
I  
J  
K  
L  
M

BRC

## SENSOR ROTOR

PFP:47970

### Removal and Installation

EF5004ZV

#### REMOVAL

##### Front

Refer to [FAX-4, "FRONT WHEEL HUB AND KNUCKLE"](#) .

##### Rear

Follow procedure below to remove rear sensor rotor.

- Remove side flange. Refer to [RFD-14, "REAR FINAL DRIVE ASSEMBLY"](#) .
- Using a bearing replacer (suitable tool) and puller (suitable tool), remove sensor rotor from the companion flange.

#### INSTALLATION

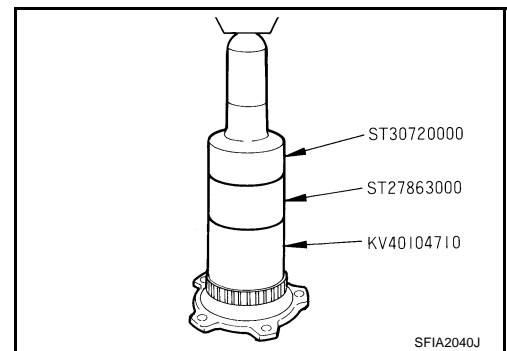
##### Front

Refer to [FAX-4, "FRONT WHEEL HUB AND KNUCKLE"](#) .

##### Rear

Follow procedure below to install rear sensor rotor.

- Using a drift (special service tool), press rear sensor rotor onto the side flange.
- Install side flange. Refer to [RFD-14, "REAR FINAL DRIVE ASSEMBLY"](#) .



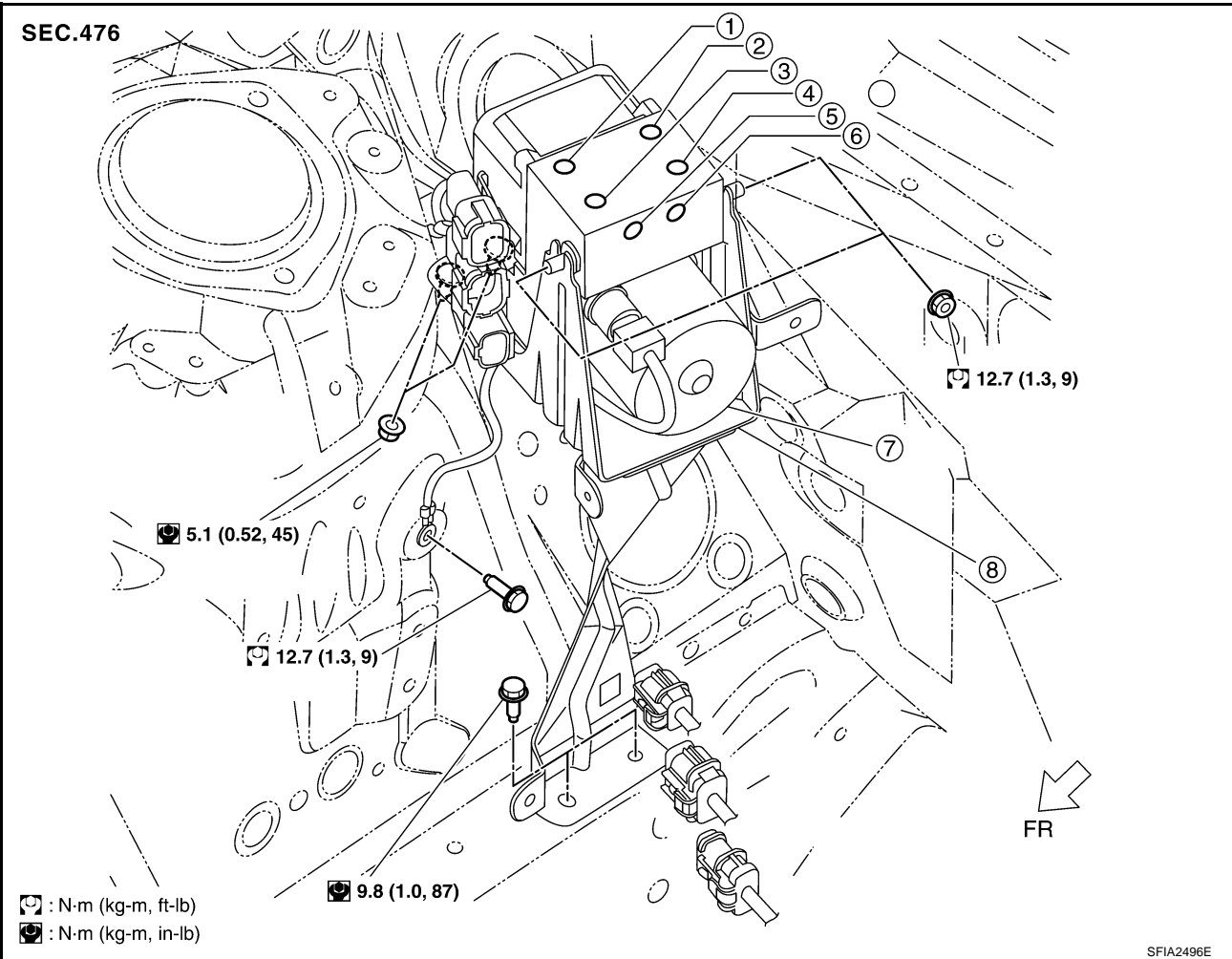


VDC/TCS/ABS ACTUATOR

PFP:47660

Removal and Installation  
COMPONENTS

EFS004ZW



- |  |                          |                                      |
|--|--------------------------|--------------------------------------|
| 1. To front caliper (LH)               | 2. To front caliper (RH) | 3. From master cylinder primary side |
| 4. From master cylinder secondary side | 5. To rear caliper (RH)  | 6. To rear caliper (LH)              |
| 7. VDC actuator                        | 8. Actuator bracket      |                                      |

**REMOVAL**

1. Disconnect VDC actuator connectors.
2. Loosen brake tube flare nuts, then remove brake tubes from VDC actuator.
3. Remove VDC actuator mounting nuts and actuator bracket mounting bolts.
4. Remove VDC actuator assembly from vehicle.
5. Remove VDC actuator from actuator bracket.

**CAUTION:**

Be careful of the following when removing VDC actuator.

- If the part number on the part number label (pasted on VDC actuator upper surface) is the same, VDC actuator cannot be used on another vehicle. If it is used on another vehicle, ABS warning lamp, SLIP indicator lamp and VDC OFF indicator lamp may turn on or VDC/TCS/ABS may not operate normally. When replacing VDC actuator, must use new service parts.
- Before servicing, disconnect battery terminal.
- To remove brake tube, use a flare nut wrench to prevent flare nuts and brake tube from being damaged.

A  
B  
C  
D  
E  
BRC  
G  
H  
I  
J  
K  
L  
M

- 
- Do not apply excessive impact to VDC actuator, such as dropping it.
  - Do not remove and install VDC actuator by holding harness.

## INSTALLATION

To install, follow procedure for removal in reverse order.

### **CAUTION:**

Be careful of the following when installing VDC actuator.

- Tighten the mounting nuts and actuator bracket mounting bolts to the specified torque. Refer to [BRC-65, "COMPONENTS"](#) .
- To install, use a flare nut torque wrench (special service tool) and tighten to the specified torque. Refer to [BR-10, "Hydraulic Circuit"](#) .
- After the work, bleed air from brake piping. Refer to [BR-9, "Bleeding Brake System"](#) .

### G SENSOR

PFP:47930

### Removal and Installation

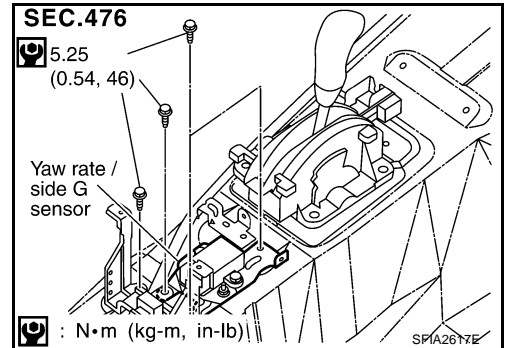
EF5004ZX

#### CAUTION:

Do not drop or strike the yaw rate/side G sensor, because it has little endurance to impact.

#### REMOVAL

1. Remove center console. Refer to [IP-14, "\(M\) Console Box Assembly"](#).
2. Remove harness connector.
3. Remove rear ventilator duct No. 2. Refer to [ATC-145, "Removal of Rear Ventilator Ducts"](#).
4. Remove installation bolts. Remove yaw rate/side G sensor.



#### INSTALLATION

Install in the reverse order to removal.

A  
B  
C  
D  
E  
BRC  
G  
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L  
M

## STEERING ANGLE SENSOR

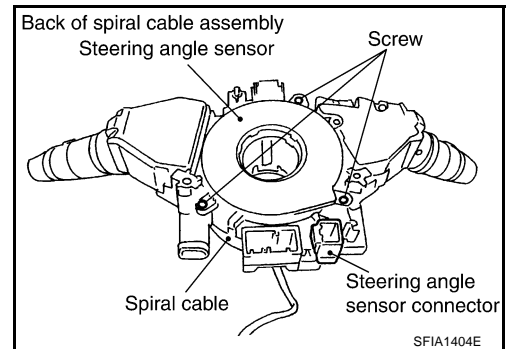
PFP:25554

### Removal and Installation

EFS004ZY

#### REMOVAL

1. Remove spiral cable assembly. Refer to [SRS-42, "SPIRAL CABLE"](#) .
2. Remove steering angle sensor from spiral cable assembly.



#### INSTALLATION

Install in the reverse order of removal.

#### NOTE:

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