

SECTION **BRC**

BRAKE CONTROL SYSTEM

A
B
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D
E

CONTENTS

VDC/TCS/ABS		BRC
PRECAUTIONS	3	
Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	3	
Precautions for Brake System	3	
Precautions for Brake Control	3	
PREPARATION	5	
Special Service Tools	5	
Commercial Service Tools	5	
ON-VEHICLE SERVICE	6	
Adjustment of Steering Angle Sensor Neutral Position	6	
SYSTEM DESCRIPTION	7	
System Diagram	7	
COMPONENTS FUNCTION DESCRIPTION	7	
Functions	7	
VDC	7	
TCS	8	
ABS	8	
EBD	8	
Operation that is not "System Error"	8	
VDC	8	
TCS	8	
ABS	8	
Hydraulic Circuit Diagram	9	
CAN Communication	9	
SYSTEM DESCRIPTION	9	
TROUBLE DIAGNOSIS	10	
Fail-Safe Function	10	
VDC/TCS SYSTEM	10	
ABS, EBD SYSTEM	10	
How to Perform Trouble Diagnosis For Quick and Accurate Repair	10	
INTRODUCTION	10	
DIAGNOSIS FLOW CHART	11	
ASKING COMPLAINTS	12	
EXAMPLE OF DIAGNOSIS SHEET	12	
Component Installation Location	13	
Schematic	14	
Wiring Diagram — VDC —	15	
Control Unit Input/Output Signal Standard	22	
VDC/TCS/ABS CONTROL UNIT INSPECTION TABLE	22	
CONSULT-II Functions (VDC)	23	
CONSULT-II MAIN FUNCTION	23	
CONSULT-II SETTING PROCEDURE	24	
SELF-DIAG RESULT MODE	24	
DATA MONITOR MODE	27	
ACTIVE TEST	30	
VDC/TCS/ABS CONTROL UNIT PART NUMBER	32	
Trouble Diagnosis Chart for Symptoms	32	
For Fast and Accurate Diagnosis	34	
PRECAUTIONS FOR DIAGNOSIS	34	
Basic Inspection	34	
BRAKE FLUID LEVEL, LEAKAGE AND BRAKE PAD	34	
POWER SUPPLY CIRCUIT TERMINAL LOOSENESS AND BATTERY	35	
ABS WARNING LAMP, VDC OFF INDICATOR LAMP, AND SLIP INDICATOR LAMP	35	
TROUBLE DIAGNOSIS FOR SYSTEM	36	
Wheel Sensor	36	
INSPECTION PROCEDURE	36	
Engine System Control Signal	38	
INSPECTION PROCEDURE	38	
VDC/TCS/ABS Control Unit	38	
INSPECTION PROCEDURE	38	
Pressure Sensor	39	
INSPECTION PROCEDURE	39	
Steering Angle Sensor	40	
INSPECTION PROCEDURE	40	
Yaw Rate/Side G Sensor	42	
INSPECTION PROCEDURE	42	
Solenoid and VDC Switching Valve	44	
INSPECTION PROCEDURE	44	
Actuator Motor and Motor Relay	46	
INSPECTION PROCEDURE	46	
Actuator Relay	48	

BRC
G
H
I
J
K
L
M

INSPECTION PROCEDURE	48	WHEEL SENSORS	63
Stop Lamp Switch	49	Removal and Installation	63
INSPECTION PROCEDURE	49	REMOVAL	63
VDC/TCS/ABS Control Unit Power Supply And		INSTALLATION	63
Ground Circuit	50	VDC/TCS/ABS CONTROL UNIT	65
INSPECTION PROCEDURE	50	Removal and Installation	65
Park/Neutral Position Switch	51	REMOVAL	65
INSPECTION PROCEDURE	51	INSTALLATION	65
Brake Fluid Level Switch	53	SENSOR ROTOR	66
INSPECTION PROCEDURE	53	Removal and Installation	66
VDC OFF Switch	54	REMOVAL	66
INSPECTION PROCEDURE	54	INSTALLATION	66
CAN Communication Circuit	54	ACTUATOR	67
INSPECTION PROCEDURE	54	Removal and Installation	67
RAS Control Unit (With RAS)	55	COMPONENTS	67
INSPECTION PROCEDURE	55	REMOVAL	67
Inspecting Components	55	INSTALLATION	68
VDC OFF SWITCH	55	G SENSOR	69
PARKING BRAKE SWITCH	56	Removal and Installation	69
VDC RELAY BOX	56	REMOVAL	69
VDC ACTUATOR	57	INSTALLATION	69
TROUBLE DIAGNOSIS FOR SYMPTOMS	58	STEERING ANGLE SENSOR	70
Excessive ABS Function Operation Frequency	58	Removal and Installation	70
Unexpected Pedal Reaction	58	REMOVAL	70
The Braking Distance Is Long	59	INSTALLATION	70
The ABS Function Does Not Operate	59	RELAY BOX	71
Pedal Vibration or ABS Operation Sound Occurs... ..	59	Removal and Installation	71
Vehicle Jerks During VDC/TCS/ABS Control	60	REMOVAL	71
ABS Warning Lamp Indication Is Not Normal	60	INSTALLATION	71
Slip Indicator Lamp Indication Is Not Normal	61		
VDC OFF Indicator Lamp Indication Is Not Normal.. ..	61		

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.

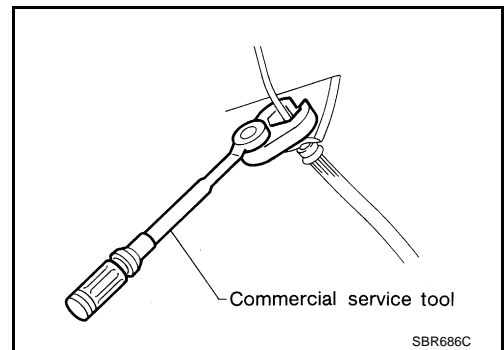
WARNING:

- 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

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- Recommended fluid is brake fluid “DOT 3”. Refer to Refer to Service Manual.
- Do not reuse drained brake fluid.
- Be careful not to splash brake fluid on painted surface of body. If brake fluid is splashed on painted surfaces of body immediately wipe it off with cloth and then wash it away with water.
- Do not use mineral oils such as gasoline or kerosene to clean. They will ruin rubber parts and cause improper operation.
- Use a flare nut wrench when removing flare nuts, and use a flare nut torque wrench when tighten brake tube flare nuts.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Before working, turn ignition switch OFF and disconnect connectors of VDC/TCS/ABS control unit or the battery cable from the negative terminal.
- When installing brake piping, be sure to check torque.



WARNING:

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

Precautions for Brake Control

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- During ABS operation, brake pedal lightly vibrates and a mechanical sound may be heard. This is normal.
- Just after starting vehicle after turning ignition switch ON, brake pedal may vibrate or motor operating sound may be heard from engine compartment. This is a normal condition of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.
- When an error is indicated by ABS or another warning lamp, collect all necessary information from customer (what symptoms are present under what conditions) and check for simple causes before starting diagnostic servicing. Besides electrical system inspection, check brake booster operation, brake fluid level, and fluid 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 VDC/TCS/ABS control unit, ABS function may have a malfunction or error.

PRECAUTIONS

[VDC/TCS/ABS]

- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits, and improper wiring.
- If the following components are replaced with non-genuine components or converted, VDC OFF indicator lamp and SLIP indicator lamp may turn on or the VDC system may not operate properly. Components related to suspension (shock absorber, strut, spring, bush, etc.), Tires, wheels (exclude specified size), components related to brake (pad, rotor, caliper, etc.), Components related to engine (Muffler, ECM, etc.), Components related to body reinforcement (roll bar, Tower bar, etc.).
- Driving in the condition of breakage or excessive wear of suspension, tires or components related to brakes may cause VDC OFF indicator lamp and SLIP indicator lamp to turn on, and the VDC system may not operate properly.
- When the TCS or VDC is activated by sudden acceleration or sudden turn, some sound may occur if brake pedal is used. The sound is a result of the normal operation of the TCS and VDC.
- When driving on roads which have extreme slopes (such as mountainous roads) or high banks (such as sharp curves on a freeway), the VDC may not operate normally, or VDC OFF indicator lamp or VDC OFF indicator lamp and SLIP indicator lamp may turn on. However, this is not a malfunction, if normal operation can be resumed after restarting engine.
- 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.

PREPARATION

[VDC/TCS/ABS]

PREPARATION

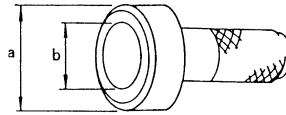
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Special Service Tools

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

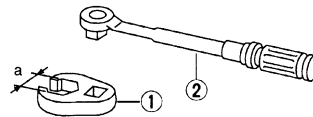
Tool number (Kent-Moore No.) Tool name	Description
ST30720000 (J-25405) Drift a: 77 mm (3.03 in) dia. b: 55.5 mm (2.19 in) dia.	Installing rear sensor rotor.
ST27863000 (—) Drift a: 74.5 mm (2.93 in) dia. b: 62.5 mm (2.46 in) dia. KV40104710 (—) Drift a: 76.3 mm (3.00 in) dia. b: 67.9 mm (2.67 in) dia.	Installing rear sensor rotor.



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Commercial Service Tools

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

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ON-VEHICLE SERVICE

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Adjustment of Steering Angle Sensor Neutral Position

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

×: Required -: Not required

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	×

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. Perform "CONSULT-II Start Procedure". Refer to [GI-36, "CONSULT-II Start Procedure"](#) .
3. Touch "WORK SUPPORT".

4. Touch "START" on "ST ANGLE SENSOR ADJUSTMENT" screen.

CAUTION:

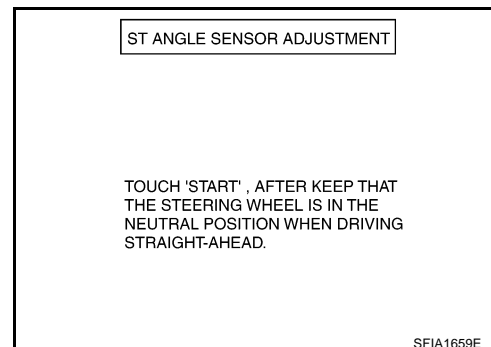
Do not touch steering wheel while adjusting steering angle sensor.

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-26, "How to Erase Self-Diagnostic Results"](#) , [EC-82, "TROUBLE DIAGNOSIS"](#) .
10. Turn ignition switch OFF.

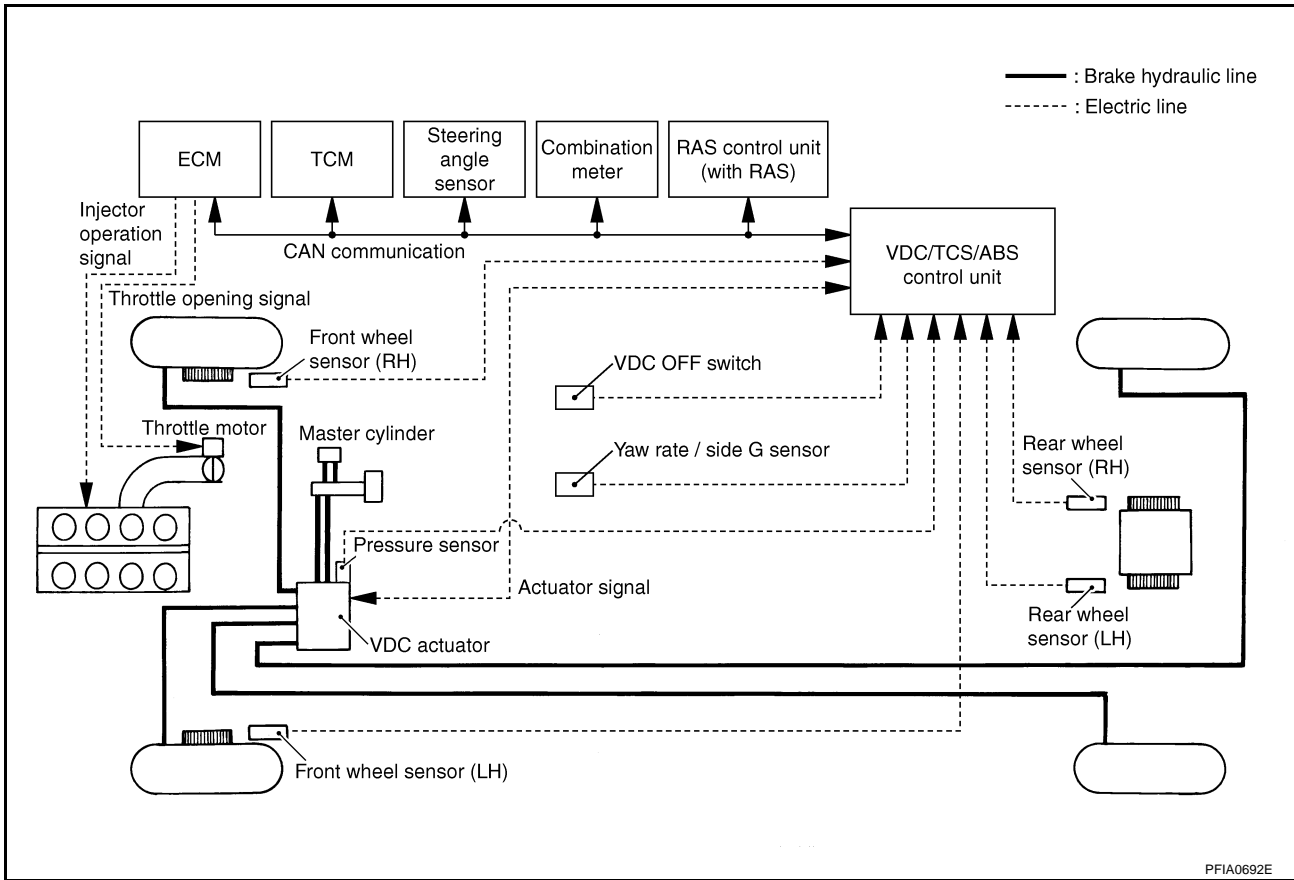


SYSTEM DESCRIPTION

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System Diagram

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COMPONENTS FUNCTION DESCRIPTION

Component	Description
VDC/TCS/ABS control unit	Receives the information of various sensor signals, ECM and TCM, and then determines the vehicle driving status. Performs the calculations of target brake fluid pressure, by VDC actuator drive signal output and by engine torque required from the VDC/TCS/ABS control.
VDC actuator	Receives the actuator drive signal from VDC/TCS/ABS control unit, and then performs the brake fluid adjustment of each wheel caliper.
Yaw rate/side G sensor	Detects the yaw rate and side G of the vehicle.
Steering angle sensor	Detects the operating angle and direction of driver steering wheel.
Pressure sensor (Integrated in VDC actuator)	Detects the fluid pressure (driver brake force) in VDC actuator.
Wheel sensor	Detects the rotation speed of each wheel.
VDC OFF switch	Cancels the VDC/TCS function.
ECM	Receives the command from VDC/TCS/ABS control unit, and then performs the controls of throttle motor and injector.

Functions
VDC

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- 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 Distribution 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”

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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 something wrong. 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 something wrong if it is possible to return to a normal position after restarting engine. Then erase the memory of Self-Diagnosis. Refer to [BRC-26. "How to Erase Self-Diagnostic Results"](#).

TCS

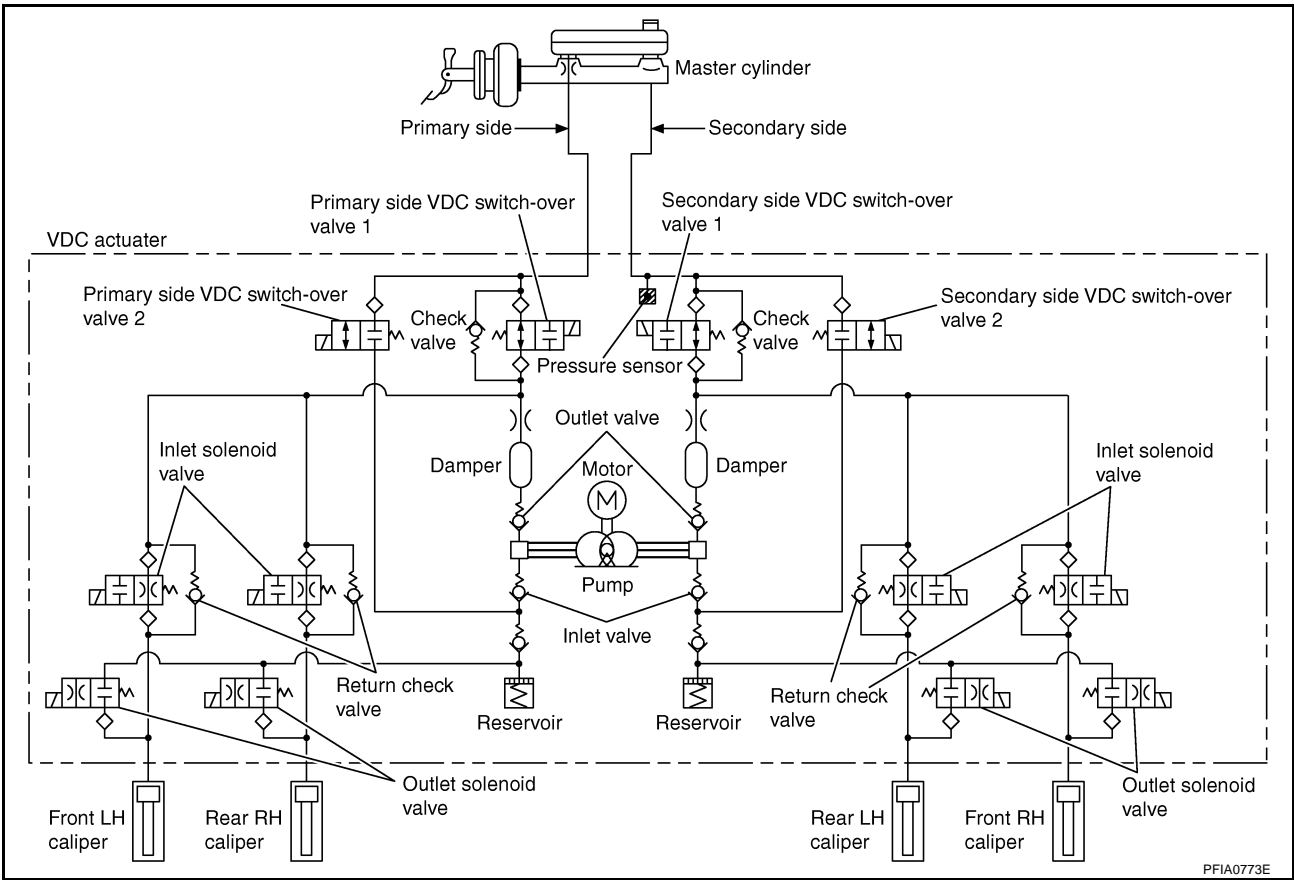
- During TCS operation, body and brake pedal lightly vibrate and mechanical noises may be heard. This is normal.
- Depending on road circumstances, driver may have a sluggish feel. This is normal, because optimum traction has highest priority under TCS operation.
- When vehicle is passing through a road 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.

Hydraulic Circuit Diagram

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CAN Communication 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-40, "CAN Communication Unit"](#).

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TROUBLE DIAGNOSIS

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Fail-Safe Function
VDC/TCS SYSTEM

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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.

How to Perform Trouble Diagnosis For Quick and Accurate Repair

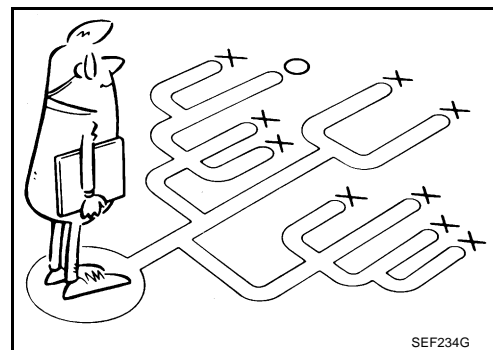
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INTRODUCTION

- To perform trouble diagnosis it is the most important to have understanding about vehicle system (control and mechanism) 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.

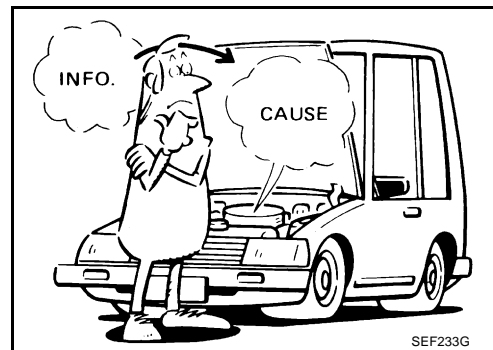
NOTE:

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



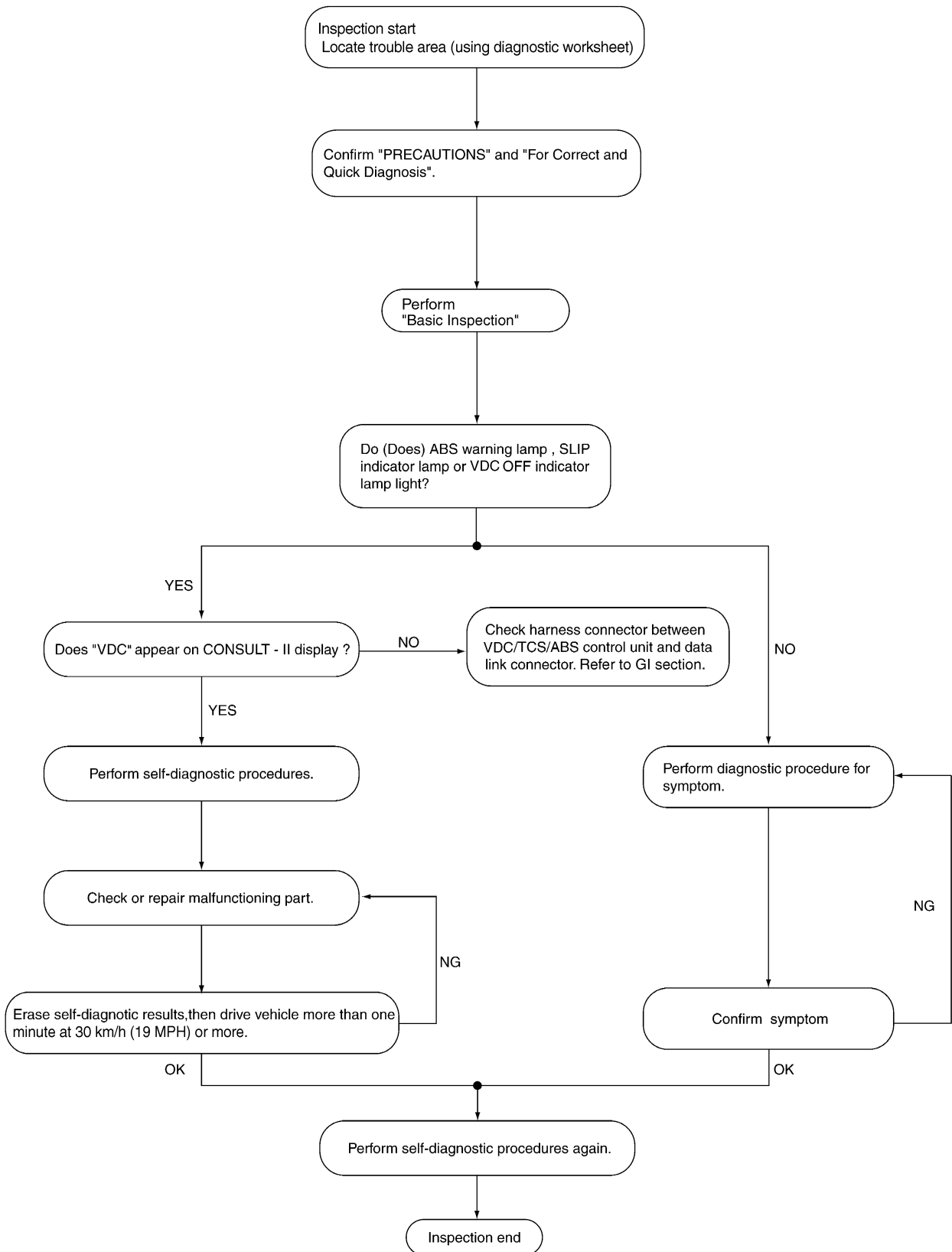
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- It is essential to check symptoms right from beginning in order to repair a malfunction completely.
For an intermittent malfunction, it is important to reproduce symptom based on interview with customer and past examples. Do not perform inspection 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-26, "How to Erase Self-Diagnostic Results"](#) .
- 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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TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

ASKING COMPLAINTS

- Complaints against malfunction vary depending on each person. It is important to clarify customer complaints.
- Ask customer about what symptoms are present and under what conditions. Use information to reproduce symptom while driving.
- It is also important to use 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

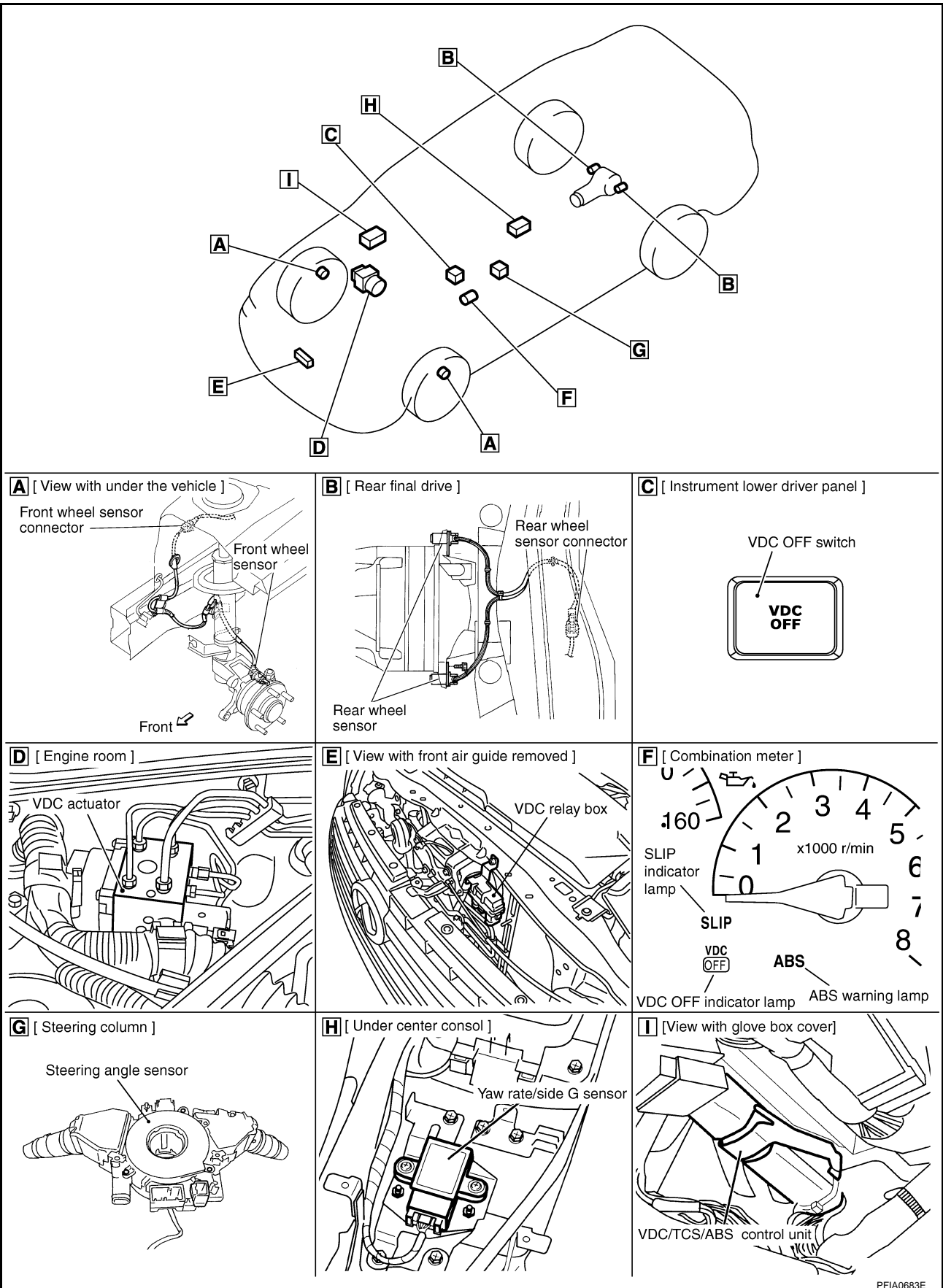
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EXAMPLE OF DIAGNOSIS SHEET

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 <input type="checkbox"/> Large stroke pedal operation
	<input type="checkbox"/> TCS does not work (Rear wheels slip when accelerating)	<input type="checkbox"/> ABS does not work (Wheels lock when braking)	<input type="checkbox"/> Lack of sense of acceleration
Engine conditions	<input type="checkbox"/> When starting <input type="checkbox"/> After starting		
Road conditions	<input type="checkbox"/> Low friction road (<input type="checkbox"/> Snow <input type="checkbox"/> Gravel <input type="checkbox"/> Other) <input type="checkbox"/> Bumps / potholes		
Driving conditions	<input type="checkbox"/> Full-acceleration <input type="checkbox"/> High speed cornering <input type="checkbox"/> Vehicle speed: Greater than 10 km/h (6 MPH) <input type="checkbox"/> Vehicle speed: 10 km/h (6 MPH) or less <input type="checkbox"/> Vehicle is stopped		
Applying brake conditions	<input type="checkbox"/> Suddenly <input type="checkbox"/> Gradually		
Other conditions	<input type="checkbox"/> Operation of electrical equipment <input type="checkbox"/> Shift change <input type="checkbox"/> Other descriptions		

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Component Installation Location



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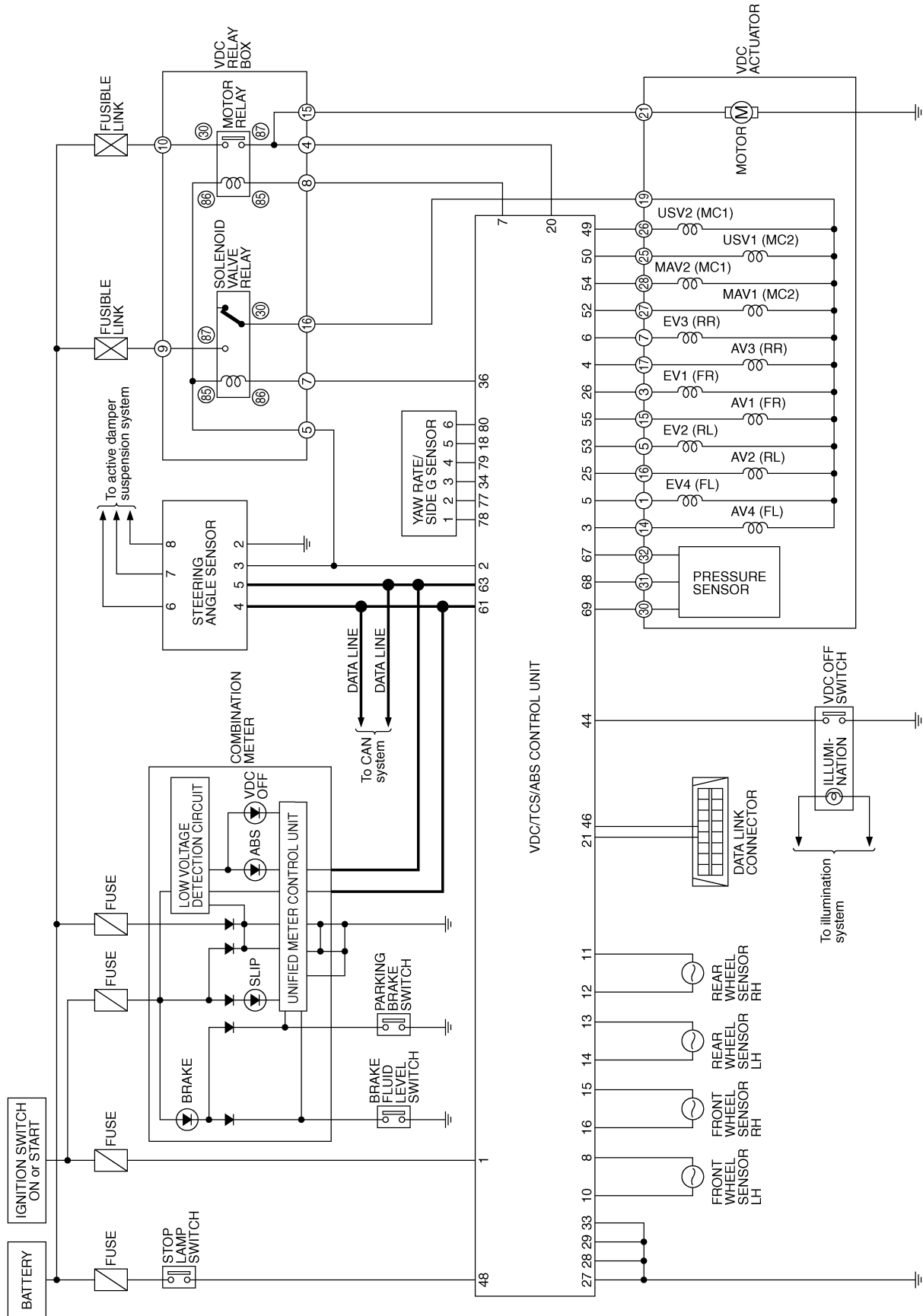
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TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Schematic

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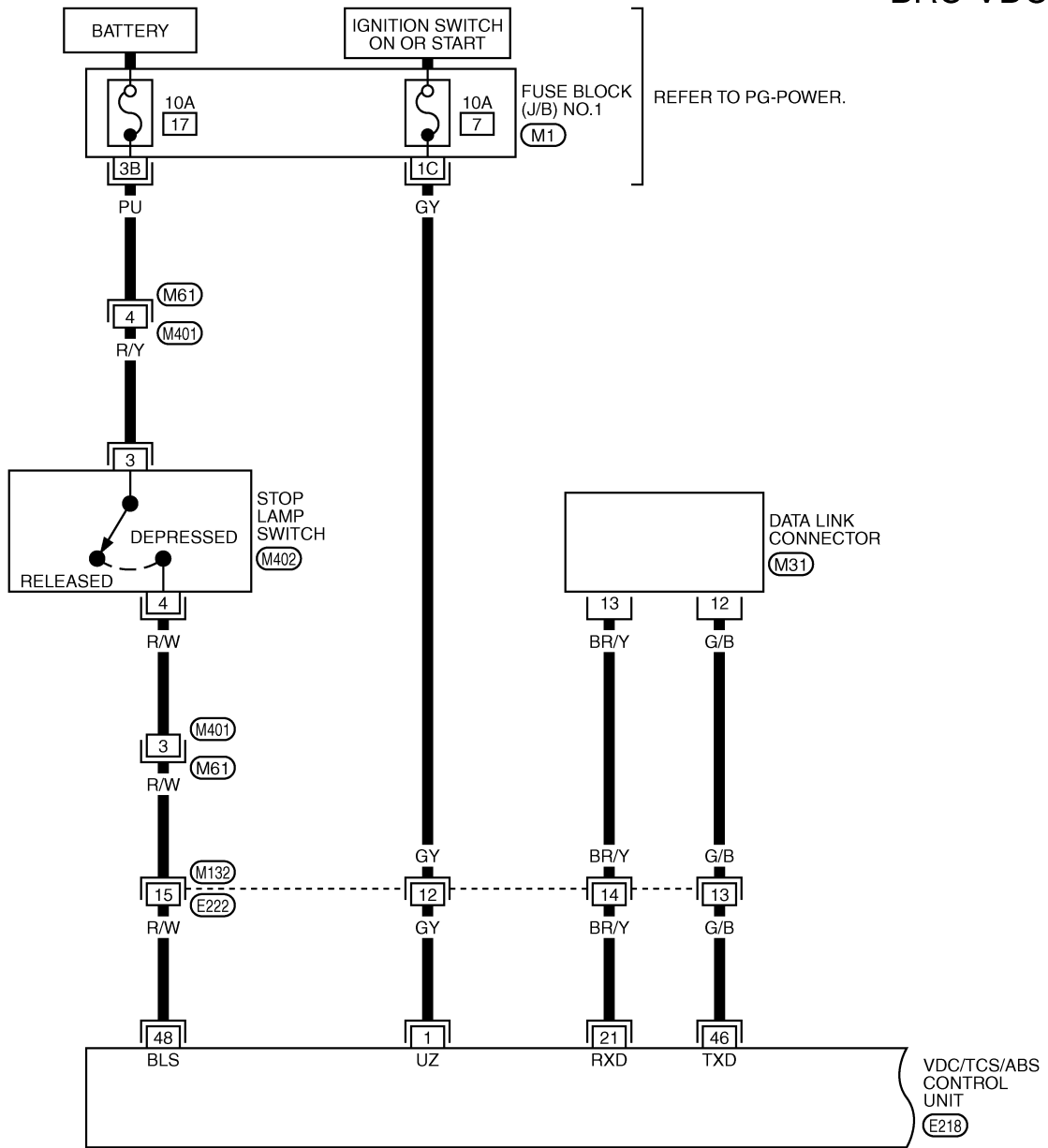
TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

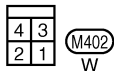
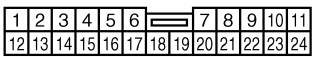
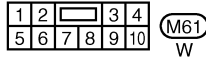
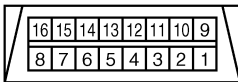
Wiring Diagram — VDC —

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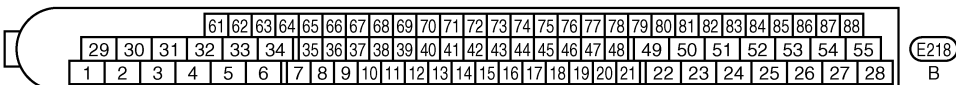


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REFER TO THE FOLLOWING.

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

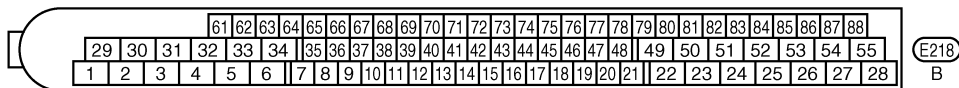
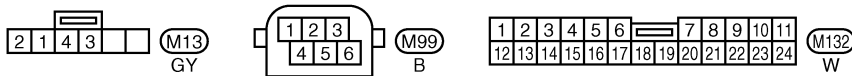
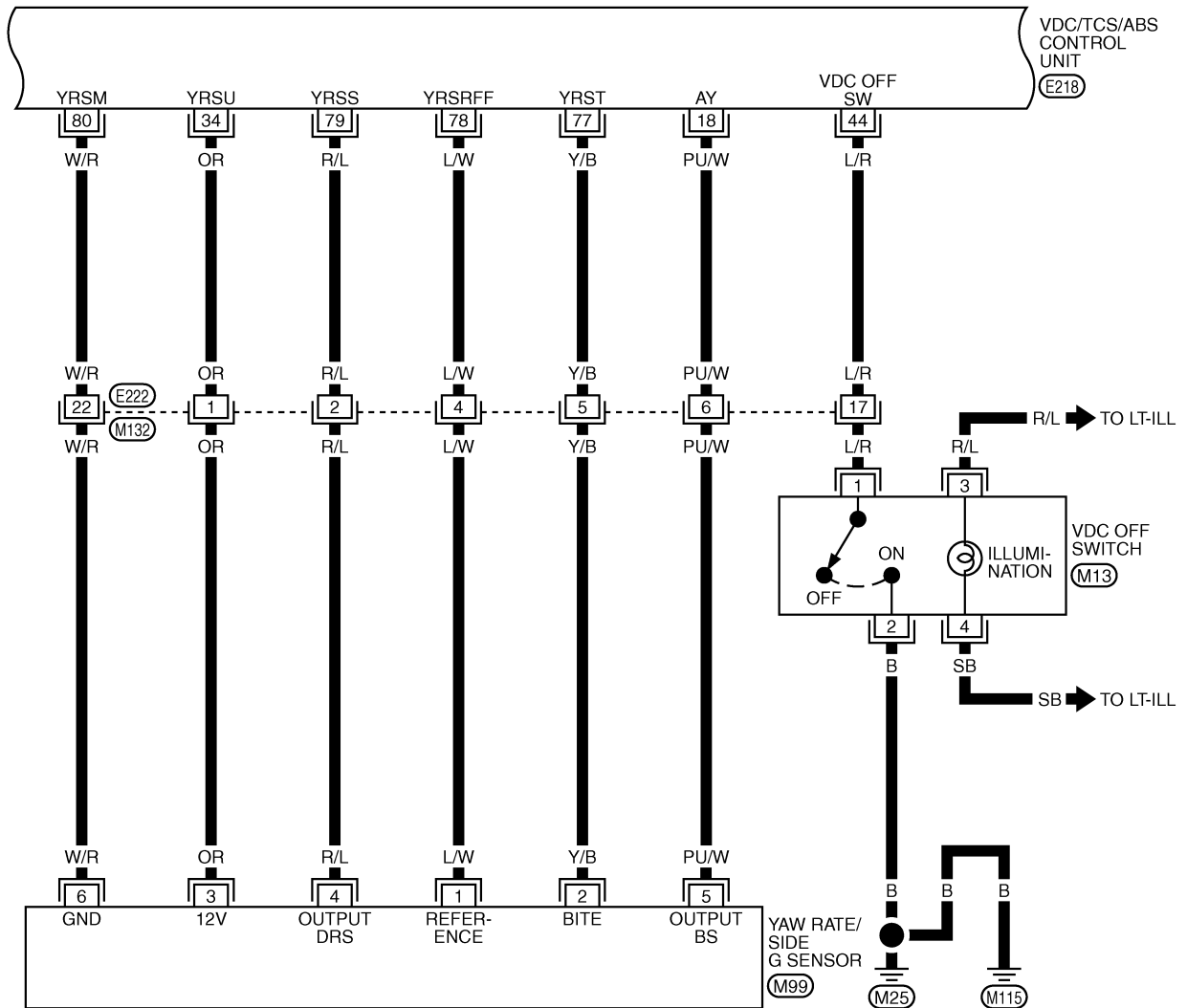


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TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-02



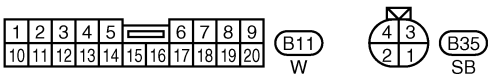
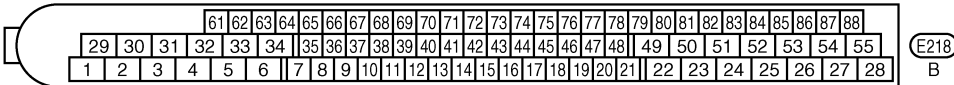
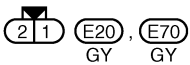
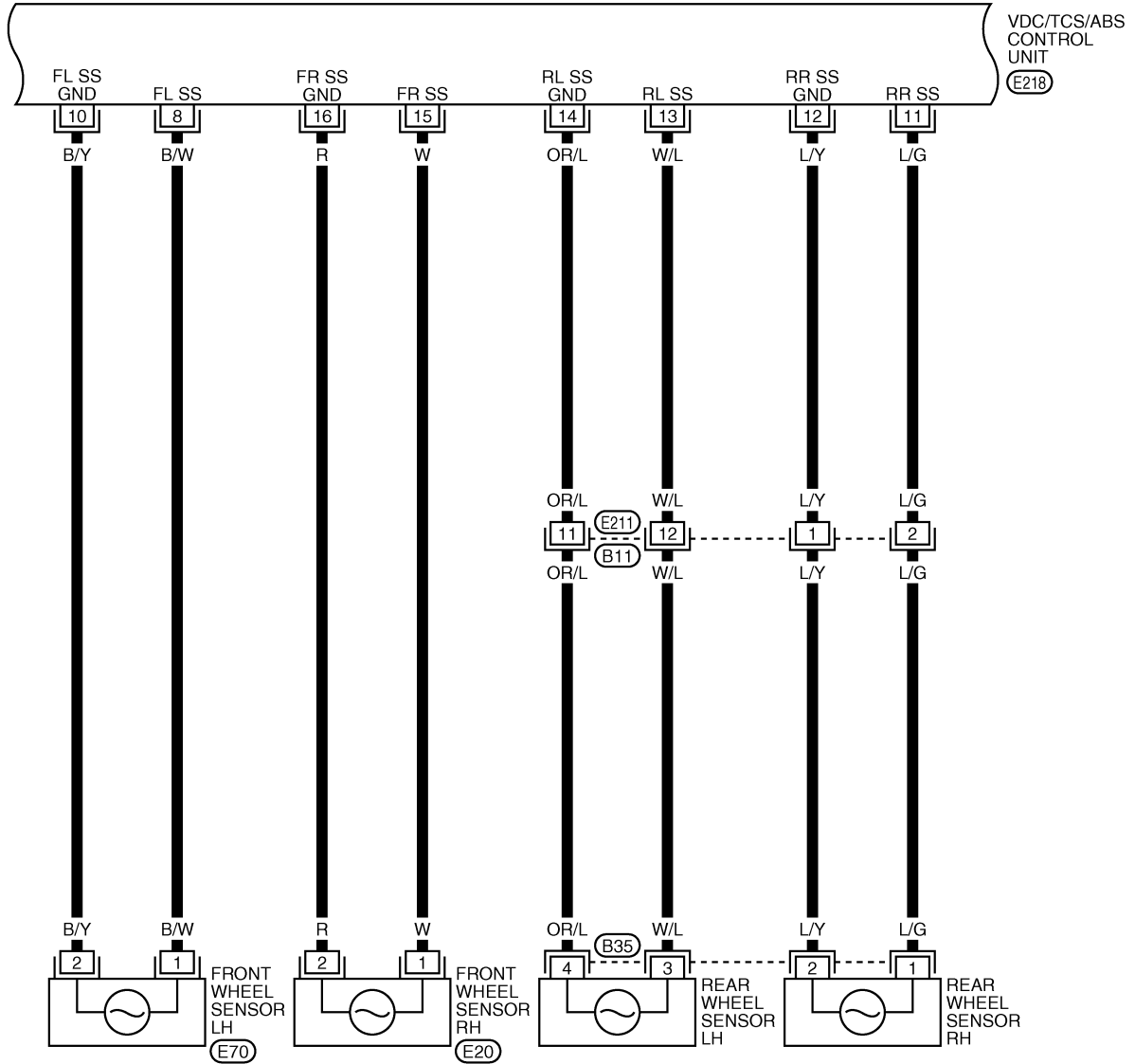
TFWM0088E

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

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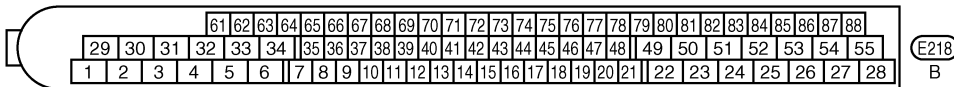
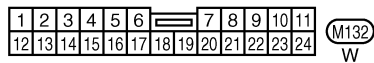
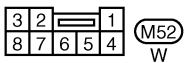
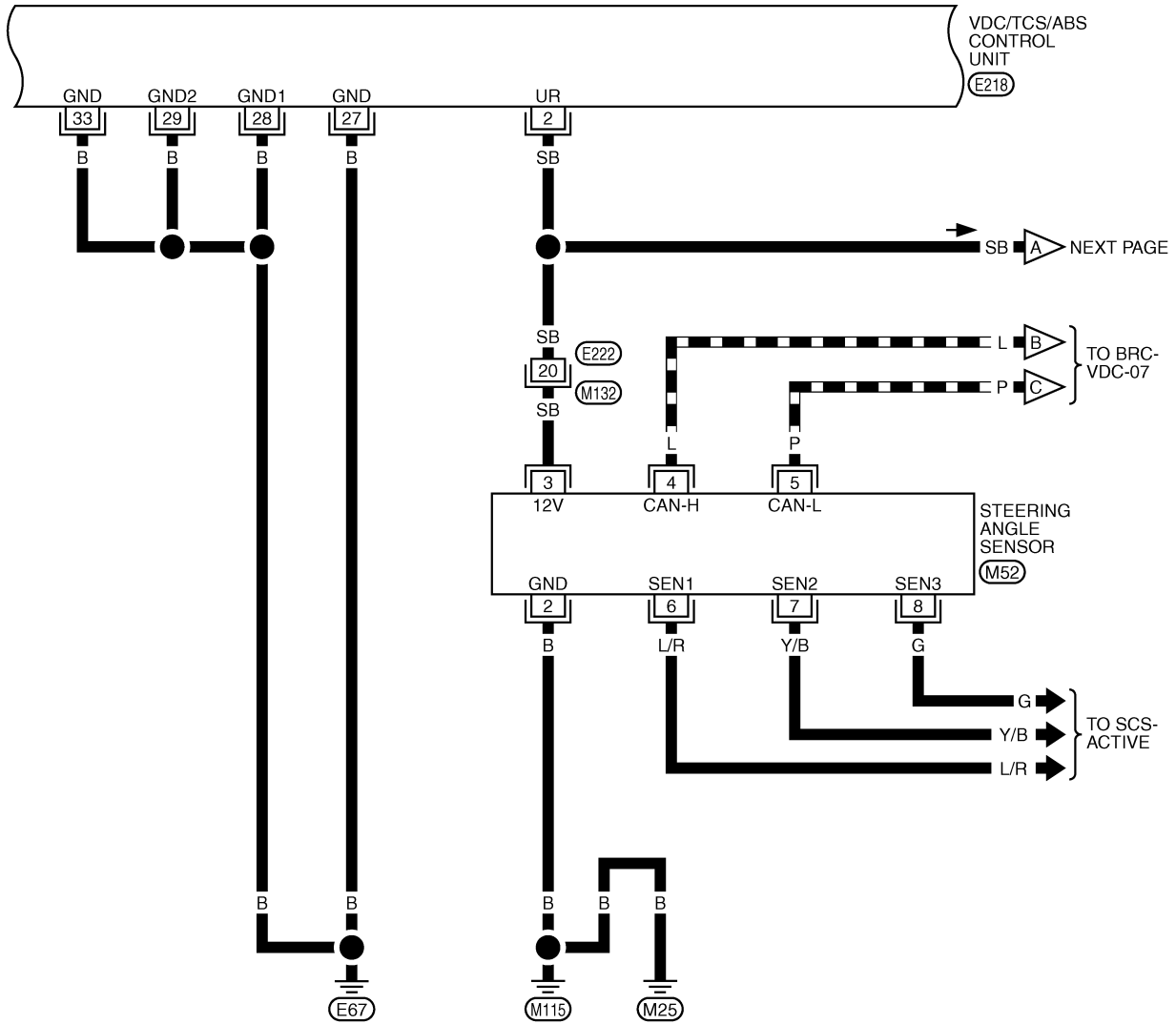
TFWM0214E

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-04

▬ : DATA LINE

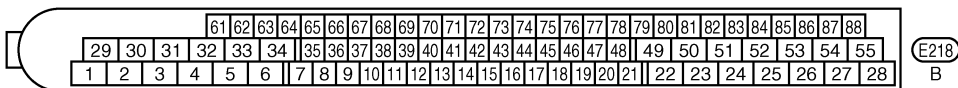
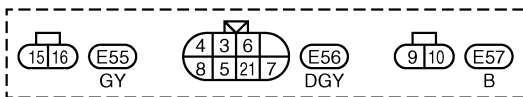
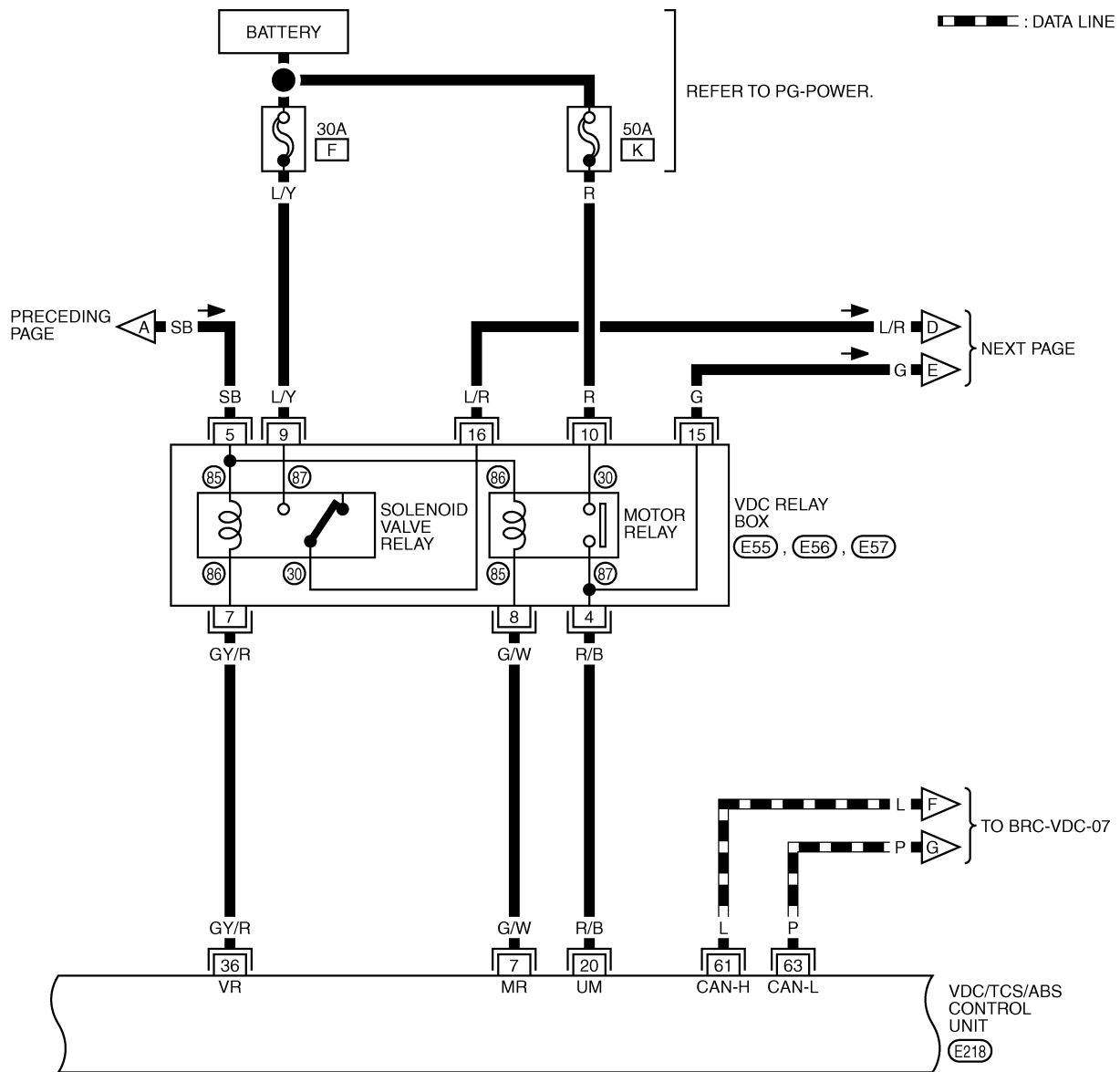


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TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-05

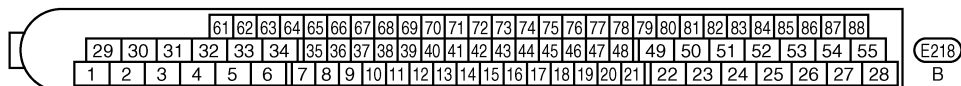
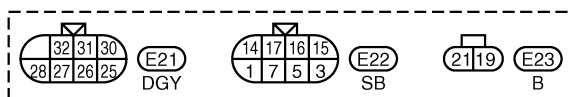
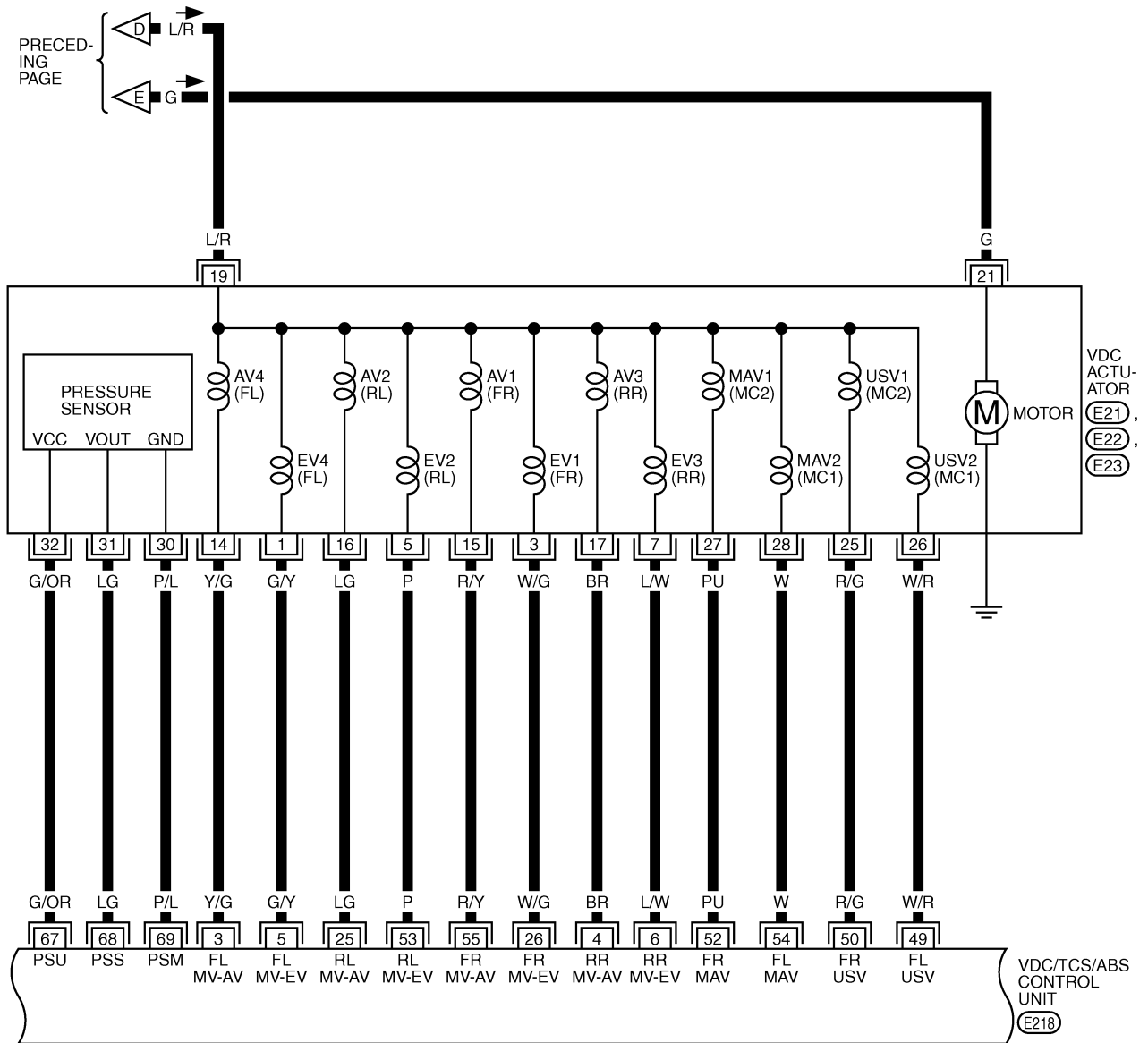


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TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-06

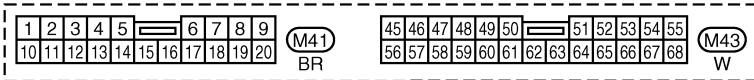
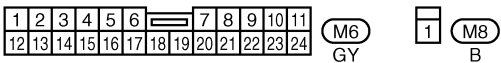
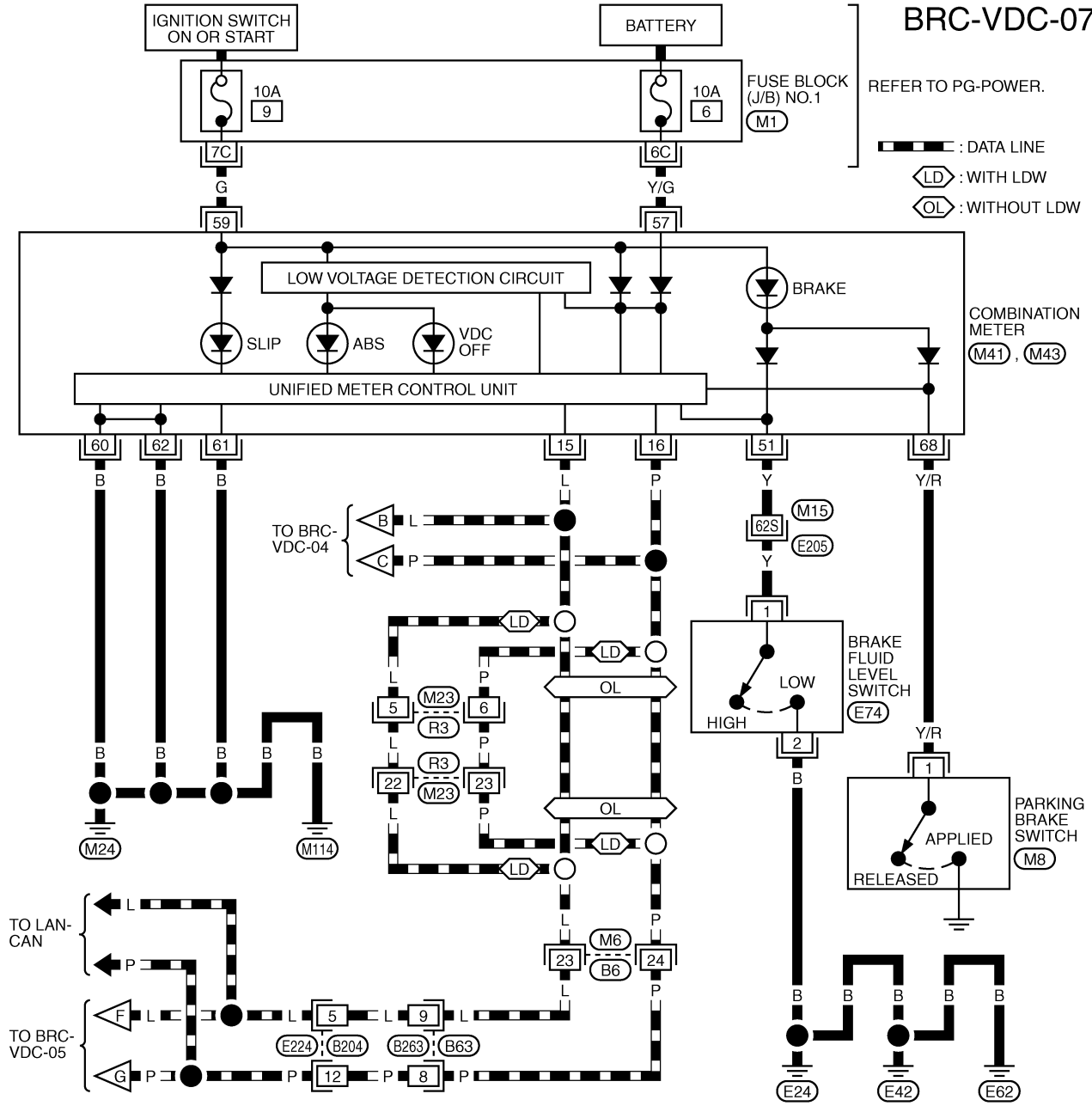


TFWM0092E

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-07



REFER TO THE FOLLOWING.

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

TFWM0216E

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Control Unit Input/Output Signal Standard VDC/TCS/ABS CONTROL UNIT INSPECTION TABLE Specifications with CONSULT-II

NFS000CU

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-POSI SIG	Conditions of N, R and P position signals	N position	ON	BRC-51, "Park/Neutral Position Switch"
		Any position other than N	OFF	
R-POSI SIG		When R position	ON	
		Not R position	OFF	
P-POSI SIG		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 FR VHCL SPEED FL VHCL SPEED RR VHCL SPEED RL	Wheel speed	Vehicle stopped	0 [km/h]	BRC-36, "Wheel Sensor"
		Vehicle running (Note 1)	Almost in accordance with speedometer display (within $\pm 10\%$)	
THRTL OPENING	Throttle actuator opening/closing is displayed (linked with accelerator pedal).	Accelerator pedal not depressed (ignition switch is ON)	0%	BRC-38, "Engine System Control Signal"
		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°	BRC-40, "Steering Angle Sensor"
		Steering wheel turned	-720 to 720°	
YAW RATE SEN	Yaw rate detected by yaw rate sensor	Vehicle stopped	Approx. 0 d/s	BRC-42, "Yaw Rate/Side G Sensor"
		Vehicle running	-70 to 70 d/s	
SIDE G-SEN	Transverse G detected by side G sensor	Vehicle stopped	Approx. 0 m/s ²	-24.3 to 24.1 m/s ²
		Vehicle running		
PRESS SENSOR	Brake fluid pressure detected by pressure sensor	With ignition switch turned ON and brake pedal released	Approx. 0 bar	BRC-39, "Pressure Sensor"
		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	BRC-50, "VDC/TCS/ABS Control Unit Power Supply And Ground Circuit"
STOP LAMP SW	Brake pedal operation	Brake pedal depressed	ON	BRC-49, "Stop Lamp Switch"
		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	BRC-56. "PARKING BRAKE SWITCH"
		Parking brake not depressed	OFF	
OFF SW	OFF switch ON/OFF status	VDC OFF switch on (When VDC OFF indicator lamp is on)	ON	BRC-55. "VDC OFF SWITCH"
		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	BRC-35. "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, AND SLIP INDICATOR LAMP"
		ABS warning lamp off	OFF	
VDC OFF LAMP	VDC OFF indicator lamp status (Note 2)	When VDC OFF indicator lamp is on	ON	BRC-35. "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, AND SLIP INDICATOR LAMP"
		When VDC OFF indicator lamp is off	OFF	
SLIP LAMP	SLIP indicator lamp status (Note 2)	When SLIP indicator lamp is ON.	ON	BRC-35. "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, AND SLIP INDICATOR LAMP"
		When SLIP indicator lamp is OFF.	OFF	
EV SIGNAL-FL EV SIGNAL-RR EV SIGNAL-FR EV SIGNAL-RL AV SIGNAL-FL AV SIGNAL-RR AV SIGNAL-FR AV SIGNAL-RL	Solenoid valve operation	Actuator (solenoid) is active ("ACTIVE TEST" with CONSULT-II).	ON	BRC-44. "Solenoid and VDC Switching Valve"
		When actuator (solenoid) is not active.	OFF	
USV SIGNAL-P USV SIGNAL-S MAV SIGNAL-P MAV SIGNAL-S	VDC switch-over valve status	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-II).	ON	BRC-44. "Solenoid and VDC Switching Valve"
		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	BRC-46. "Actuator Motor and Motor Relay"
		When actuator motor and motor relay are inactive.	OFF	
FLUID LEV SW	Brake fluid level switch status	When brake fluid level switch ON.	ON	BRC-53. "Brake Fluid Level Switch"
		When brake fluid level switch OFF.	OFF	

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Note 1: Confirm tire pressure is normal.

Note 2: ON/OFF timing of warning lamp and indicator lamp. Refer to [BRC-35. "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, AND SLIP INDICATOR LAMP"](#).

CONSULT-II Functions (VDC) CONSULT-II MAIN FUNCTION

NFS000CV

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

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Diagnostic test mode	Function	Reference
WORK SUPPORT	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-II.	BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"
SELF-DIAG RESULTS	Self-diagnostic results can be read and erased quickly.	BRC-24, "SELF-DIAG RESULT MODE"
DATA MONITOR	Input/Output data in the VDC/TCS/ABS control unit can be read.	BRC-27, "DATA MONITOR MODE"
CAN DIAG SUPPORT MNTR	The results of transmit/receive diagnosis of communication can be read.	LAN-29, "CAN Diagnostic Support Monitor"
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.	BRC-30, "ACTIVE TEST"
FUNCTION TEST	Performed by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".	Separate volume "CONSULT-II OPERATION MANUAL (FUNCTION TEST)"
ECU PART NUMBER	VDC/TCS/ABS control unit part number can be read.	—

CONSULT-II SETTING PROCEDURE

Refer to [GI-36, "CONSULT-II Start Procedure"](#) .

SELF-DIAG RESULT MODE

Operation Procedure

1. Perform "CONSULT-II Start Procedure". Refer to [GI-36, "CONSULT-II Start Procedure"](#) .
2. Start engine and drive at approximately 30 km/h (19 MPH) for approximately 1 minute.
3. Stop vehicle. With engine at idle, touch "SELF-DIAG RESULTS". Display shows malfunction experienced since the last erasing operation.
4. Self-diagnosis results are displayed. (If necessary, touch "PRINT" to print self-diagnosis result.)
 - When "NO FAILURE" is shown, check ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp. Refer to [BRC-60, "ABS Warning Lamp Indication Is Not Normal"](#) , [BRC-61, "Slip Indicator Lamp Indication Is Not Normal"](#) , [BRC-61, "VDC OFF Indicator Lamp Indication Is Not Normal"](#) .
 - 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.
5. Go to appropriate inspection from to display item list, and repair or replace as necessary.
6. Start engine and drive at approximately 30 km/h (19 MPH) for approximately 1 minute.

CAUTION:

- Check again to make sure that there is no malfunction on other parts.
- When a wheel sensor "short-circuit" is detected, if the vehicle is not driven at 30 km/h (19 MPH) for at least 1 minute, the ABS warning lamp will not turn off even if everything is normal.

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Display Item List

Items (CONSULT-II screen terms)	Malfunction is detected when...	Check item	
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.		BRC-36, "Wheel Sensor" (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.		BRC-46, "Actuator Motor and Motor Relay"
	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.	BRC-49, "Stop Lamp Switch"	
PRESS SEN CIRCUIT	Pressure sensor signal line is open or shorted, or pressure sensor is malfunctioning.	BRC-39, "Pressure Sensor"	
ST ANGLE SEN CIRCUIT	Neutral position of steering angle sensor is dislocated, or steering angle sensor is malfunctioning.	BRC-40, "Steering Angle Sensor"	
YAW RATE SENSOR	Yaw rate/side G sensor is malfunctioning, or the yaw rate/side G sensor signal line is open or shorted.	BRC-42, "Yaw Rate/Side G Sensor"	
FR LH IN ABS SOL	When the control unit detects a malfunction in the front left inlet solenoid circuit.	BRC-44, "Solenoid and VDC Switching Valve"	
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.		

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TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Items (CONSULT-II screen terms)	Malfunction is detected when...	Check item
PRIMARY SIDE USV CIRCUIT	When the primary side VDC switch over valve 1 circuit is open or short-circuited.	BRC-44. "Solenoid and VDC Switching Valve"
SECONDARY SIDE USV CIRCUIT	When the secondary side VDC switch over valve 1 circuit is open or short-circuited.	
PRIMARY SIDE HSV CIRCUIT	When the primary side VDC switch over valve 2 circuit is open or short-circuited.	
SECONDARY SIDE HSV CIRCUIT	When the secondary side VDC switch over valve 2 circuit is open or short-circuited.	
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.	BRC-46. "Actuator Motor and Motor Relay"
	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.	BRC-50. "VDC/TCS/ABS Control Unit Power Supply And Ground Circuit"
ST ANGLE SEN SIGNAL	Neutral position correction of steering angle sensor is not finished.	BRC-6. "Adjustment of Steering Angle Sensor Neutral Position"
SIDE G-SEN CIRCUIT	Side G sensor is malfunctioning, or signal line of side G sensor is open or shorted.	BRC-42. "Yaw Rate/Side G Sensor"
EMERGENCY BRAKE	VDC/TCS/ABS control unit malfunction (pressure increase is too much or too little.)	BRC-38. "VDC/TCS/ABS Control Unit"
CONTROLLER FAILURE	Internal malfunction of VDC/TCS/ABS control unit	BRC-38. "VDC/TCS/ABS Control Unit"
SHIFT POSITION ERROR	P-position switch stuck to ON or TCM internal malfunction, VDC/TCS/ABS control unit internal malfunction.	BRC-51. "Park/Neutral Position Switch"
BR FLUID LEVEL LOW	Brake fluid level drops or communication line between VDC/TCS/ABS control unit and brake fluid level switch is open or shorted.	BRC-53. "Brake Fluid Level Switch"
ENGINE SIGNAL 2-6	Major engine components are malfunctioning.	BRC-38. "Engine System Control Signal"
RAS CIRCUIT	When RAS system is malfunctioning.	BRC-55. "RAS Control Unit (With RAS)"
ST ANG SEN COM CIR	CAN communication line or steering angle sensor has generated an error.	BRC-54. "CAN Communication Circuit"
CAN COMM CIRCUIT	<ul style="list-style-type: none"> ● CAN communication line is open or shorted. ● VDC/TCS/ABS control unit internal malfunction ● Battery voltage for EMC is suddenly interrupted for approximately 0.5 seconds or more. 	BRC-54. "CAN Communication Circuit" Note 2
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	No NG item has been detected.	—

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, perform diagnosis for CAN communication line first.

How to Erase Self-Diagnostic Results

1. Perform applicably inspection of malfunctioning item and then repair or replace.
2. Start engine and drive at 30 km/h (19 MPH) or more for approx. 1 minute.
3. Turn ignition switch "OFF" to erase memory.
4. Start engine and select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
5. Touch "ERASE" on CONSULT-II screen to erase memory.

CAUTION:

If memory cannot be erased, perform applicably diagnosis.

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

6. Drive at 30 km/h (19 MPH) or more for approx. 1 minute. Be sure ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp stay OFF.

CAUTION:

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

DATA MONITOR MODE

Operation Procedure

1. Perform "CONSULT-II Start Procedure". Refer to [GI-36, "CONSULT-II Start Procedure"](#).
2. Touch "DATA MONITOR".
3. Select from "SELECT MONITOR ITEM", screen of data monitor mode is displayed.

Display Item List

×: Applicable –: Not applicable

Data monitor item (Unit)	SELECT MONITOR ITEM			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.
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 ²)	×	-	×	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.

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Data monitor item (Unit)	SELECT MONITOR ITEM			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
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.
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 fail signal (ON/OFF) status is displayed.
TCS FAIL SIG (ON/OFF)	-	-	×	TCS fail signal (ON/OFF) status is displayed.
ABS FAIL SIG (ON/OFF)	-	-	×	ABS fail signal (ON/OFF) status is displayed.
EBD FAIL SIG (ON/OFF)	-	-	×	EBD fail signal (ON/OFF) status is displayed.
FLUID LEV SW (ON/OFF)	-	-	×	Brake fluid level warning lamp switch (ON/OFF) status is displayed.
EBD SIGNAL (ON/OFF)	-	-	×	EBD operation (ON/OFF) status is displayed.

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Data monitor item (Unit)	SELECT MONITOR ITEM			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
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.

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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 stet SLIP indicator lamp stet on before starting ACTIVE TEST.
- ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp turn on during ACTIVE TEST.

Operation Procedure

1. Perform "CONSULT-II Start Procedure". Refer to [GI-36, "CONSULT-II Start Procedure"](#).
2. Touch "ACTIVE TEST".
3. The "SELECT TEST ITEM" is displayed.
4. Touch necessary test item.
5. While "MAIN SIGNALS" indication is inverted, touch "START".
6. "ACTIVE TEST" screen will be displayed so perform the following test.

NOTE:

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

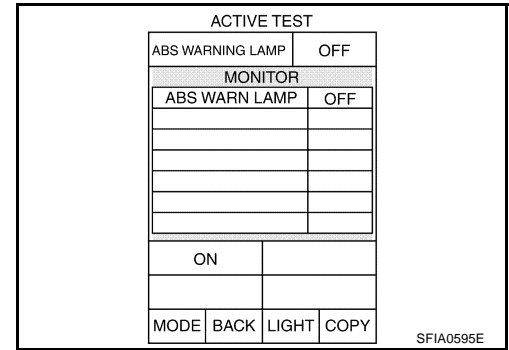
SELECT TEST ITEM
FR RH ABS SOLENOID(TEST1)
FR RH ABS SOLENOID(TEST2)
FR LH ABS SOLENOID(TEST1)
FR LH ABS SOLENOID(TEST2)
RR RH ABS SOLENOID(TEST1)
RR RH ABS SOLENOID(TEST2)

SFIA0162E

ABS Warning Lamp

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

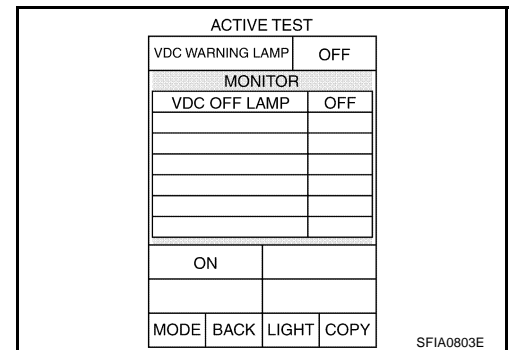
Operation	ON	OFF
ABS WARN LAMP	ON	OFF



VDC OFF Indicator Lamp

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

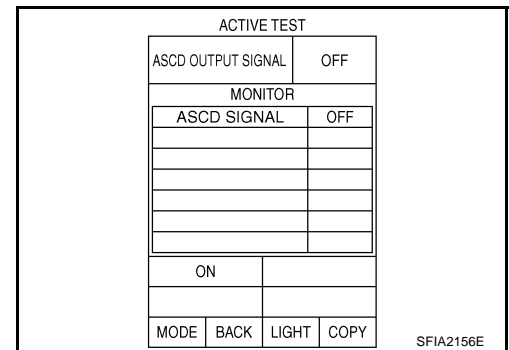
Operation	ON	OFF
VDC OFF LAMP	ON	OFF



ASCD Output

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

Operation	ON	OFF
ASCD SIGNAL	ON	OFF



VDC/TCS/ABS CONTROL UNIT PART NUMBER

Ignore the VDC/TCS/ABS control unit part number displayed in the "ECU PART NUMBER". Refer to parts catalog to order the VDC/TCS/ABS control unit.

Trouble Diagnosis Chart for Symptoms

NFS00012

If ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp turn ON, perform self-diagnosis. Refer to [BRC-24. "SELF-DIAG RESULT MODE"](#).

Symptom	Check item	Reference Page
Excessive ABS Function Operation Frequency	Brake force distribution	BRC-58
	Looseness of front and rear axle	
	Wheel sensor and rotor system	
Unexpected pedal reaction	Brake pedal stroke	BRC-58
	Make sure the braking force is sufficient when the ABS is not operating.	
The braking distance is long	Check stopping distance when the ABS is not operating.	BRC-59
The ABS function does not operate	Wheel sensor	BRC-59
	The ABS does not operate when the speed is 10 km/h (6MPH) or less.	

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Symptom	Check item	Reference Page
Pedal vibration or ABS operation sound occurs	Wheel sensor	BRC-59
	Under several conditions, When brake pedal is lightly depressed (just place a foot on it), ABS is activated and vibration is felt. However this is normal,	
Vehicle jerks during VDC/TCS/ABS control	VDC/TCS/ABS control unit	BRC-60
	Unified ECM	
	Unified TCM	
ABS warning lamp indication is not normal	CAN communication line	BRC-60
	VDC/TCS/ABS control unit	
	Combination meter	
SLIP indicator lamp is not normal	CAN communication line	BRC-61
	VDC/TCS/ABS control unit	
	Combination meter	
VDC OFF indicator lamp is not normal	CAN communication line	BRC-61
	VDC/TCS/ABS control unit	
	Combination meter	

A
B
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BRC
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L
M

For Fast and Accurate Diagnosis

NFS000CW

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-26, "How to Erase Self-Diagnostic Results"](#) .
- 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

Basic Inspection

NFS000HP

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.

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

- 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-28, "DISC ROTOR INSPECTION"](#) , Front pad:[BR-23, "PAD WEAR INSPECTION"](#) , Rear disk rotor: [BR-33, "DISC ROTOR INSPECTION"](#) , Rear pad: [BR-29, "PAD WEAR INSPECTION"](#) .

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.

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 switch OFF	-	-	-
When ignition switch is turned ON.	x	x	x
After ignition switch ON.	-	-	-
VDC OFF switch turned ON. (VDC function is OFF.)	-	x	-
VDC/TCS function is malfunctioning.	-	x	x
VDC/TCS/ABS function is malfunctioning.	x	x	x
EBD function is malfunctioning.	x	x	x

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, "CAN Communication Circuit"](#) . 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-26, "How to Erase Self-Diagnostic Results"](#) .

NOTE:

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

TROUBLE DIAGNOSIS FOR SYSTEM

PFP:00000

**Wheel Sensor
INSPECTION PROCEDURE**

NFS000CY

1. CHECK SELF-DIAGNOSTIC RESULTS**④ With CONSULT-II**

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. 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?

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

2. CHECK TIRE

Check air pressure, wear and size.

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

- YES >> GO TO 3.
NO >> Adjust air pressure, or replace tire.

3. CHECK SENSOR AND SENSOR ROTOR

- Check the condition of the sensor mount (for looseness, etc.).
- Check the surface of front sensor rotor for damage.
- Check rear sensor rotor for damage.

OK or NG

- OK >> GO TO 4.
NG >> Repair sensor mount or replace sensor rotor. Refer to [BRC-66, "SENSOR ROTOR"](#).

4. CHECK CONNECTOR

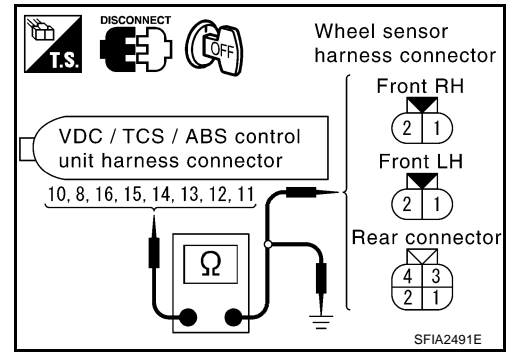
1. Turn ignition switch "OFF".
2. Disconnect VDC/TCS/ABS control unit connector E218 and malfunctioning wheel sensor connector E20 (FR-RH), E70 (FR-LH), B35 (RR-RH, RR-LH). Check terminal to see if it is deformed, disconnected, loose, etc., Repair or replace it if any malfunction condition is found.
3. Reconnect connectors and then perform the self-diagnosis. Refer to [BRC-24, "SELF-DIAG RESULT MODE"](#).

OK or NG

- OK >> INSPECTION END
NG >> GO TO 5.

5. CHECK WHEEL SENSOR HARNESS

1. Turn ignition switch "OFF".
2. Disconnect malfunctioning wheel sensor connector E20 (FR-RH), E70 (FR-LH), B35 (RR-RH, RR-LH) and VDC/TCS/ABS control unit harness connector E218.
3. 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 circuit		Signal circuit		Ground circuit	
	VDC/TCS/ABS control unit harness connector	Wheel sensor harness connector	VDC/TCS/ABS control unit harness connector	Wheel sensor harness connector	VDC/TCS/ABS control unit harness connector	Ground
Front RH	15	1	16	2	15, 16	—
Front LH	8	1	10	2	8, 10	
Rear RH	11	1	12	2	11, 12	
Rear LH	13	3	14	4	13, 14	

- Power circuit** : Continuity should exist.
- Signal circuit** : Continuity should exist.
- Ground circuit** : 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.

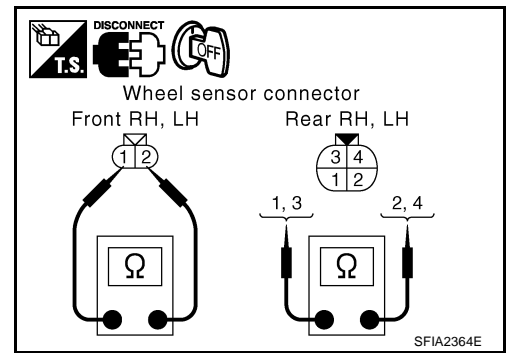
6. CHECK WHEEL SENSOR

1. Check resistance value of malfunctioning wheel sensor.

Resistance value		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 VDC/TCS/ABS control unit.
- NG >> Replace wheel sensor.



Engine System Control Signal INSPECTION PROCEDURE

NFS000CZ

1. CHECK SELF-DIAGNOSIS RESULTS

Ⓟ With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic 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?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK ENGINE SYSTEM

1. Perform ECM self-diagnosis. Repair or replace items indicated, then perform ECM self-diagnosis again. Refer to [EC-82. "TROUBLE DIAGNOSIS"](#).
2. Perform VDC/TCS/ABS control unit self-diagnosis again.

OK or NG

OK >> INSPECTION END

NG >> ● Repair or replace malfunctioning components.

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

VDC/TCS/ABS Control Unit INSPECTION PROCEDURE

NFS000D0

1. CHECK SELF-DIAGNOSTIC RESULTS

Ⓟ With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the 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?

YES >> ● Replace VDC/TCS/ABS control unit.

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

NO >> INSPECTION END

Pressure Sensor INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Ⓟ **With CONSULT-II**

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic results.

Self-diagnosis results
PRESS SEN CIRCUIT

Is above displayed in self-diagnosis display?

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

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect VDC actuator connector E21 and VDC/TCS/ABS control unit connector E218, check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found. Repair or replace terminal.
3. Reconnect connectors and then perform the self-diagnosis. Refer to [BRC-24, "SELF-DIAG RESULT MODE"](#).

OK or NG

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

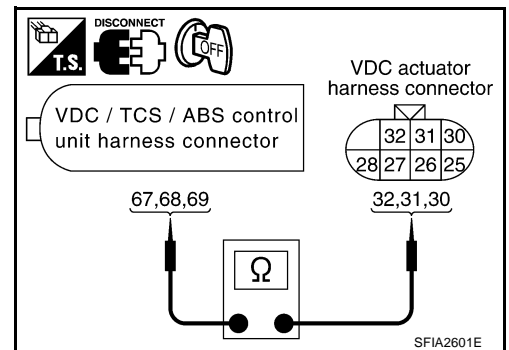
3. CHECK PRESSURE SENSOR CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect VDC actuator connector and VDC/TCS/ABS control unit connector.
3. Check continuity between VDC/TCS/ABS control unit harness connector E218 and VDC actuator harness connector E21.

- 69 - 30 : Continuity should exist.**
68 - 31 : Continuity should exist.
67 - 32 : Continuity should exist.

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 E218.
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).

Steering Angle Sensor INSPECTION PROCEDURE

NFS000D2

1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic results.

Self-diagnosis results
ST ANGLE SEN COM CIR

Is the "ST ANGLE SEN COM CIR" display?

- YES >> GO TO [LAN-17, "Precautions When Using CONSULT-II"](#).
 NO >> GO TO 2.

2. CHECK SELF-DIAGNOSIS RESULTS

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic results.

Self-diagnosis results
ST ANGLE SEN CIRCUIT

Is the "ST ANGLE SEN CIRCUIT" display?

- YES >> GO TO 3.
 NO >> INSPECTION END

3. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect steering angle sensor connector M52 and VDC/TCS/ABS control unit connector E218. And check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
3. Reconnect connectors and then perform the self-diagnosis.

OK or NG

- OK >> INSPECTION END
- NG >> GO TO 4.

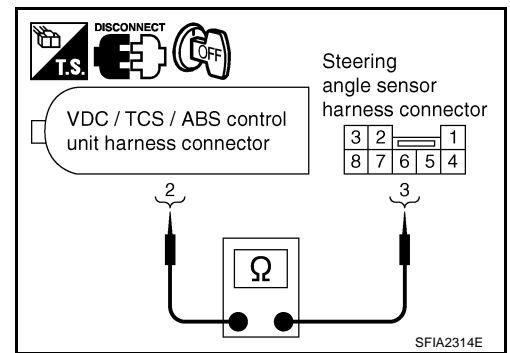
4. CHECK STEERING ANGLE SENSOR CIRCUIT

1. Turn ignition switch "OFF".
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.

2 - 3 : Continuity should exist.

OK or NG

- OK >> GO TO 5.
- NG >> Open or short in harness. Repair or replace suspect harness.



5. CHECK DATA MONITOR

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "VDC" with CONSULT-II.
3. Execute "DATA MONITOR" for "STEERING ANGLE SIGNAL". Make sure 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"](#).

Yaw Rate/Side G Sensor**CAUTION:**

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

INSPECTION PROCEDURE**1. CHECK SELF-DIAGNOSIS RESULTS****④ With CONSULT-II**

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic results.

 Self-diagnosis results

 YAW RATE SENOR

 SIDE G-SENSOR CIRCUIT

Is above displayed in the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect yaw rate/side G sensor connector M99 and VDC/TCS/ABS control unit connector E218 and check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
3. Reconnect connectors and then perform the self-diagnosis.

OK or NG

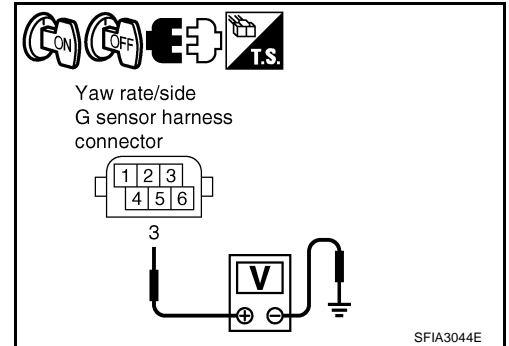
OK >> INSPECTION END

NG >> GO TO 3.

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

1. Turn ignition switch "OFF".
2. Disconnect yaw rate/side G sensor connector M99.
3. Turn ignition switch "ON" or "OFF".
4. Check voltage between yaw rate/side G sensor harness connector M99 terminal 3 and ground.

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



OK or NG

OK >> GO TO 4.

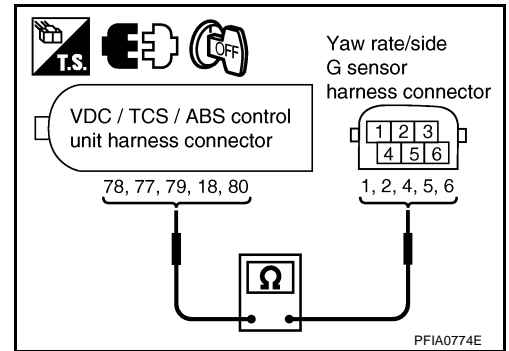
NG >> ● Repair or replace malfunctioning components.

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

4. CHECK YAW RATE/SIDE G SENSOR HARNESS

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

- 78 - 1 : Continuity should exist.
- 77 - 2 : Continuity should exist.
- 79 - 4 : Continuity should exist.
- 18 - 5 : Continuity should exist.
- 80 - 6 : Continuity should exist.



OK or NG

OK >> GO TO 5.

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

5. CHECK DATA MONITOR

🔧 With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "VDC" with CONSULT-II.
3. Check "DATA MONITOR" for yaw rate /side G sensor. Make sure 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 ²
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.

Solenoid and VDC Switching Valve INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Ⓟ With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic 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 HSV CIRCUIT
SECONDARY SIDE HSV CIRCUIT

Is above displayed in the self-diagnosis display?

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

2. CHECK CONNECTOR

1. Turn ignition switch OFF and disconnect VDC/TCS/ABS control unit connector E218 and VDC actuator connector E21, E22, check terminal for deformation, disconnection, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connectors and then perform the self-diagnosis.

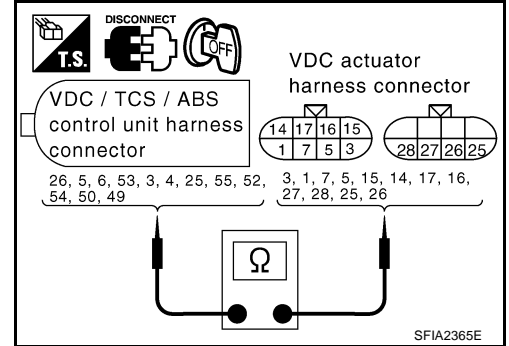
OK or NG

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

3. CHECK SOLENOID AND VDC SWITCHING VALVE CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect VDC actuator connector E21, E22 and VDC/TCS/ABS control unit connector.
3. Check continuity between VDC/TCS/ABS control unit harness connector E218 and VDC actuator harness connector E21, E22.

Item	VDC/TCS/ABS control unit	VDC actuator	Continuity
FR LH IN ABS SOL	5	1	Continuity should exist.
FR LH OUT ABS SOL	3	14	
RR RH IN ABS SOL	6	7	
RR RH OUT ABS SOL	4	17	
FR RH IN ABS SOL	26	3	
FR RH OUT ABS SOL	55	15	
RR LH IN ABS SOL	53	5	
RR LH OUT ABS SOL	25	16	
PRIMARY SIDE USV CIRCUIT	49	26	
SECONDARY SIDE USV CIRCUIT	50	25	
PRIMARY SIDE HSV CIRCUIT	54	28	
SECONDARY SIDE HSV CIRCUIT	52	27	



OK or NG

OK >> GO TO 4.

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

4. CHECK SOLENOID AND VDC SWITCHING VALVE INPUT SIGNAL

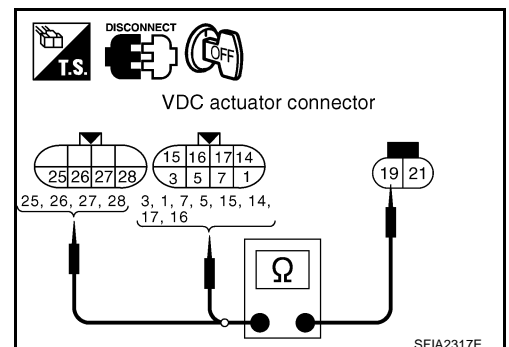
1. Turn ignition switch "OFF".
2. Disconnect VDC actuator connector.
3. Check resistance of VDC actuator solenoid.

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

OK or NG

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

NO >> Replace VDC actuator assembly.



Actuator Motor and Motor Relay INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Ⓟ With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic results.

Self-diagnosis results

PUMP MOTOR ACTUATOR RLY

Is above displayed in the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect VDC/TCS/ABS control unit connector E218, VDC actuator connector and VDC relay box connector E55, E56, E57, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
3. Reconnect connectors and then perform the self-diagnosis.

OK or NG

OK >> INSPECTION END.

NG >> GO TO 3.

3. CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect VDC relay box connector E57.
3. Check voltage between VDC relay box harness connector E57 and body ground.

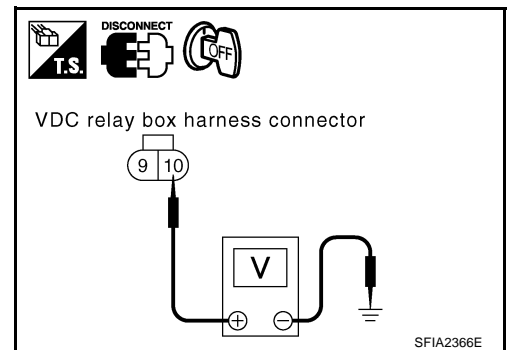
10 - Ground : **Battery voltage.**

OK or NG

OK >> GO TO 4.

NG >> ● Check fuse 50 A.

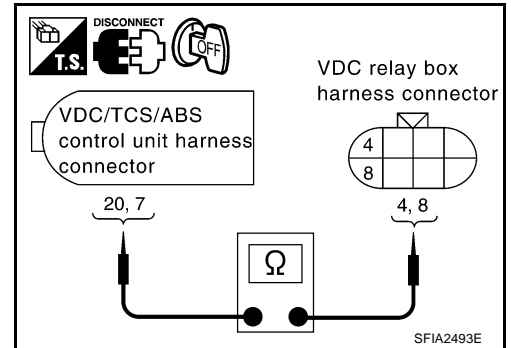
- Check that there is continuity between battery and VDC relay box terminal No. 10.



4. CHECK MOTOR RELAY CIRCUIT

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

20 - 4 : Continuity should exist.
7 - 8 : Continuity should exist.

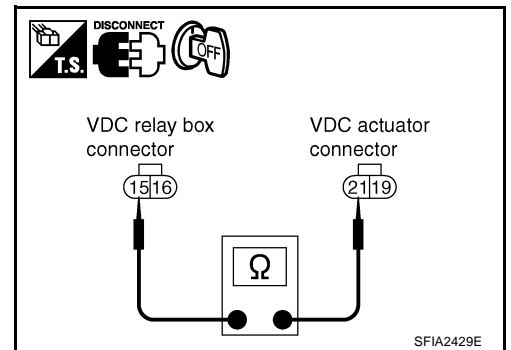


4. Check continuity between VDC relay box harness connector E55 and VDC actuator harness connector E23.

15 - 21 : Continuity should exist.

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.



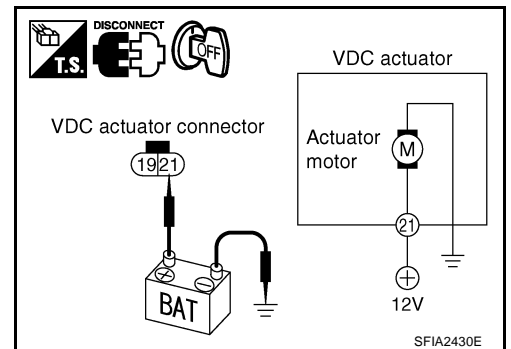
5. CHECK ABS MOTOR CIRCUIT

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-56. "VDC RELAY BOX"](#) .

OK or NG

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

Actuator Relay INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Ⓟ With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic results.

Self-diagnosis results

MAIN RELAY

Is above displayed in the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect VDC/TCS/ABS control unit connector E218 and VDC relay box connector E57. Then reconnect it securely.
3. 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. Turn ignition switch "OFF".
2. Disconnect VDC relay box connector E57.
3. Check voltage between VDC relay box harness connector E57 and ground.

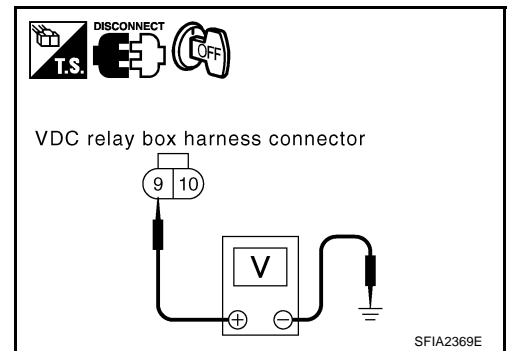
9 - Ground : **Battery voltage**

OK or NG

OK >> GO TO 4.

NG >> ● Check fuse 30A.

- Check continuity between battery and VDC relay box harness connector E57 terminal 9. If it is not OK, replace fuse or harness.



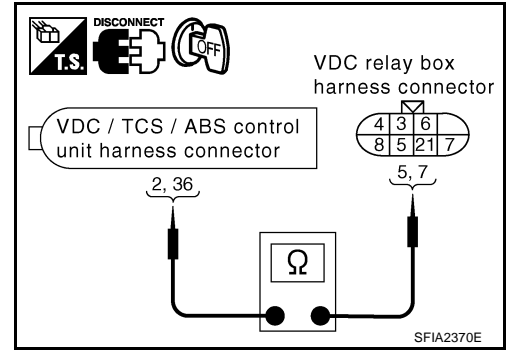
4. CHECK ACTUATOR RELAY POWER CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect VDC/TCS/ABS control unit connector and VDC relay box connector E56.
3. Check continuity between VDC/TCS/ABS control unit harness connector E218 and VDC relay box harness connector E56.

2 - 5 : Continuity should exist.
36 - 7 : Continuity should exist.

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-56, "VDC RELAY BOX"](#) .

OK or NG

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

Stop Lamp Switch INSPECTION PROCEDURE

NFS000D7

1. CHECKING SELF-DIAGNOSIS RESULTS

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic results.

Self-diagnosis results

STOP LAMP SW

Is above displayed in the self-diagnosis display?

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

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect stop lamp switch connector M402 and VDC/TCS/ABS control unit connector E218.
3. Reconnect connectors securely.
4. Start engine.
5. Repeat pumping brake pedal carefully several times, then perform self-diagnosis again.

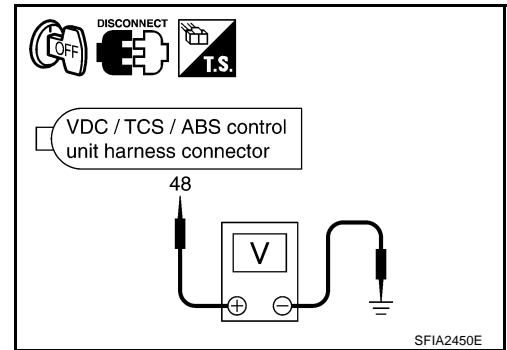
Do any self-diagnosis items appear?

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

3. CHECK STOP LAMP SWITCH CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect VDC/TCS/ABS control unit harness connector.
3. Check continuity between VDC/TCS/ABS control unit harness connector E218 terminal 48 and ground.

VDC/TCS/ABS control unit	Measurement condition	Voltage
48 - Ground	Brake pedal depressed	Battery voltage (Approx. 12 V)
	Brake pedal not depressed	Approx 0 V



OK or NG

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

VDC/TCS/ABS Control Unit Power Supply And Ground Circuit INSPECTION PROCEDURE

NFS000D8

1. CHECKING SELF-DIAGNOSIS RESULT

Ⓜ With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic results.

Self-diagnosis results
LOW POWER VOLTAGE

Is above displayed in self-diagnosis display?

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

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect VDC/TCS/ABS control unit connector. Then reconnect it securely.
3. Perform self-diagnosis.

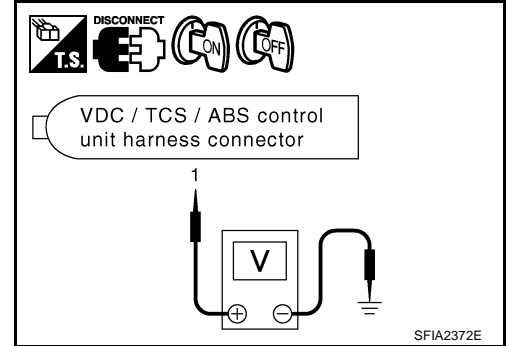
Do any self-diagnosis items appear?

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

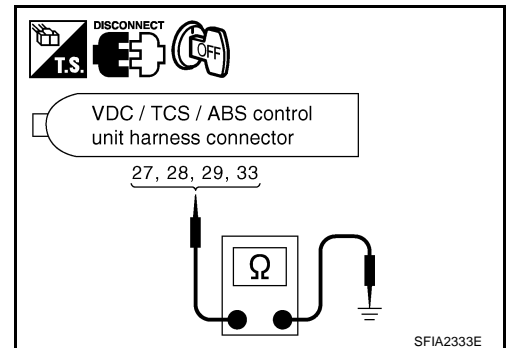
3. CHECK VDC/TCS/ABS CONTROL UNIT POWER AND GROUND CIRCUIT

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

VDC/TCS/ABS control unit	Condition	Voltage (Approx.)
1 - Ground	Ignition switch ON	Battery voltage (Approx. 12 V)
	Ignition switch OFF	Approx 0 V



VDC/TCS/ABS control unit	Condition	Continuity
27 - Ground	Ignition switch OFF	Yes
28 - Ground		
29 - Ground		
33 - Ground		



OK or NG

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

Park/Neutral Position Switch INSPECTION PROCEDURE

NFS000D9

1. CHECK SELF-DIAGNOSIS RESULTS

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic results.

Self-diagnosis results
SHIFT POSITION ERROR

Is above displayed in the self-diagnosis display?

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

2. CHECK DATA MONITOR

④ With CONSULT-II

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 >> Perform VDC/TCS/ABS control unit self-diagnosis again.
 NG >> GO TO 3.

3. CHECK A/T PARK/NEUTRAL POSITION SWITCH

Perform Park/Neutral position switch inspection. Refer to [AT-107, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#).

Do any self-diagnosis items appear?

- YES >> Repair indicated items and perform VDC/TCS/ABS control unit self-diagnosis again.
 NO >> Perform VDC/TCS/ABS control unit self-diagnosis again.

Brake Fluid Level Switch

CAUTION:

Check brake fluid level before inspection start.

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Ⓟ With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic results.

Self-diagnosis results
BR FLUID LEVEL LOW

Is above displayed in the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect brake fluid level switch connector E74 and VDC/TCS/ABS control unit connector E218.
3. Reconnect connectors securely, then perform VDC/TCS/ABS control unit self-diagnosis again.

Does anything appear on self-diagnosis results display?

YES >> Poor connector connections. Repair or replace connectors.

NO >> GO TO 3.

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

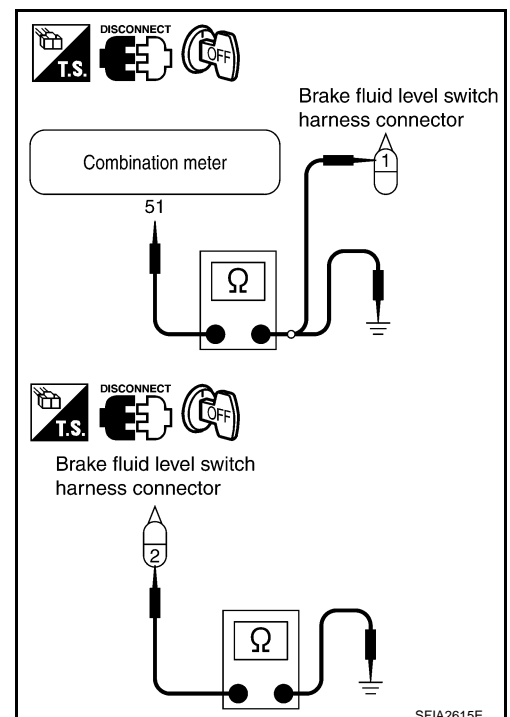
1. Turn ignition switch "OFF".
2. Disconnect combination meter connector M43.
3. Check continuity between brake fluid level switch harness connector E74 and combination meter harness connector M43.

- 51 - 1 : Continuity should exist.**
- 2 - Ground : Continuity should exist.**
- 51 - Ground : Continuity should not exist.**

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.



SFIA2615E

VDC OFF Switch INSPECTION PROCEDURE

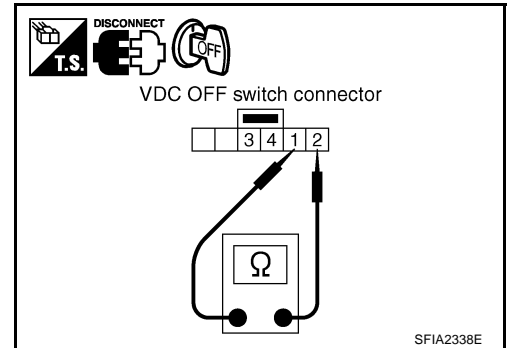
1. CHECK VDC OFF SWITCH

1. Turn ignition switch "OFF".
2. Disconnect VDC OFF switch connector M13.
3. Check continuity between VDC OFF switch connector M13 terminal 1 and 2.

VDC OFF switch connector	Condition	Continuity
1 - 2	VDC OFF switch ON	Yes
	VDC OFF switch OFF	No

OK or NG

- OK >> GO TO 2.
 NG >> Replace VDC OFF switch.



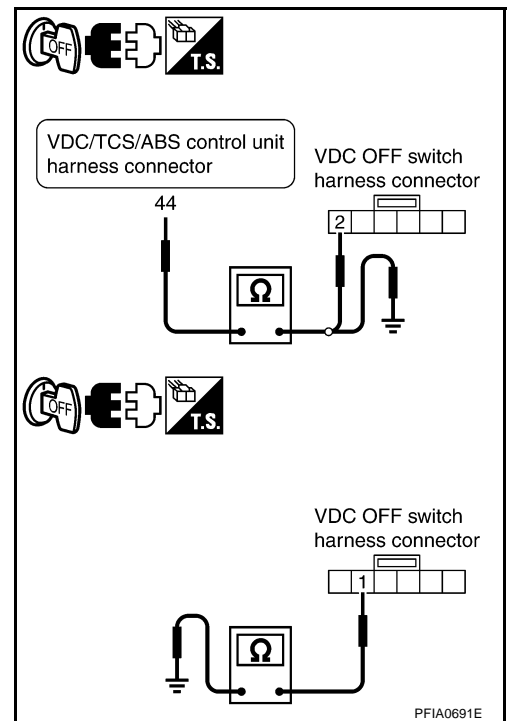
2. CHECK VDC OFF SWITCH HARNESS

1. Turn ignition switch "OFF".
2. Disconnect VDC/TCS/ABS control unit connector E218.
3. Check continuity between VDC OFF switch connector M13 and VDC/TCS/ABS control unit connector E218.

VDC/TCS/ABS control unit	VDC OFF switch	Continuity
44	2	Yes
	Ground	No
Ground	1	Yes

OK or NG

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



CAN Communication Circuit INSPECTION PROCEDURE

- Check the following if "CAN COMM CIRCUIT" or "ST ANG SEN COM CIR" is detected in self-diagnostic results of CONSULT-II.

1. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. 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.
3. 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?

- YES >> Print out self-diagnostic results and go to [LAN-17, "Precautions When Using CONSULT-II"](#) .
- NO >> INSPECTION END

RAS Control Unit (With RAS) INSPECTION PROCEDURE

NFS000HR

1. CHECK SELF-DIAGNOSIS RESULTS

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "VDC" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Check the self-diagnostic results.

Self-diagnosis results
RAS CIRCUIT

Is above displayed on the self-diagnosis display?

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

2. CHECK RAS CONTROL UNIT CIRCUIT

1. Perform RAS control unit self-diagnosis. Repair or replace items indicated, then perform RAS control unit self-diagnosis again. Refer to [STC-49, "SELF-DIAG RESULT MODE"](#) .
2. Perform VDC actuator and electric unit (control unit) self-diagnosis.

OK or NG

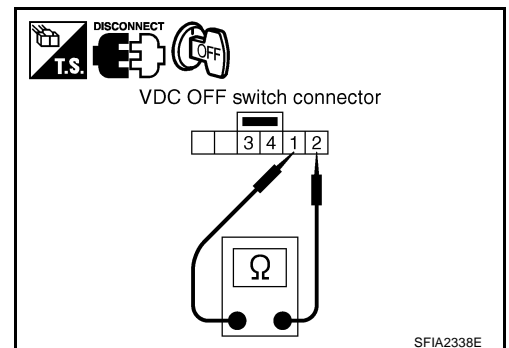
- OK >> INSPECTION END
- NG >> Repair or replace malfunctioning components.

Inspecting Components VDC OFF SWITCH

NFS000DC

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

VDC OFF switch connector	Condition	Continuity
1 - 2	VDC OFF switch ON	Yes
	VDC OFF switch OFF	No



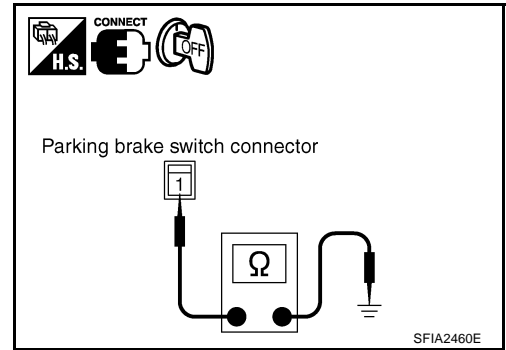
TROUBLE DIAGNOSIS FOR SYSTEM

[VDC/TCS/ABS]

PARKING BRAKE SWITCH

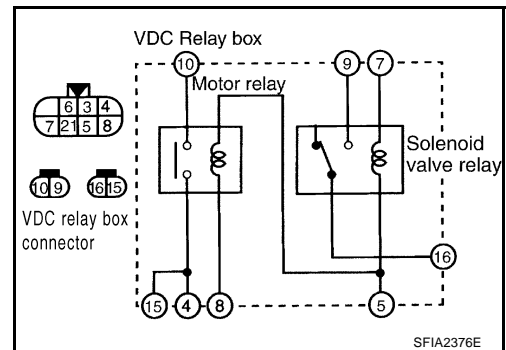
- Turn ignition switch OFF. Check continuity between parking brake switch connector M8 and ground

Parking brake switch connector	Measurement condition	Continuity
1 - Ground	Depressing the parking brake pedal	Yes
	Releasing the parking brake pedal	No



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

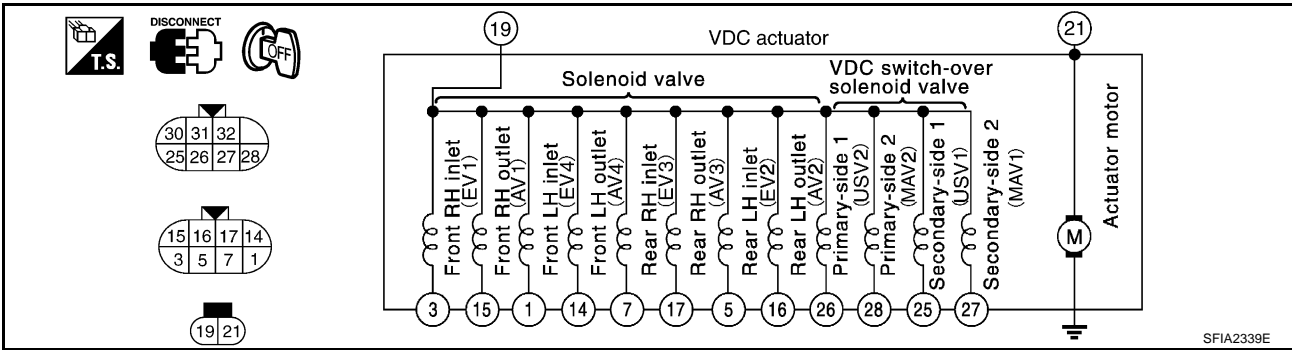
Item	VDC relay box								Condition			
	16	2	4	1	9	4	15	10		5	7	8
Solenoid valve relay	○ — x — ○								Open (0V) ○ — ○			Between terminal No. 5 and No. 7 Open (0V)
	○ — ○								12V ○ — ○			Between terminal No. 5 and No. 7 Add 12V
Motor relay				○ — ○								—
				○ — x — ○					Open (0V) ○ — ○			Between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

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

SFIA2424E

VDC ACTUATOR

Turn ignition switch OFF and 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

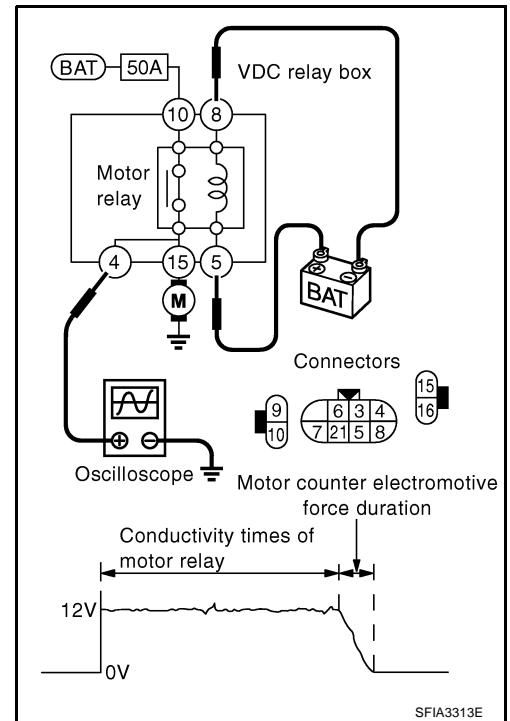
Item	VDC actuator connector terminal number	Continuity and Resistance value	Condition
Solenoid valve	1, 3, 5, 7	6.0 - 11Ω	Check the resistance
	14, 15, 16, 17	3.0 - 5.0Ω	
VDC switch-over solenoid valve	25, 26	6.0 - 11Ω	
	27, 28	3.0 - 5.0Ω	
Actuator motor	21	ground	—

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.



TROUBLE DIAGNOSIS FOR SYMPTOMS

PFP:00007

Excessive ABS Function Operation Frequency

NFS000DD

1. CHECK ABS WARNING LAMP DISPLAY

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

OK or NG

OK >> GO TO 2.

NG >> Perform self-diagnosis. Refer to [BRC-24, "SELF-DIAG RESULT MODE"](#) .

2. CHECK BRAKE FORCE DISTRIBUTION

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

OK or NG

OK >> GO TO 3.

NG >> Check brake system.

3. CHECK FRONT AND REAR AXLE

Make sure that there is no looseness in the front and rear axles. Refer to front axle [FAX-4, "WHEEL BEARING INSPECTION"](#) , rear axle [RAX-5, "WHEEL BEARING INSPECTION"](#) .

OK or NG

OK >> GO TO 4.

NG >> Axle inspection and repair

4. CHECK WHEEL SENSOR AND SENSOR ROTOR

Check the following.

- Wheel sensor installation and damage.
- Sensor pick-up inspection for iron chips.
- Sensor rotor installation and damage.
- Wheel sensor connector connection.
- Wheel sensor harness inspection.

OK or NG

OK >> INSPECTION END.

NG >> Repair wheel sensor and rotor system.

Unexpected Pedal Reaction

NFS000DE

1. CHECK BRAKE PEDAL STROKE

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

Is the stroke too big?

YES >> ● Bleed air from brake 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-8, "Removal and Installation"](#) . Brake master cylinder and Brake booster: [BR-21, "Removal and Installation"](#) .

NO >> GO TO 2.

2. CHECK FUNCTION

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 4. "CHECK WHEEL SENSOR AND SENSOR ROTOR" in [BRC-58, "Excessive ABS Function Operation Frequency"](#) .
- NG >> Check brake system.

The Braking Distance Is Long

NFS000DF

CAUTION:

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

1. CHECK FUNCTION

1. Turn ignition switch "OFF".
2. 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 "CHECK WHEEL SENSOR AND SENSOR ROTOR" in [BRC-58, "Excessive ABS Function Operation Frequency"](#) .
- NG >> ● Bleed air from brake piping. Refer to [BR-9, "Bleeding Brake System"](#) .
● Check brake system.

The ABS Function Does Not Operate

NFS000DG

CAUTION:

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

1. CHECK ABS WARNING LAMP DISPLAY

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

OK or NG

- OK >> Go to "CHECK WHEEL SENSOR AND SENSOR ROTOR" in [BRC-58, "Excessive ABS Function Operation Frequency"](#) .
- NG >> Perform self-diagnosis. Refer to [BRC-24, "SELF-DIAG RESULT MODE"](#) .

Pedal Vibration or ABS Operation Sound Occurs

NFS000DH

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-24, "SELF-DIAG RESULT MODE"](#) .

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 "CHECK WHEEL SENSOR AND SENSOR ROTOR" in [BRC-58, "Excessive ABS Function Operation Frequency"](#) .

Vehicle Jerks During VDC/TCS/ABS Control

NFS000DI

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis 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 2.

2. CHECK VDC/TCS/ABS CONTROL UNIT

Check VDC/TCS/ABS control unit input/output signal. Refer to [BRC-22, "Control Unit Input/Output Signal Standard"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Check VDC/TCS/ABS control unit pin terminals for damage or loose connection with harness connector. If any item is damaged, repair or replace damaged parts.

3. 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-82, "TROUBLE DIAGNOSIS"](#) .
 - TCM: Refer to [AT-42, "TROUBLE DIAGNOSIS"](#) .
- NO >> Replace VDC actuator.

ABS Warning Lamp Indication Is Not Normal

NFS000DJ

NOTE:

For lighting condition of ABS warning lamp. Refer to [BRC-35, "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, AND SLIP INDICATOR LAMP"](#) .

1. CHECK SYSTEM FOR CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [BRC-24, "SELF-DIAG RESULT MODE"](#) .

Is the "CAN COMM CIRCUIT" displayed?

- YES >> Perform trouble diagnosis for CAN communication line. Refer to [BRC-54, "CAN Communication Circuit"](#) .
- NO >> GO TO 2.

2. CHECK VDC/TCS/ABS CONTROL UNIT

Check VDC/TCS/ABS control unit input/output signal. Refer to [BRC-22, "Control Unit Input/Output Signal Standard"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Check VDC/TCS/ABS control unit pin terminals for damage or loose connection with harness connector. If any item is damaged, repair or replace damaged parts.

3. 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 >> INSPECTION END.

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

Slip Indicator Lamp Indication Is Not Normal

NFS000DK

NOTE:

For lighting condition of slip indicator lamp. refer to [BRC-35, "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, AND SLIP INDICATOR LAMP"](#) .

1. CHECK SYSTEM FOR CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [BRC-24, "SELF-DIAG RESULT MODE"](#) .

Is the "CAN COMM CIRCUIT" displayed?

YES >> Perform trouble diagnosis for CAN communication line. Refer to [BRC-54, "CAN Communication Circuit"](#) .

NO >> GO TO 2.

2. CHECK VDC/TCS/ABS CONTROL UNIT

Check VDC/TCS/ABS control unit input/output signal. Refer to [BRC-22, "Control Unit Input/Output Signal Standard"](#) .

OK or NG

OK >> GO TO 3.

NG >> Check VDC/TCS/ABS control unit pin terminals for damage or loose connection with harness connector. If any item is damaged, repair or replace damaged parts.

3. 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 >> INSPECTION END.

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

VDC OFF Indicator Lamp Indication Is Not Normal

NFS000DL

NOTE:

- For lighting condition of VDC OFF indicator lamp. Refer to [BRC-35, "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, AND SLIP INDICATOR LAMP"](#) .
- Make sure that VDC OFF switch is normal. Refer to [BRC-55, "VDC OFF SWITCH"](#) .

1. CHECK SYSTEM FOR CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [BRC-24, "SELF-DIAG RESULT MODE"](#) .

Is the "CAN COMM CIRCUIT" displayed?

YES >> Perform trouble diagnosis for CAN communication line. Refer to [BRC-54, "CAN Communication Circuit"](#) .

NO >> GO TO 2.

2. CHECK VDC/TCS/ABS CONTROL UNIT

Check VDC/TCS/ABS control unit input/output signal. Refer to [BRC-22, "Control Unit Input/Output Signal Standard"](#) .

OK or NG

OK >> GO TO 3.

NG >> Check VDC/TCS/ABS control unit pin terminals for damage or loose connection with harness connector. If any item is damaged, repair or replace damaged parts.

3. 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 >> INSPECTION END.

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

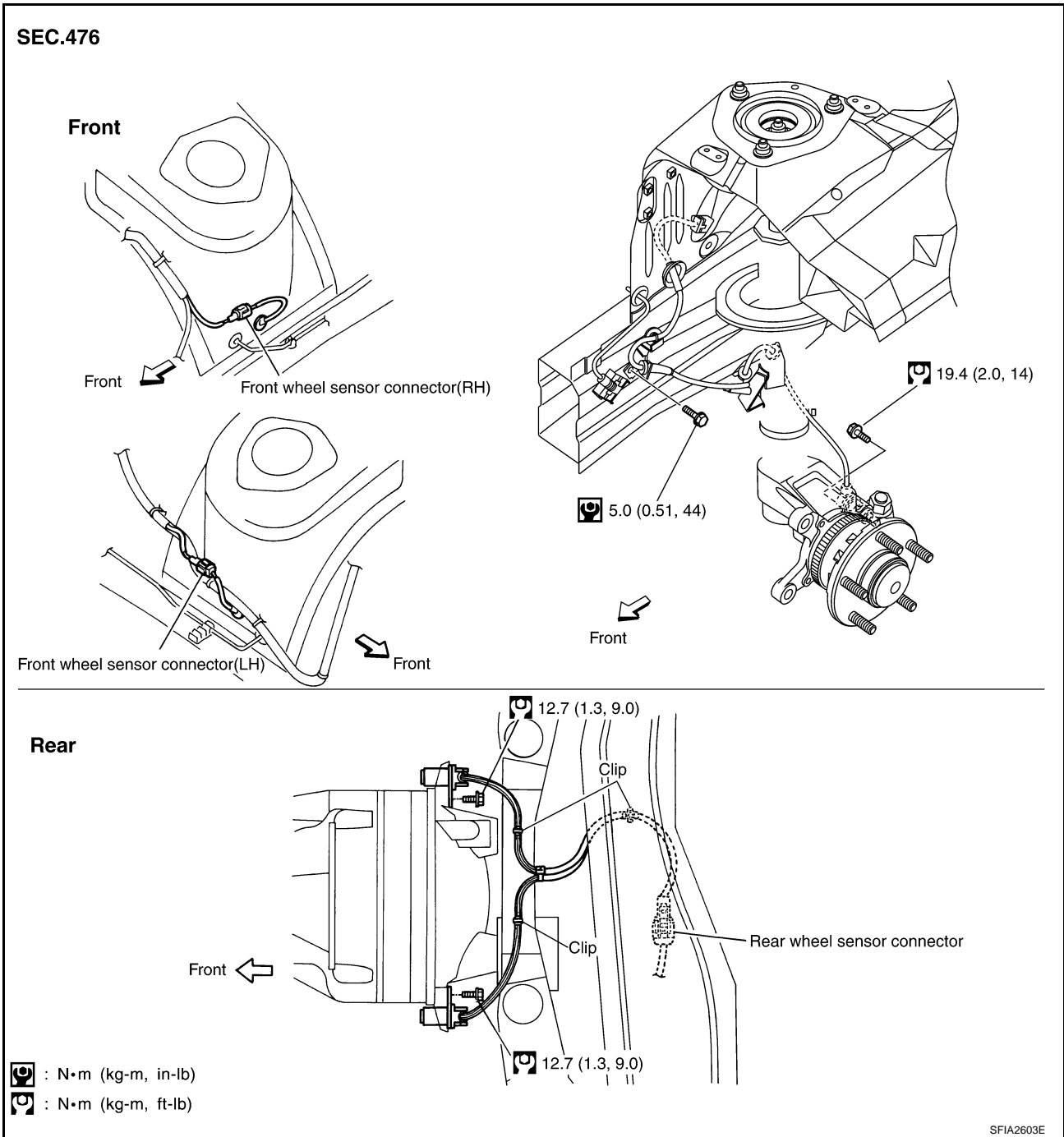
WHEEL SENSORS

PFP:47910

Removal and Installation

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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-63](#), "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

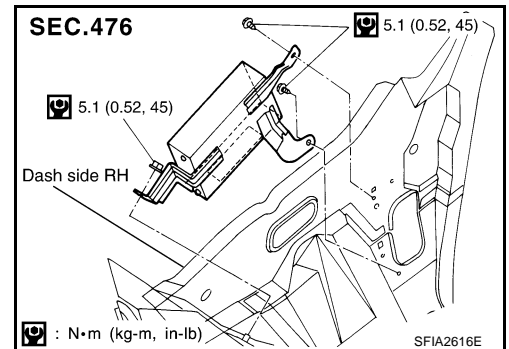
PFP:47660

NFS000DN

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-105, "ECM Terminals and Reference Value"](#) .
7. Remove VDC/TCS/ABS control unit.



INSTALLATION

Installation in the reverse order of removal.

NOTE:

If the case that VDC/TCS/ABS control unit are replaced, make sure to adjust position of steering angle sensor. Refer to [BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"](#) .

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SENSOR ROTOR

PFP:47970

Removal and Installation

NFS000DO

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-16, "REAR FINAL DRIVE ASSEMBLY"](#) .
- Using a bearing replacer (suitable tool) and puller (suitable tool), remove sensor rotor from the companion flange.

INSTALLATION

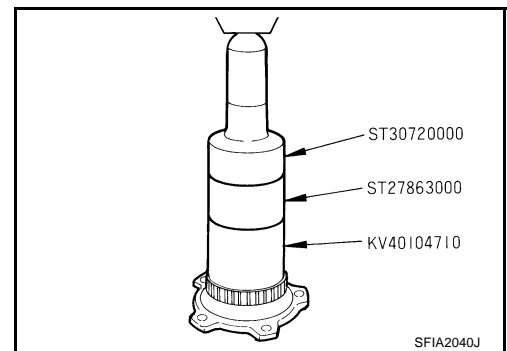
Front

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-16, "REAR FINAL DRIVE ASSEMBLY"](#) .



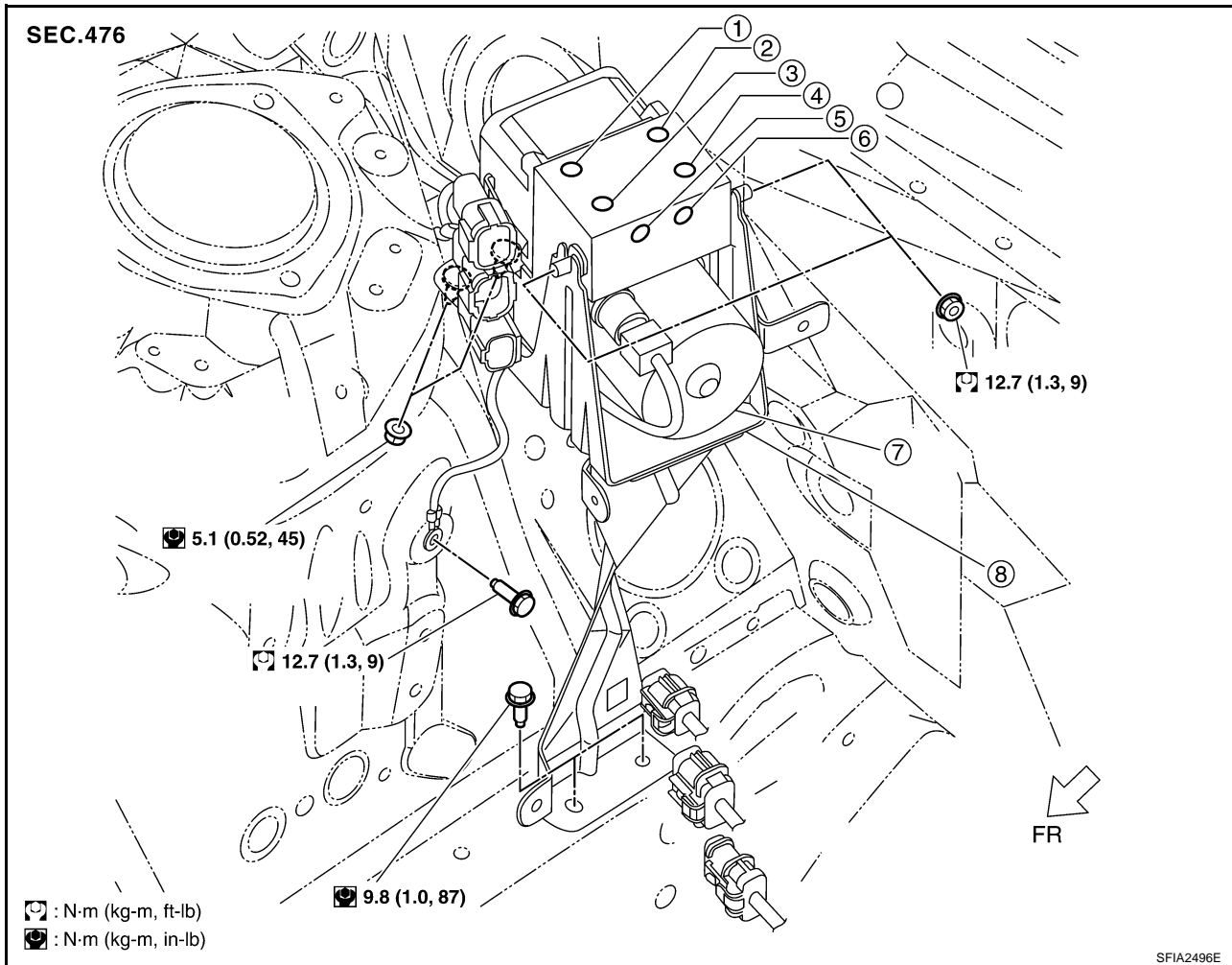
ACTUATOR

PFP:47600

Removal and Installation COMPONENTS

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|--|--------------------------|--------------------------------------|
| 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 cables.
- To remove brake tube, use a flare nut wrench to prevent flare nuts and brake tube from being damaged.

- 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-67, "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

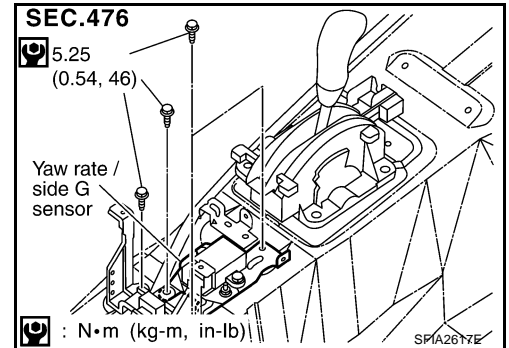
NFS000DQ

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 mounting bolts. Remove yaw rate/side G sensor.

**INSTALLATION**

Installation is the reverse order of removal.

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STEERING ANGLE SENSOR

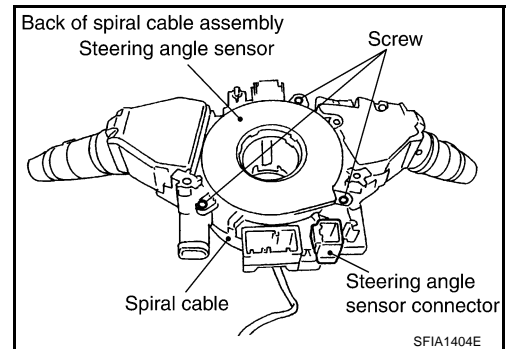
PFP:25554

Removal and Installation

NFS000DR

REMOVAL

1. Remove spiral cable assembly. Refer to [SRS-43, "SPIRAL CABLE"](#) .
2. Remove steering angle sensor from spiral cable assembly.



INSTALLATION

Installation is 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"](#) .

RELAY BOX

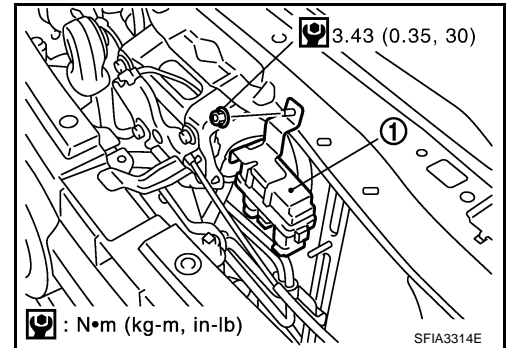
PFP:47605

Removal and Installation

NFS000HN

REMOVAL

1. Remove front air guide. Refer to [EM-13, "ENGINE ROOM COVER"](#).
2. Remove harness connector.
3. Remove VDC relay box bracket mounting bolt.
4. Remove VDC relay box (1) from vehicle.

**INSTALLATION**

Installation is the reverse order to removal.

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