

SECTION **BRC**

BRAKE CONTROL SYSTEM

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PRECAUTIONS

PRECAUTIONS

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

EFS000NX

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. 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.

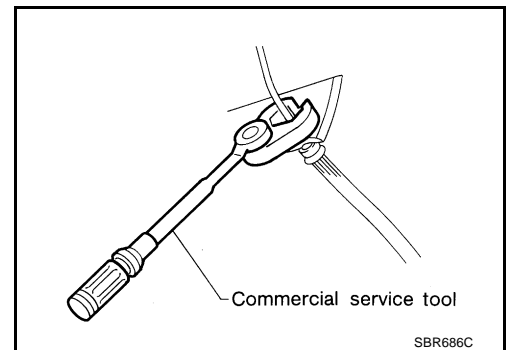
Precautions for Brake System

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- Use brake fluid “DOT 3”.
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of hydraulic system.
- Use flare nut wrench when removing and installing brake tubes.
- Always torque brake lines when installing.
- Before working, turn the ignition switch OFF and disconnect the connectors for the ABS actuator and control module or the battery terminals.
- Burnish the brake contact surfaces after refinishing or replacing drums or rotors, after replacing pads or linings, or if a soft pedal occurs at very low mileage. Refer to [BR-25, "Brake Burnishing Procedure"](#).

WARNING:

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



Precautions for Brake Control

EFS000GW

- During ABS operation, the brake pedal vibrates lightly and its mechanical noise may be heard. This is a normal condition.
- Just after starting the vehicle after ignition switch ON, the brake pedal may vibrate or the motor operating noise may be heard from the engine compartment. This is a normal status of the operation check.
- The stopping distance may be longer than that of vehicles without ABS when the vehicle drives on rough, gravel, or snowy (fresh deep snow) road.
- If a malfunction is indicated by the ABS warning lamp, or other warning lamps, collect the necessary information from the customer (what symptoms are present under what conditions) and find out the possible causes before starting the service. Besides the electrical system inspection, check the booster operation, brake fluid level, and oil leaks.
- If the tire size and type are used in a improper combination, or the brake pads are not NISSAN genuine parts, the stopping distance or steering stability may deteriorate.
- If there is a radio, antenna, or antenna lead-in wire (including wiring) near the control unit, the ABS function may have a malfunction or error.
- If aftermarket parts (e.g. Car stereo equipment, CD player) have been installed, check the electrical harnesses for pinches, open, and improper wiring.

PRECAUTIONS

Precautions for Trouble Diagnosis

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CAN SYSTEM

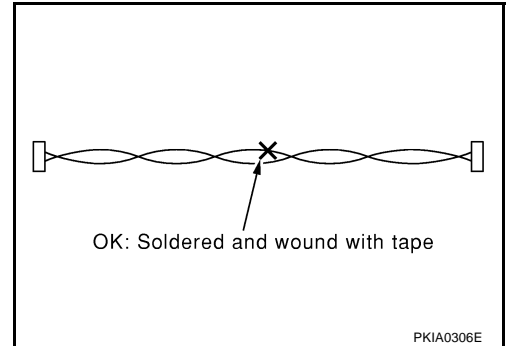
- Do not apply voltage of 7.0V or higher to the measurement terminals.
- Use the tester with its open terminal voltage being 7.0V or less.

Precautions for Harness Repair

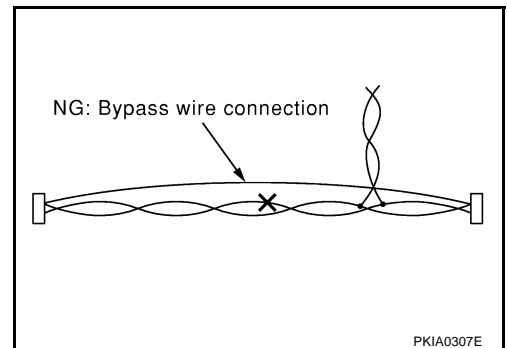
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CAN SYSTEM

- Solder the repaired parts, and wrap with tape. [Frays of twisted line must be within 110 mm (4.33 in)]



- Do not perform bypass wire connections for the repair parts. (The spliced wire will become separated and the characteristics of twisted line will be lost.)



ON-VEHICLE SERVICE

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Adjustment of Neutral Position of Steering Angle Sensor

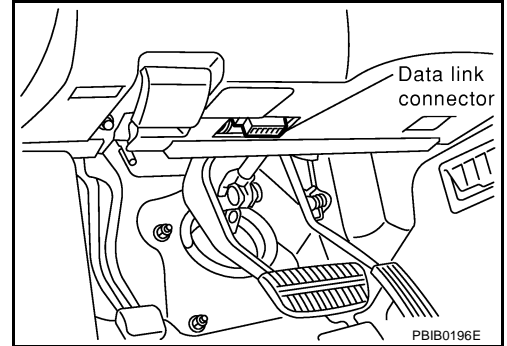
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- After removing/installing or replacing the VDC/TCS/ABS control unit, steering angle sensor, steering components, suspension components, and tires, or after adjusting the wheel alignment, make sure to adjust the neutral position of the steering angle sensor before running the vehicle.

CAUTION:

To adjust the neutral position of the steering angle sensor, make sure to use CONSULT-II. (Adjustment cannot be done other than CONSULT-II.)

- Stop the vehicle with the front wheels in the straight-ahead position.
- Connect CONSULT-II to data link connector on the vehicle, and turn the ignition switch to ON position (engine not running).
- Touch "VDC", "WORK SUPPORT" and "ANGLE SENSOR ADJUSTMNET" on the CONSULT-II screen in this order.



- Touch "START".

CAUTION:

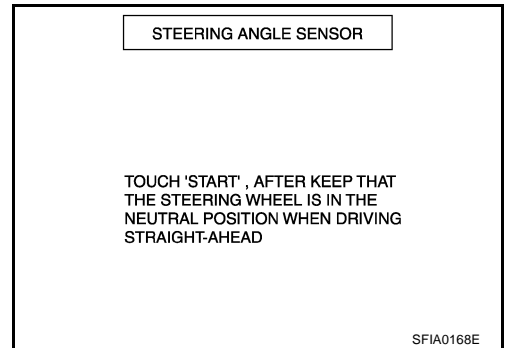
Do not touch the steering wheel while adjusting the steering angle sensor.

- After approximately 10 seconds, touch "END". (After approximately 60 seconds, it ends automatically.)
- Turn the ignition switch OFF, then turn it ON again.

CAUTION:

Make sure to carry out the above operation.

- Run the vehicle with the front wheels in the straight-ahead position, then stop.
- Select "DATA MONITOR", "CONTROL MODULE INPUT ITEM", and "STEERING ANGLE SIGNAL" on the CONSULT-II screen. Then check that the "STEERING ANGLE SIGNAL" is within 0 ± 2.5 deg. If the value is more than the specification, repeat steps 1 to 5.
- Erase the memory of VDC/TCS/ABS control module and ECM.
- Turn the ignition switch OFF.



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GENERAL INFORMATION

GENERAL INFORMATION

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Fail-Safe ABS SYSTEM

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If a malfunction occurs in the electrical system, the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp in the meter will turn ON. In this condition, the VDC/TCS/ABS and EBD become one of the following conditions by the fail-safe function.

1. Only EBD operates. The same condition as that of models without VDC/TCS/ABS
2. VDC/TCS/ABS and EBD do not operate. Only normal brake operates on 4 wheels.

NOTE:

In the step 1 shown above, the self-diagnosis is carried out at the ignition switch is turned ON and when the vehicle initial starts. ABS self-diagnosis noise may be heard as usual.

VDC/TCS SYSTEM

If a malfunction occurs in the electrical system, the VDC OFF indicator lamp and SLIP indicator lamp in the meter turn on. In this condition, VDC/TCS will be deactivated and it becomes equal to that of models without VDC/TCS. However, ABS is controlled normally.

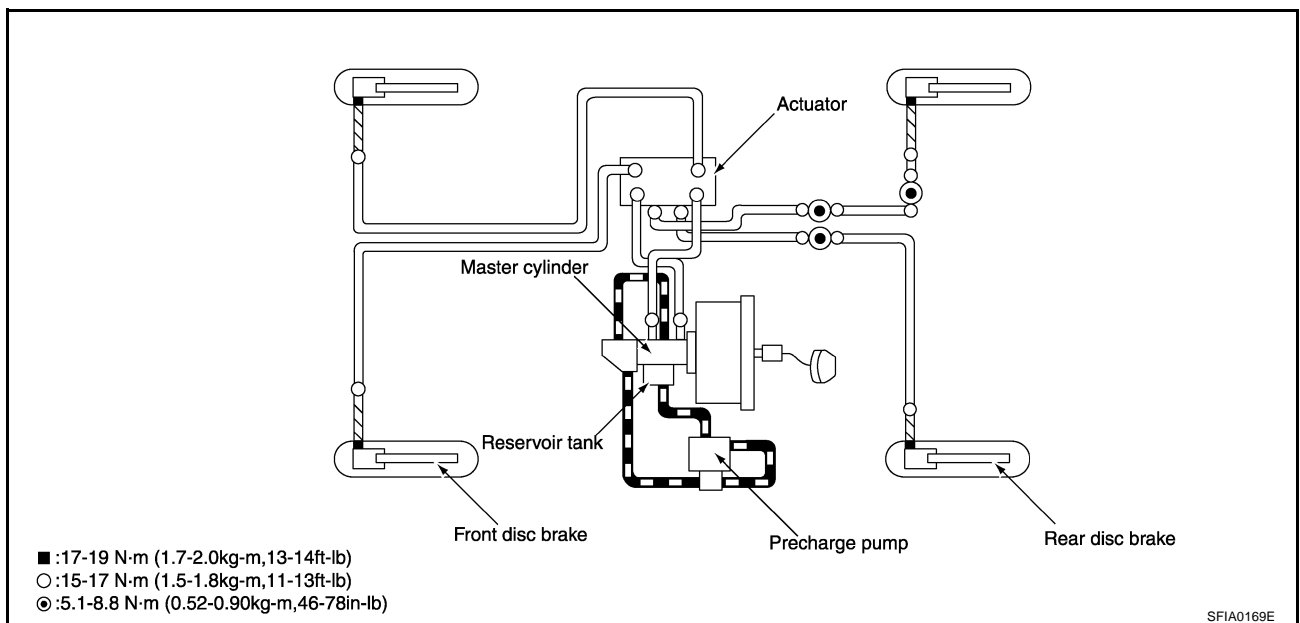
If a malfunction occurs in the throttle control system, VDC/TCS control does not operate. Only ABS control operates normally.

CAUTION:

If the fail-safe function operates, carry out the self-diagnosis for VDC/TCS/ABS control system.

Hydraulic Circuit

EFS000H0



CAUTION:

- When installing, check for twist and fracture.
- Make sure that there is no interference with other parts when turning the steering clockwise or counter clockwise.
- The brake piping is an important safety part. If a brake fluid leak is detected, always disassemble and replace with a new one, if necessary.

ABS Functions

EFS000H1

1. During ABS operation, the brake pedal lightly vibrates and its mechanical noise may be heard. This is a normal condition.
2. When starting the engine, or just after starting the vehicle, the brake pedal may vibrate or the motor operating noise may be heard from the engine compartment. This is a normal status of the operation check.
3. The stopping distance may be longer than that of vehicles without ABS when the vehicle drives on rough, gravel, or snowy (fresh deep snow) road.
4. EBD is integrated in VDC/TCS/ABS system.

GENERAL INFORMATION

TCS Functions

EFS000H2

1. With the wheel speed sensor signal from 4 wheels, the VDC/TCS/ABS control module detects a wheel spin on the drive wheels. If a wheel spins, the control module controls brake fluid pressure on rear LH and RH, and cuts the fuel to the engine. It also closes the throttle valve to reduce the engine torque. Furthermore, throttle position is controlled to the appropriate engine torque.
2. Depending on road circumstances, the driver may have a sluggish feel. This is not abnormal, because the optimum traction has the highest priority by TCS operation.
3. When the vehicle is passing through a road where the surface friction coefficient varies, downshifting or depressing the accelerator pedal fully may activate TCS temporarily.
4. During TCS operation, it informs a driver of system operation by flashing SLIP indicator lamp.

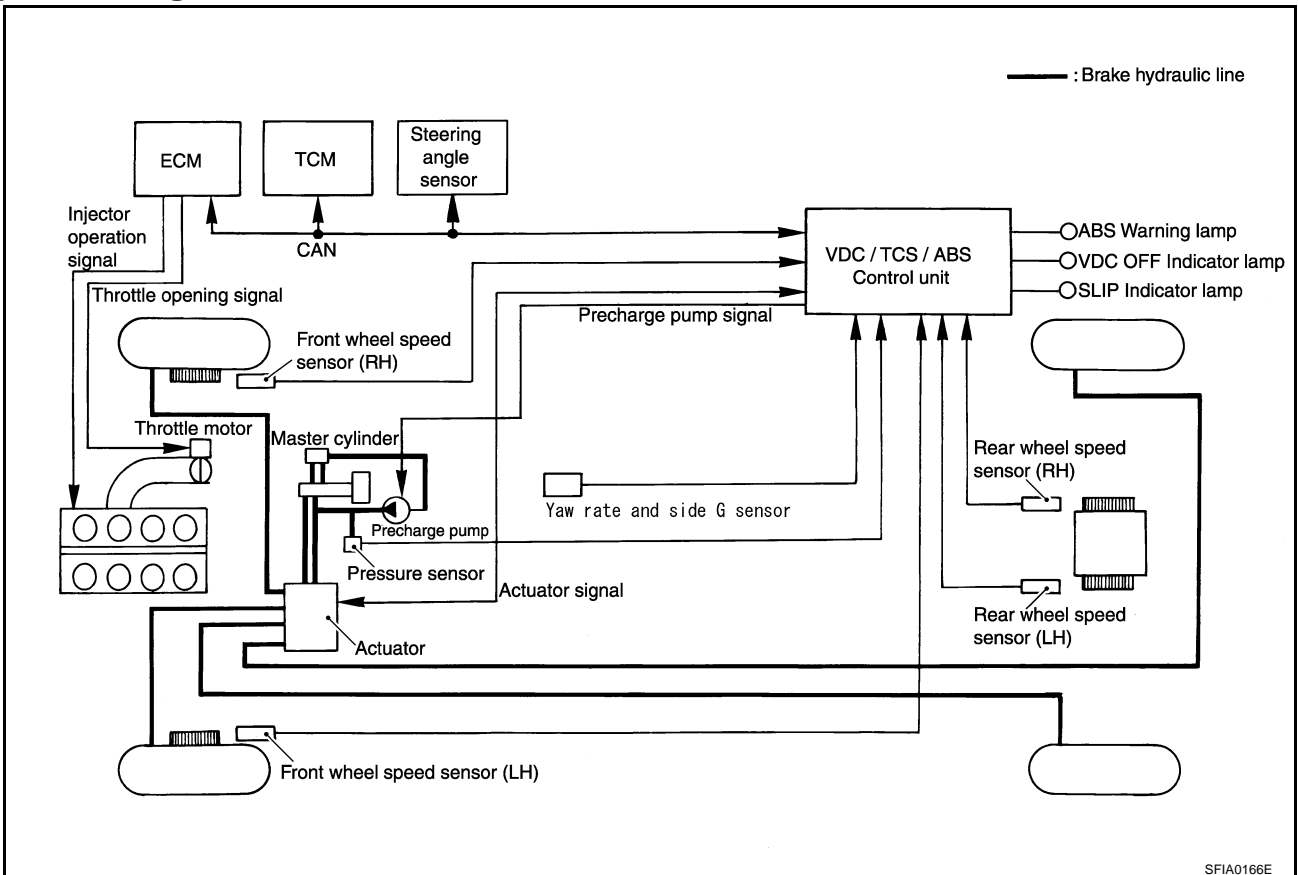
VDC Functions

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1. In addition to the ABS/TCS function, VDC detects the driver's steering operation amount and brake operation amount from the steering angle sensor and pressure sensor. Using the information from the yaw rate/transverse G-sensor and wheel speed sensor, VDC judges the driving condition (conditions of under steer and over steer) to improve the stability by controlling the brake on 4 wheels and engine output.
2. During VDC operation, the SLIP indicator lamp flashes to inform the driver of the operation.
3. During VDC operation, the body and the brake pedal lightly vibrate and their mechanical noise may be heard. This is a normal condition.
4. If the vehicle is rotated on a turn table, or rolled and rocked on a ship, the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp may turn ON. In this case, start the engine on a normal road again. If the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp turn OFF after the restart, it is normal.
5. When driving in a steep slope such as a bank, the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp may turn ON. In this case, start the engine on a normal road again. If the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp turn off after the restart, it is normal.

System Diagram

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GENERAL INFORMATION

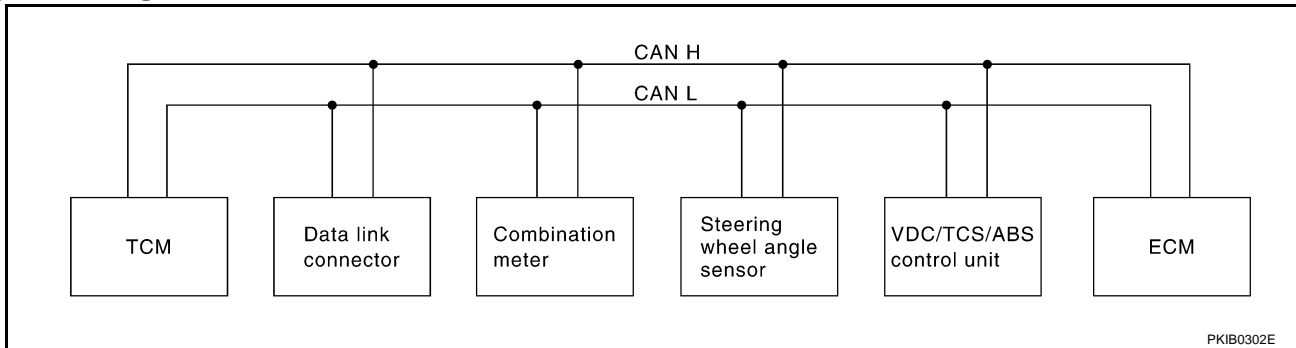
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CAN Communication SYSTEM DESCRIPTION

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.

FOR VDC MODELS

System diagram



Input/output signal chart

T: Transmit R: Receive

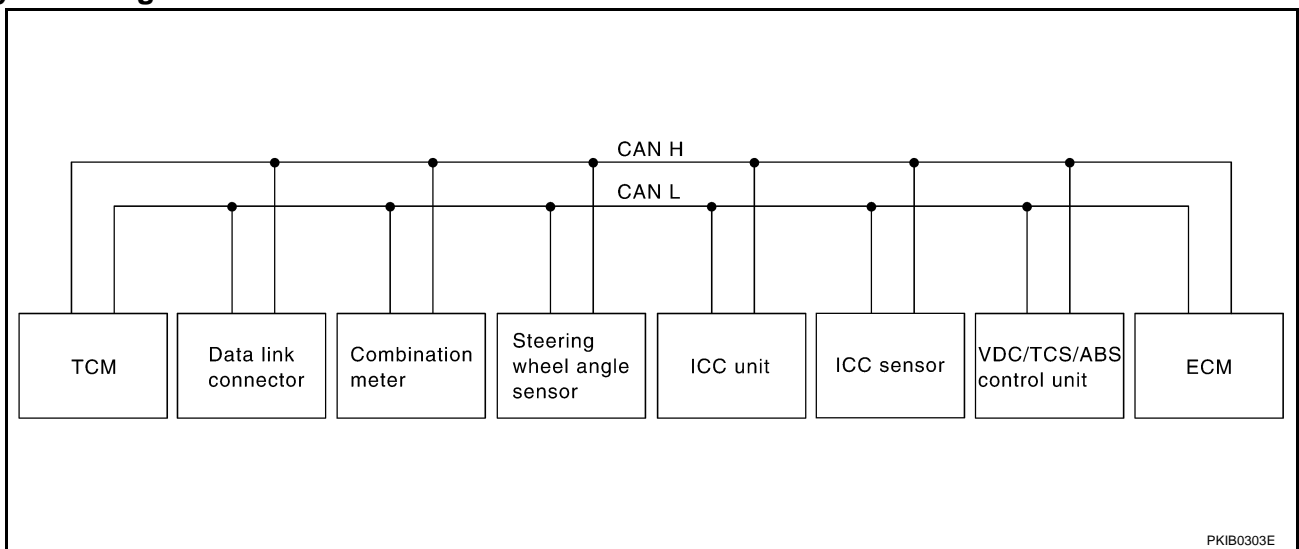
Signals	TCM	Combination meter	Steering wheel angle sensor	VDC / TCS / ABS control unit	ECM
Engine speed signal	R	R		R	T
Engine coolant temperature signal	R	R			T
Accelerator pedal position signal	R			R	T
Engine torque signal	R			R	T
Battery voltage signal	R				T
Closed throttle position signal	R				T
Wide open throttle position signal	R				T
Lock-up prohibition signal	R				T
Torque-down permission signal	R				T
Fuel consumption monitor signal		R			T
Lock-up signal	T				R
Hard deceleration signal	T				R
Torque-down signal	T				R
Power mode indicator signal	T				R
A/T fluid temperature warning lamp signal	T	R			R
Current gear position signal	T	R		R	R
	R	T			
Next gear position signal	T			R	R
Shift change signal	T			R	R
Shift pattern signal	T				R
VDC system control signal				T	R
VDC operation signal				T	R
Stop lamp switch signal	R			T	
Steering wheel angle sensor signal	R		T	R	R

GENERAL INFORMATION

Signals	TCM	Combination meter	Steering wheel angle sensor	VDC / TCS / ABS control unit	ECM
Air conditioner switch signal		T			R
Headlamp switch signal		T			R
Rear window defogger switch signal		T			R
OD cancel switch signal	R	T		R	
Brake switch signal	R	T			
Power mode switch signal	R	T			
Vehicle speed signal	R	R		T	
	R	T			R
	T				R

FOR ICC MODELS

System diagram



Input/output signal chart

T: Transmit R: Receive

Signals	TCM	Combina-tion meter	Steering wheel angle sensor	ICC unit	ICC sensor	VDC / TCS / ABS control unit	ECM
ICC system display signal		R		T			
ICC sensor signal				R	T		
Engine speed signal	R	R		R		R	T
Engine coolant temperature signal	R	R					T
Accelerator pedal position signal	R					R	T
Engine torque signal	R					R	T
Battery voltage signal	R						T
Closed throttle position signal	R			R			T
Lock-up prohibition signal	R						T
Torque-down permission signal	R						T
Fuel consumption monitor signal		R					T
Lock-up signal	T						R
Hard deceleration signal	T						R
Torque-down signal	T						R

GENERAL INFORMATION

Signals	TCM	Combina- tion meter	Steering wheel angle sensor	ICC unit	ICC sensor	VDC / TCS / ABS con- trol unit	ECM
Power mode indicator signal	T						R
A/T fluid temperature warning lamp sig- nal	T	R					R
Current gear position signal	T	R				R	R
	R	T					
Next gear position signal	T					R	R
Shift change signal	T					R	R
Shift pattern signal	T			R			R
VDC system control signal						T	R
VDC operation signal				R		T	R
Stop lamp switch signal	R					T	
Steering wheel angle sensor signal	R		T			R	R
Air conditioner switch signal		T					R
Headlamp switch signal		T					R
Rear window defogger switch signal		T					R
OD cancel switch signal	R	T				R	
Brake switch signal	R	T					
Power mode switch signal	R	T					
Vehicle speed signal	R	R		R		T	
	R	T					R
	T			R			R

TROUBLE DIAGNOSIS

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How to Perform Trouble Diagnoses for Quick and Accurate Repair

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INTRODUCTION

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

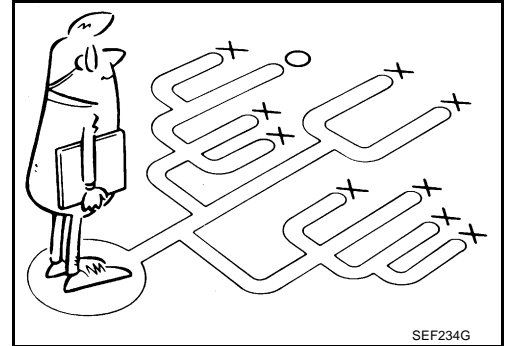
- It is also important to clarify the customer complaints before inspection.

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

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

CAUTION:

Customers are not professional. It is dangerous to make an easy guess like “maybe the customer means that...,” or “maybe the customer mentions this symptom”.



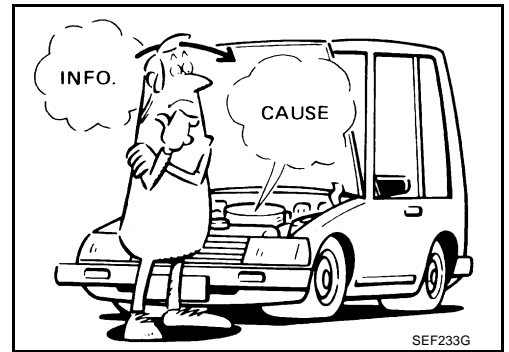
- It is essential to check symptoms right from the beginning in order to repair a malfunction completely.

For an intermittent malfunction, it is important to reproduce the symptom based on an interview with the customer and past examples. Do not perform an inspection on an ad hoc basis. Most intermittent malfunctions are caused by poor contacts. In this case, it will be effective to shake the suspected harness or connector by hand. When repairs are performed without any trouble diagnosis. Repair work is not confirmed if it's done correctly.

- After the diagnosis, make sure to carry out “erase memory”. Refer to [BRC-33, "SELF-DIAGNOSIS"](#).

- For an intermittent malfunction, move the harness or harness connector by hand to check the poor contact or false open circuit.

- Always read the “GI Section, General Information” to check the general guidelines and to confirm the general precautions.



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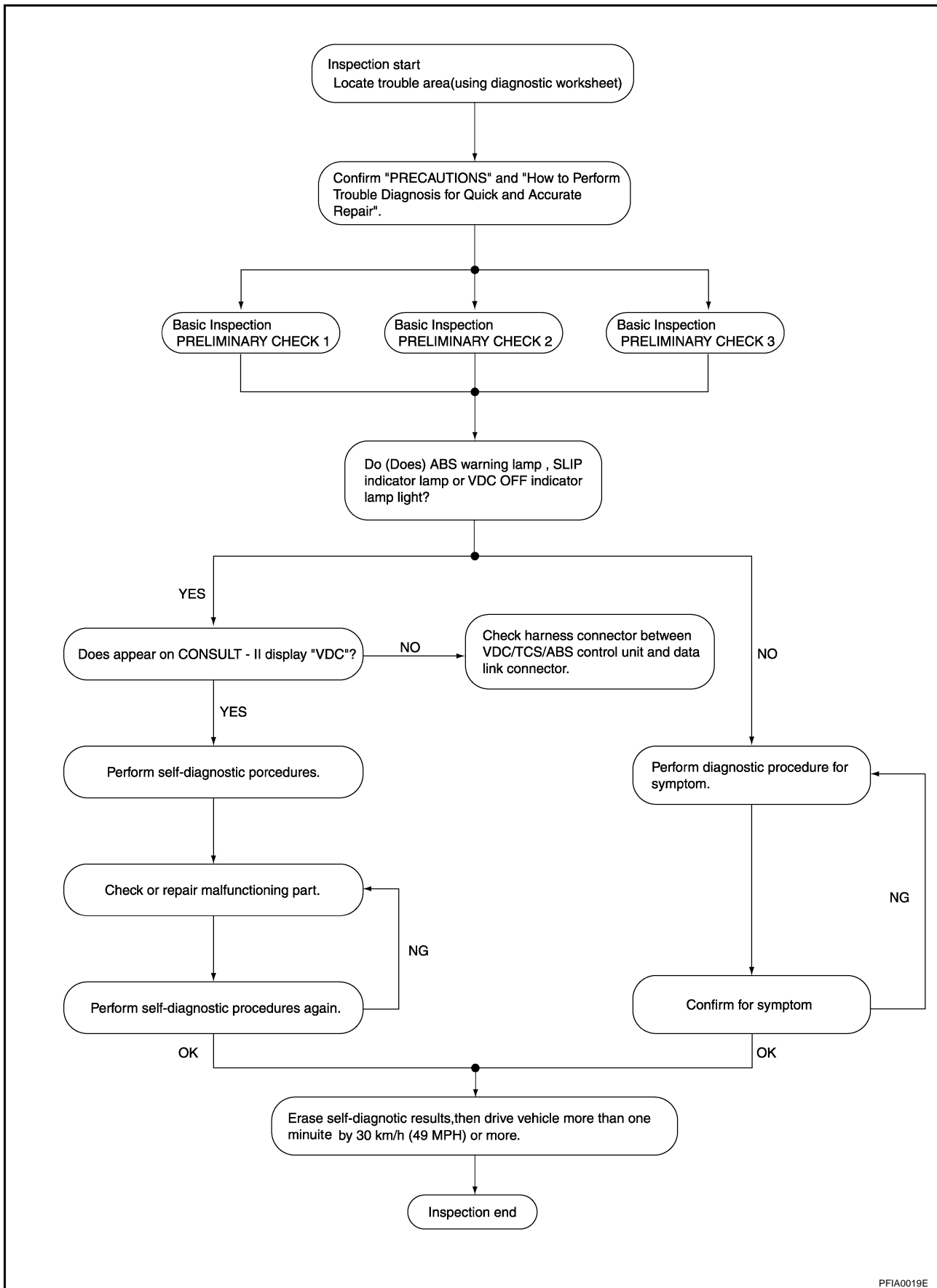
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TROUBLE DIAGNOSIS

WORK FLOW



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TROUBLE DIAGNOSIS

ASKING COMPLAINTS

- Complaints against a malfunction vary depending on each person. It is important to clarify the customer complaints.
- Ask the customer about what symptoms are present under what conditions. Use the information to reproduce the symptom while driving.
- It is also important to use the diagnosis sheet to understand what type of trouble the customer having.

KEY POINTS

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

SBR339B

EXAMPLE OF DIAGNOSIS SHEET

Customer name 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 slip when braking)	<input type="checkbox"/> Lack of sense of acceleration
Engine conditions	<input type="checkbox"/> When starting <input type="checkbox"/> After starting		
Road conditions	<input type="checkbox"/> Low friction road (<input type="checkbox"/> Snow <input type="checkbox"/> Gravel <input type="checkbox"/> Other) <input type="checkbox"/> Bumps / potholes		
Driving conditions	<input type="checkbox"/> Full-acceleration <input type="checkbox"/> High speed cornering <input type="checkbox"/> Vehicle speed: Greater than 10 km/h (6 MPH) <input type="checkbox"/> Vehicle speed: 10 km/h (6 MPH) or less <input type="checkbox"/> Vehicle is stopped		
Applying brake conditions	<input type="checkbox"/> Suddenly <input type="checkbox"/> Gradually		
Other conditions	<input type="checkbox"/> Operation of electrical equipment <input type="checkbox"/> Shift change <input type="checkbox"/> Other descriptions		

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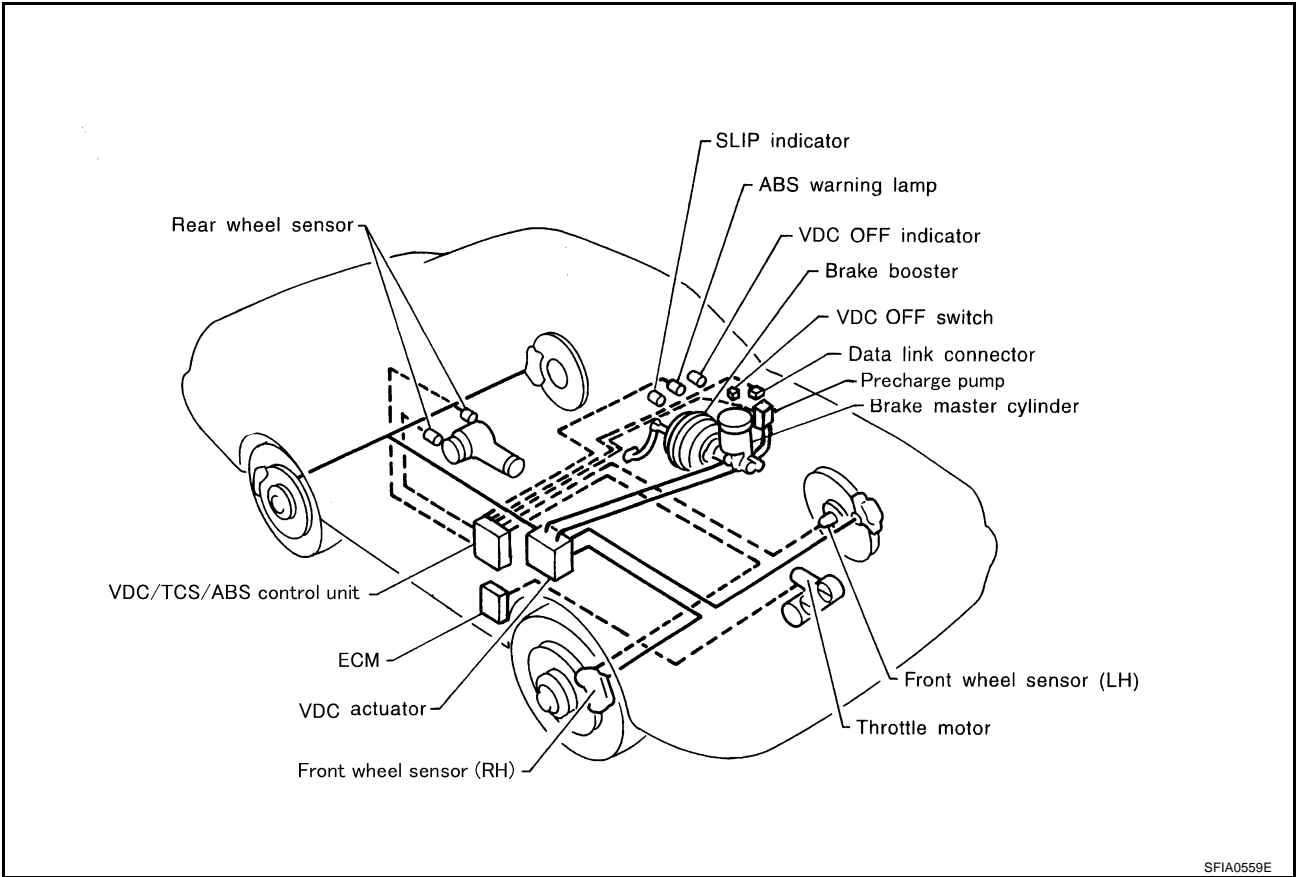
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TROUBLE DIAGNOSIS

Component Parts and Harness Connector Location

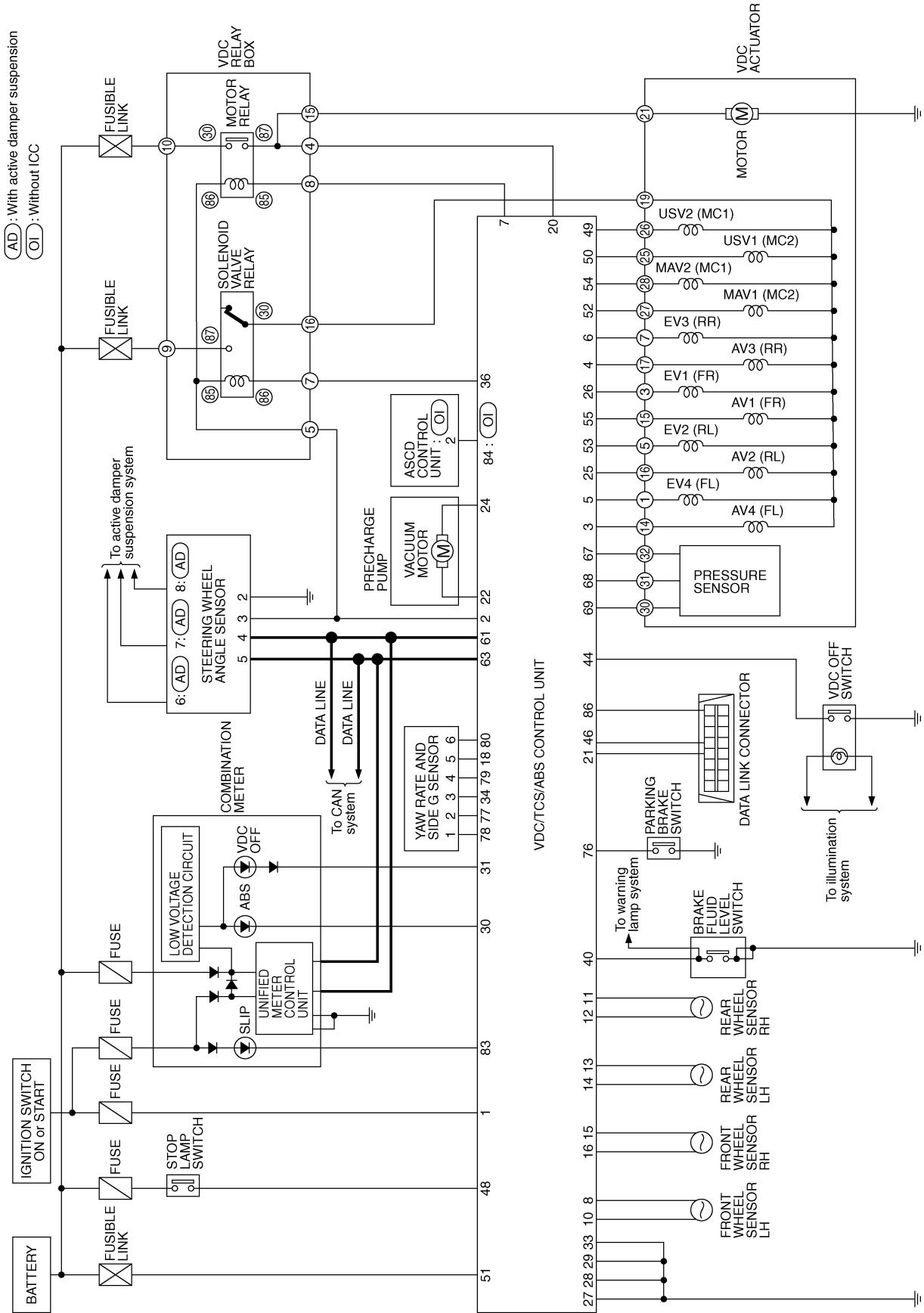
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TROUBLE DIAGNOSIS

Schematic

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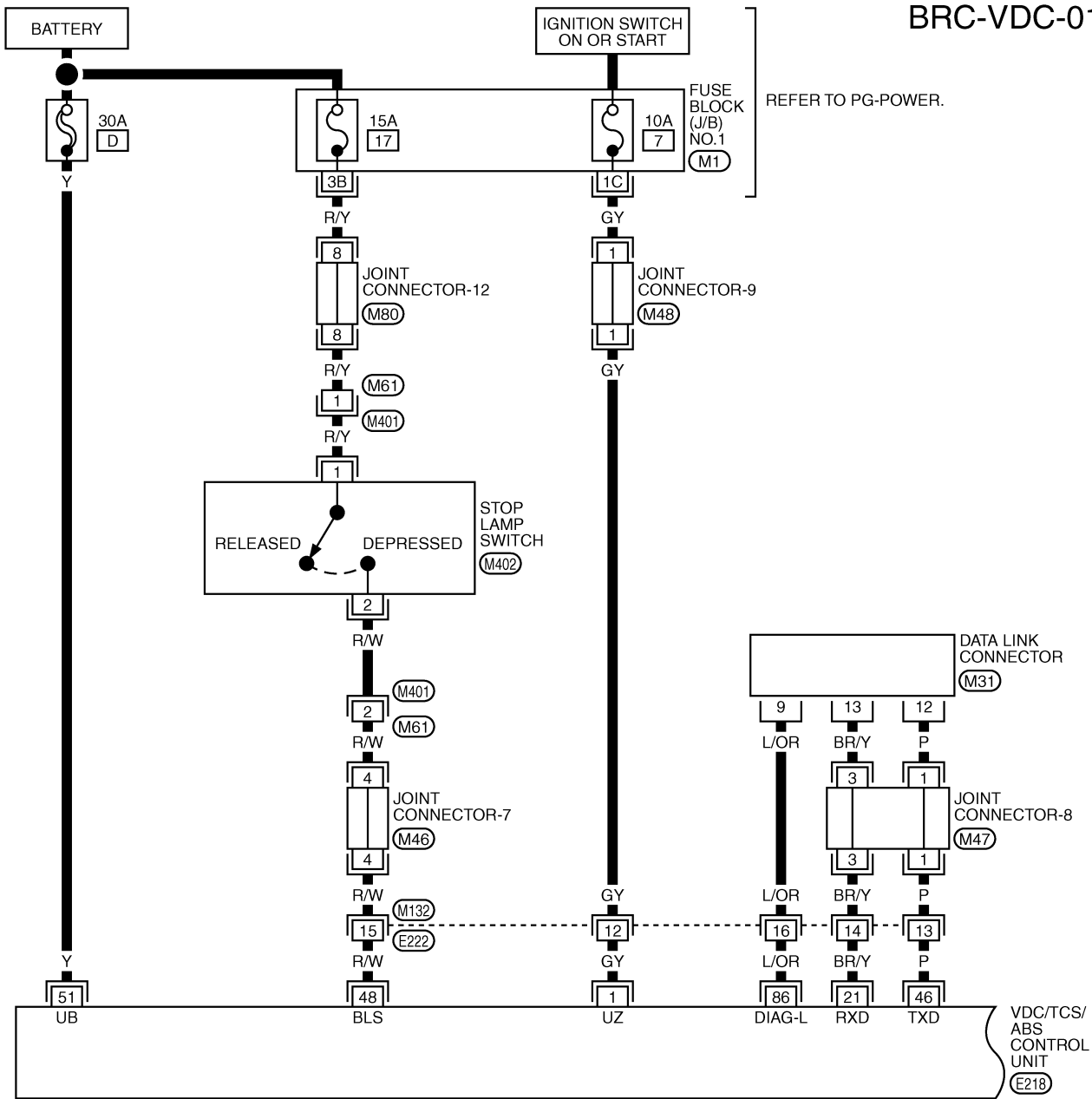
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TROUBLE DIAGNOSIS

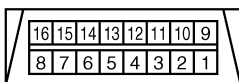
Wiring Diagram -VDC-

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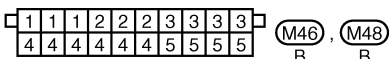
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REFER TO PG-POWER.

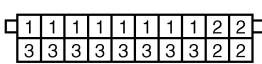


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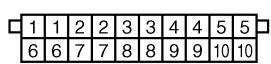


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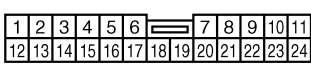
REFER TO THE FOLLOWING.
(M1) -FUSE BLOCK-JUNCTION BOX (J/B) NO.1



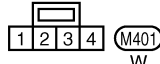
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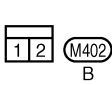
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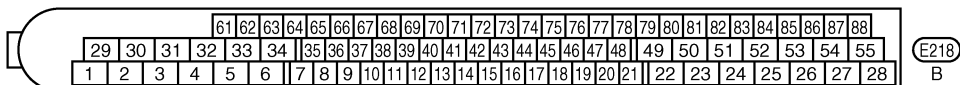
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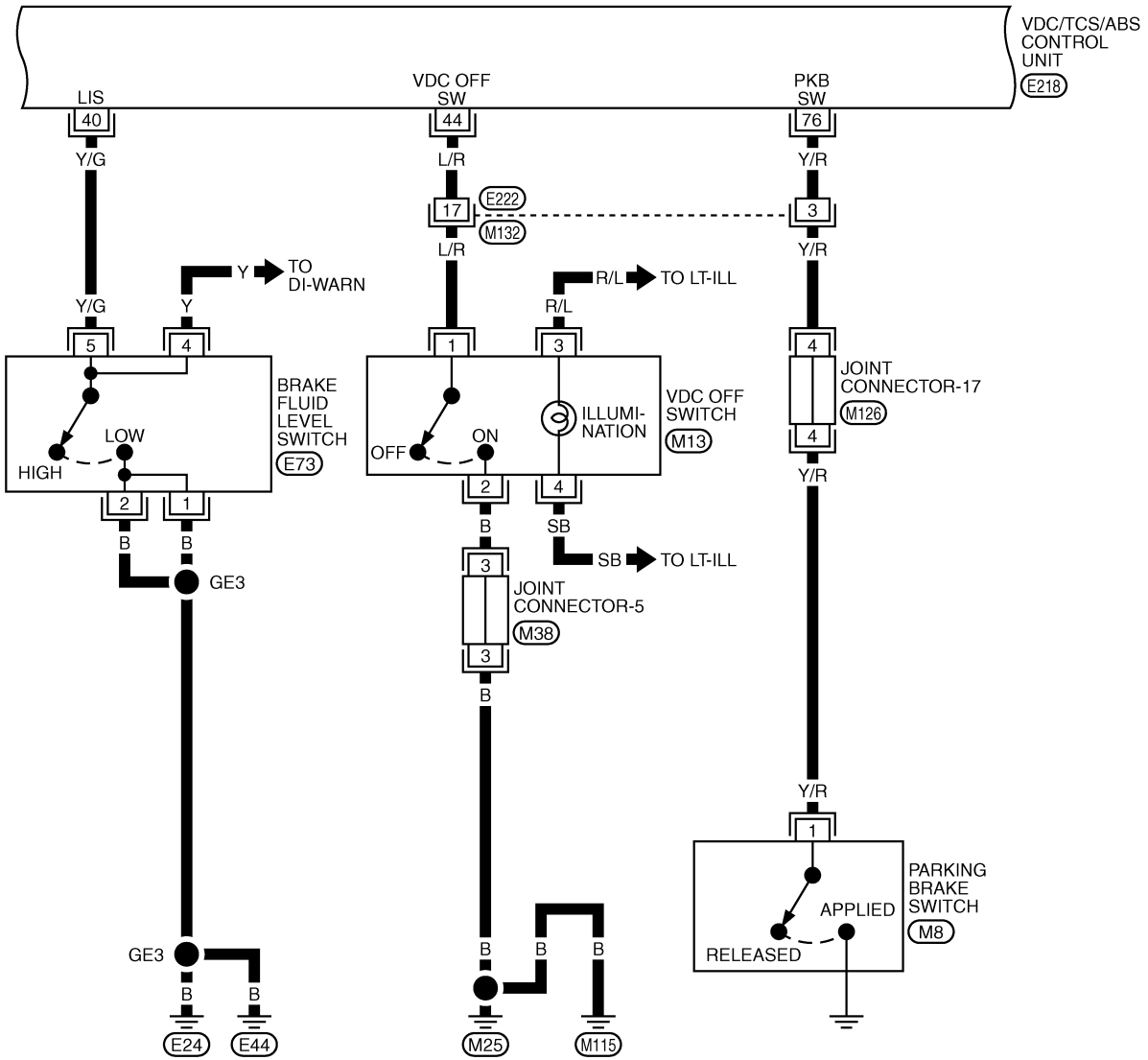
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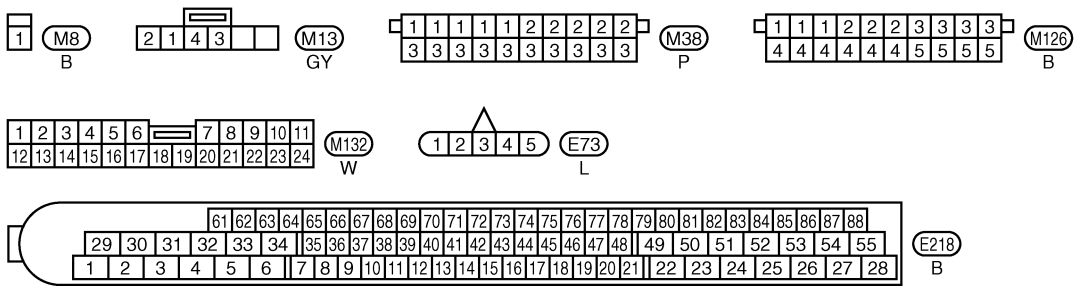
TROUBLE DIAGNOSIS

BRC-VDC-02

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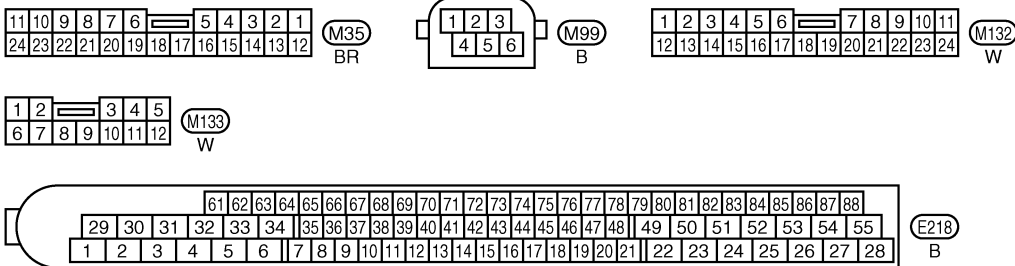
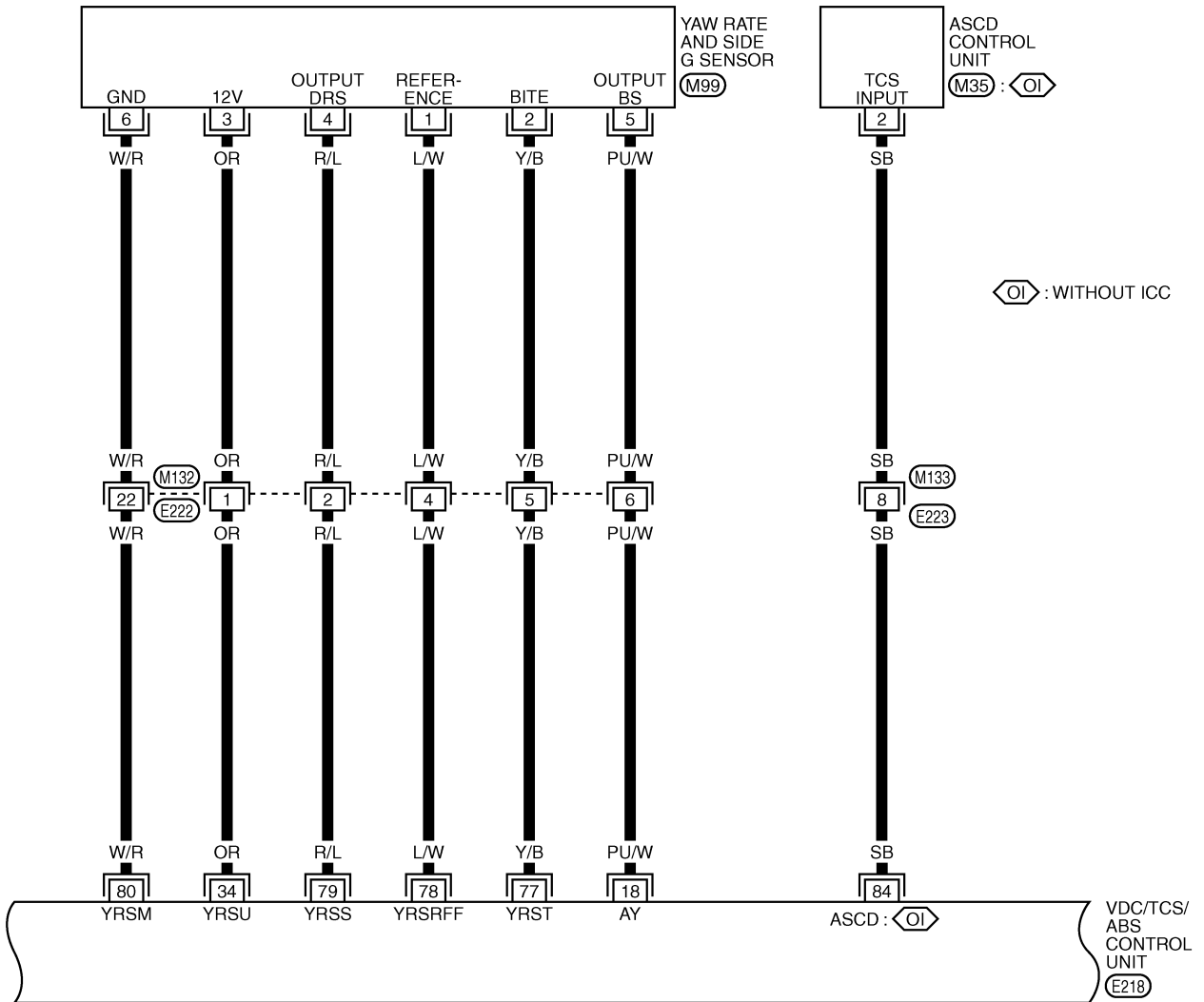
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TROUBLE DIAGNOSIS

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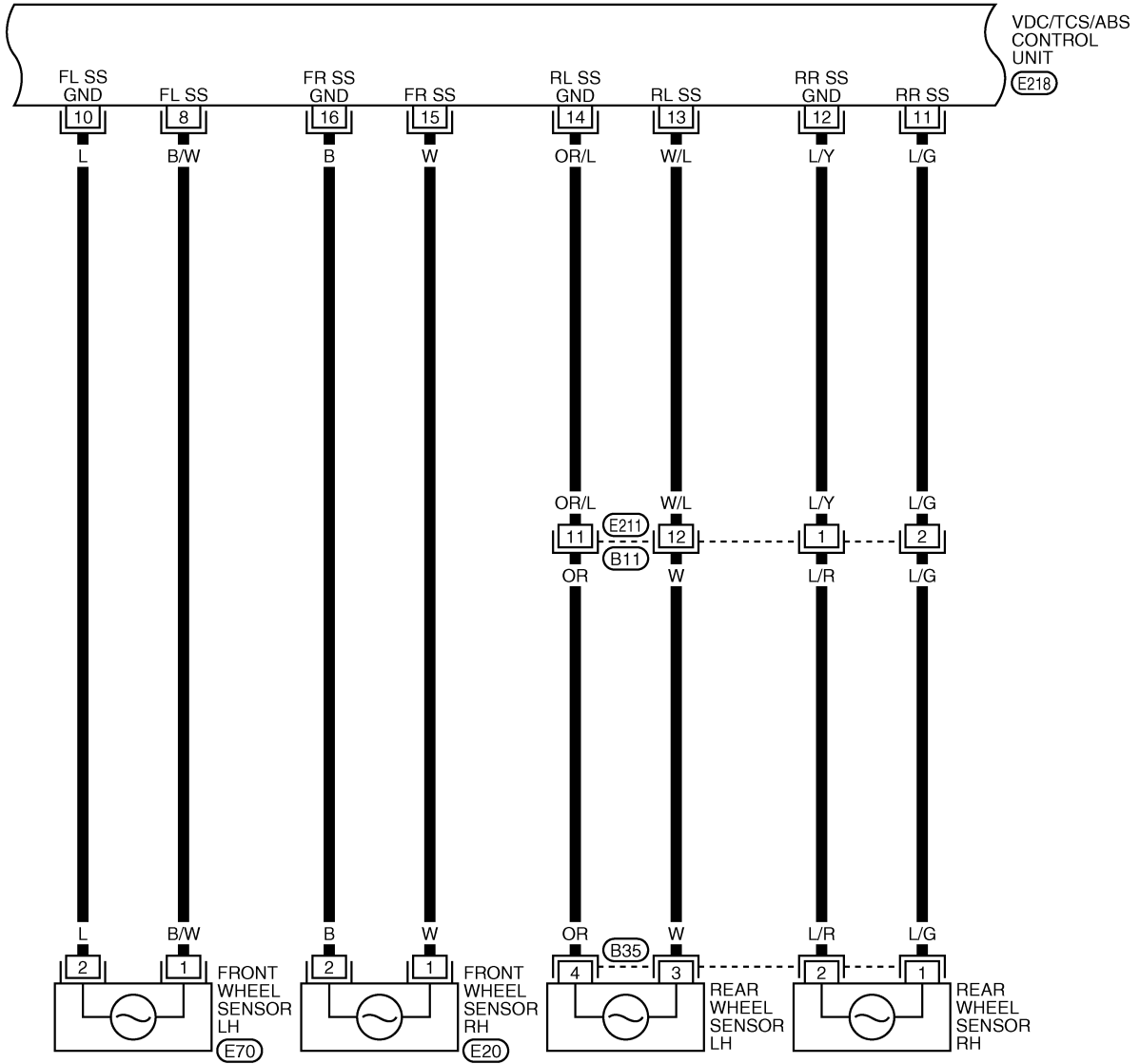


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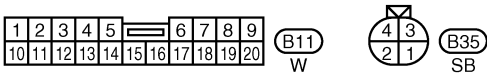
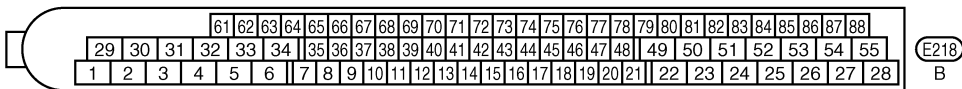
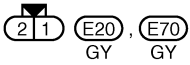
TROUBLE DIAGNOSIS

BRC-VDC-04

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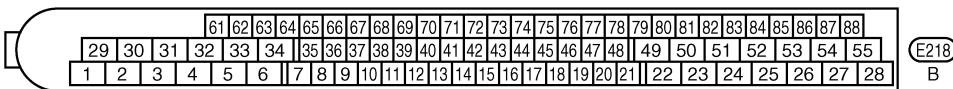
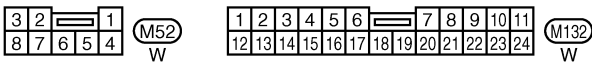
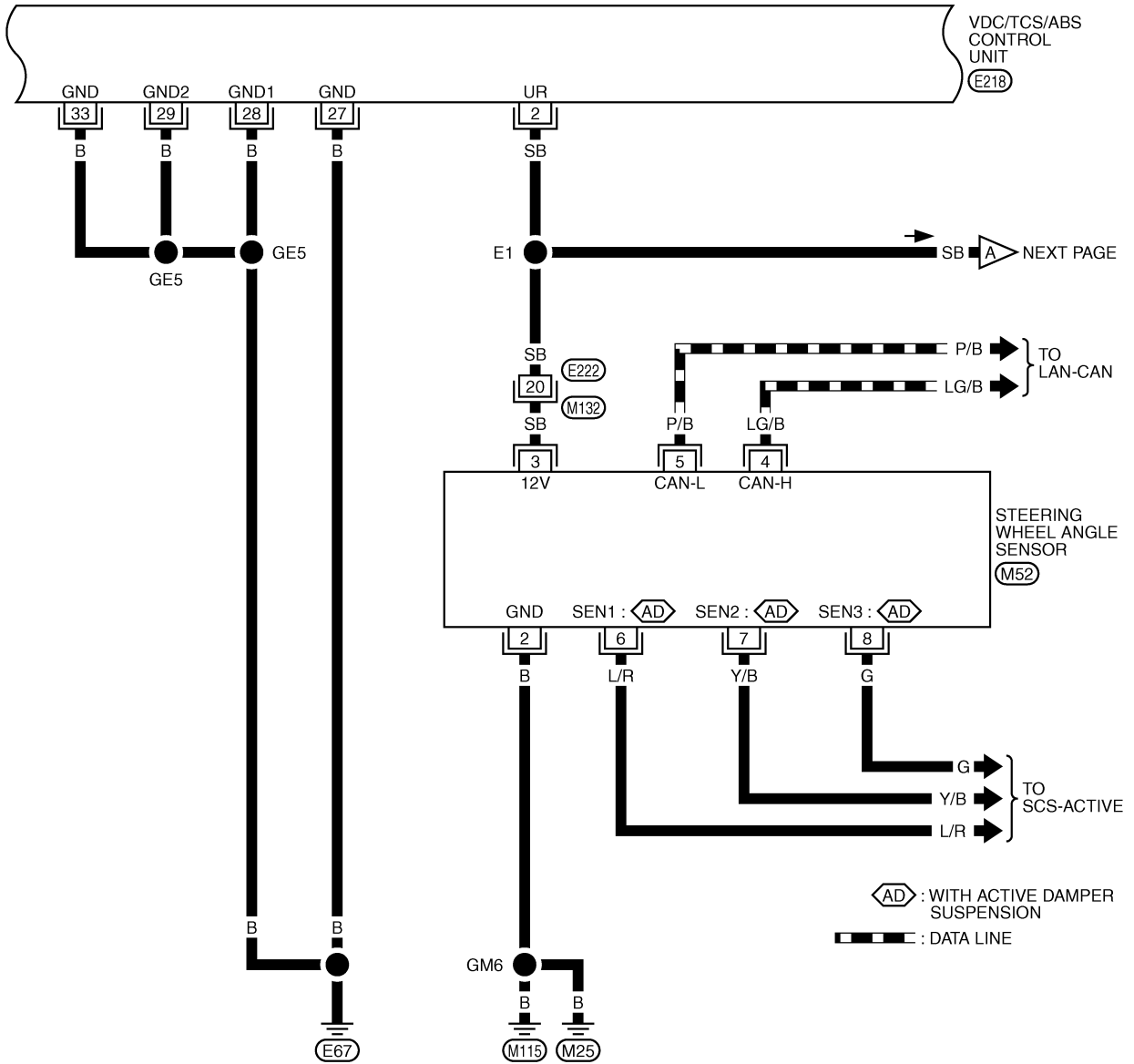
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TROUBLE DIAGNOSIS

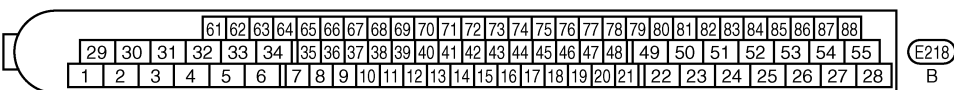
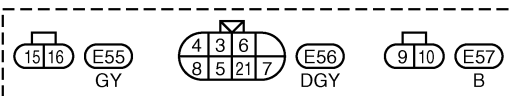
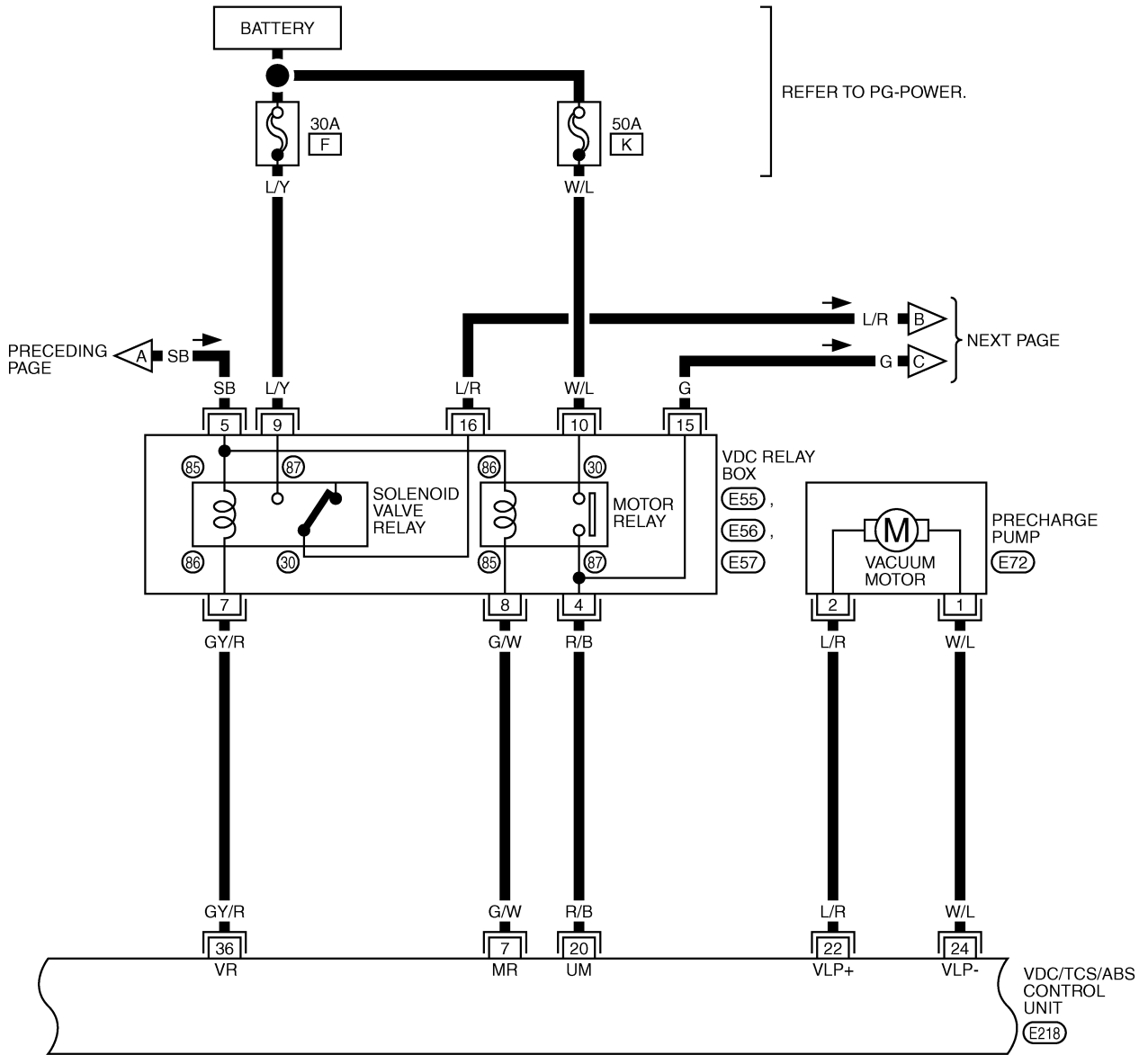
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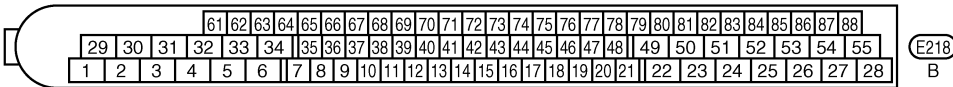
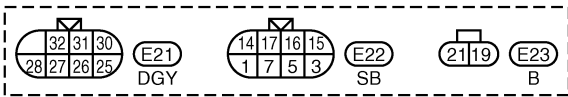
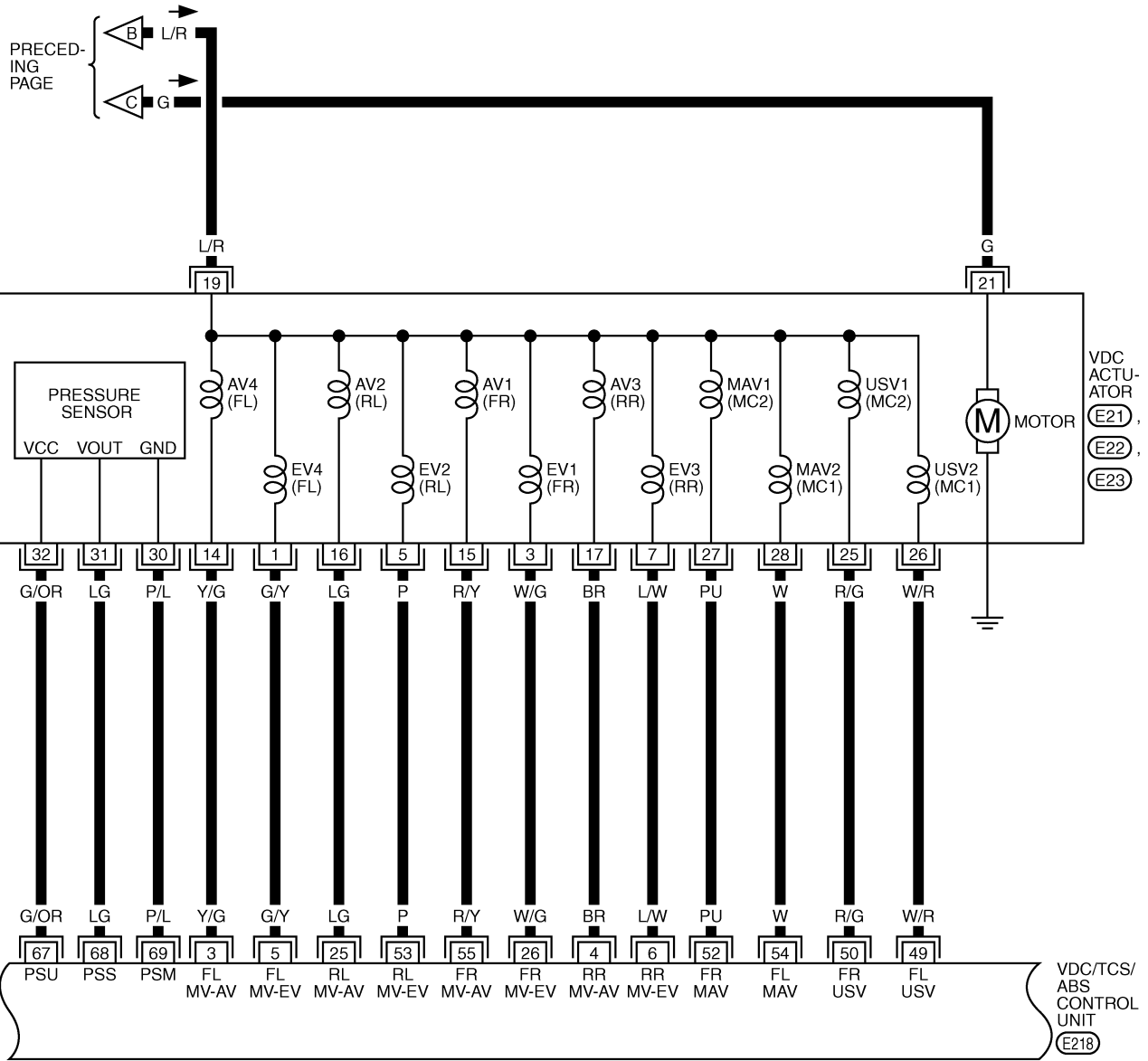
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TROUBLE DIAGNOSIS

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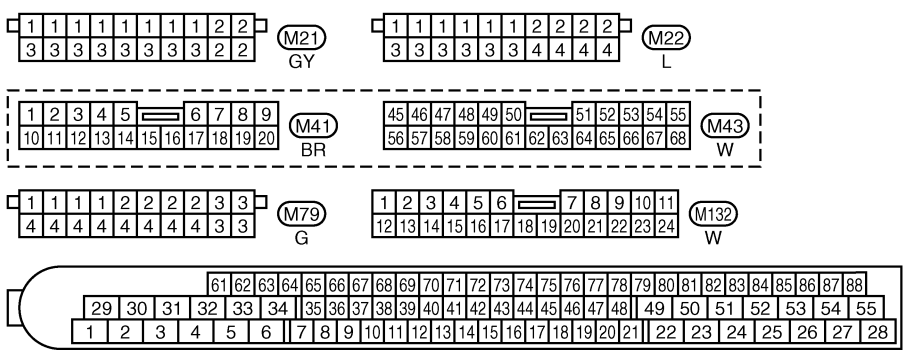
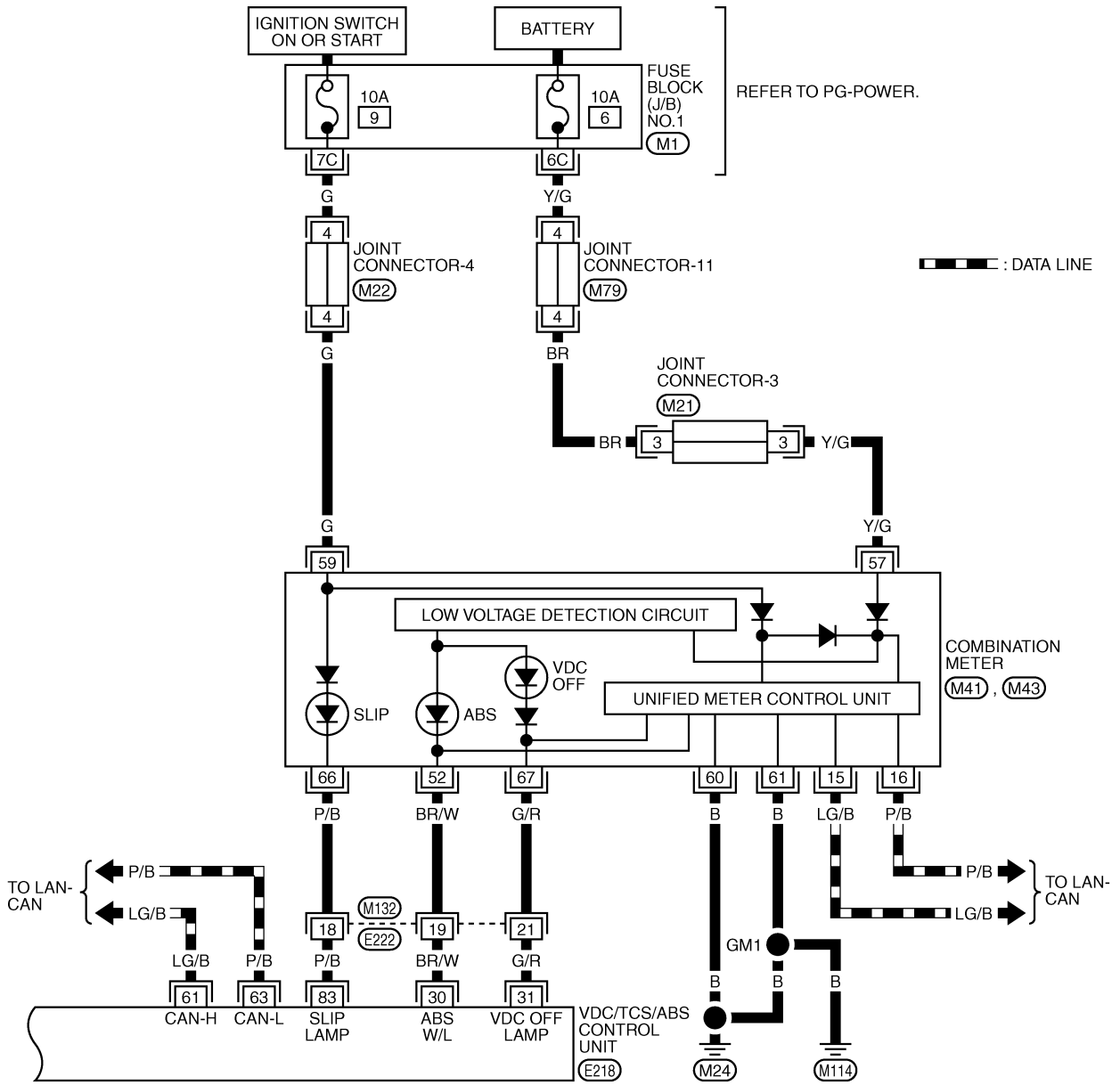
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TROUBLE DIAGNOSIS

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REFER TO THE FOLLOWING.
(M1) -FUSE BLOCK-JUNCTION BOX (J/B) NO.1

TFWM0009E

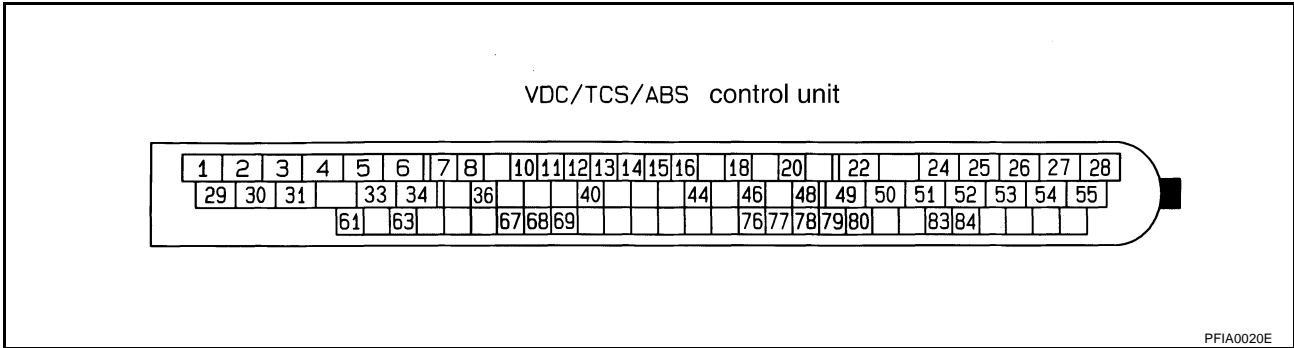
TROUBLE DIAGNOSIS

Control Unit Input/Output Signal Standard STANDARDS USING A CIRCUIT TESTER AND OSCILLOSCOPE

EFS000H8

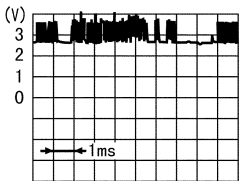
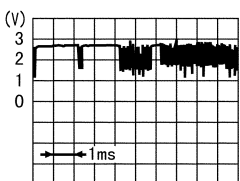
CAUTION:

Connect the connectors for the VDC/TCS/ABS control unit and actuator, and turn the ignition switch ON.



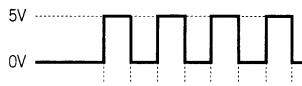
Measurement terminal		Measuring point	Standard value (Note 1)		(Reference) Check items for malfunction
+	-				
1		Power supply	Ignition switch ON	Battery voltage (approx. 12V)	Control unit power supply circuit
51		Power supply	Always	Battery voltage (approx. 12V)	
2		Actuator motor relay, actuator relay power supply and steering angle sensor power supply	Ignition switch ON	Battery voltage (approx. 12V)	
7	Body ground	Actuator motor relay	Actuator motor being driven ("Active test" mode with CONSULT-II)	Approx. 0V	Actuator motor, motor relay, and circuit
			Actuator motor while the vehicle is stopped	Battery voltage (approx. 12V)	
36		Actuator relay	When actuator relay is active. (the engine running)	Approx. 0V	Actuator relay and circuit
			When actuator relay is inactive. (Fail-safe, engine starts.)	Battery voltage (approx. 12V)	
20		Actuator motor monitor	When actuator relay is active. (the engine running)	Battery voltage (approx. 12V)	Actuator motor monitor circuit
			When actuator relay is inactive. (Fail-safe, engine starts.)	Approx. 0V	

TROUBLE DIAGNOSIS

Measurement terminal		Measuring point	Standard value (Note 1)		(Reference) Check items for malfunction		
+	-						
3	Body ground	Front LH wheel OUT solenoid	Solenoid valve activated (In active test mode of CONSULT-II) or actuator relay inactive (in fail-safe mode)	Approx. 0V	Solenoid and circuit		
4		Rear RH wheel OUT solenoid					
5		Front LH wheel IN solenoid					
6		Rear RH wheel IN solenoid					
25		Rear LH wheel OUT solenoid				When solenoid valve is inactive and actuator relay active (when ignition switch ON)	Battery voltage (approx. 12V)
26		Front RH wheel IN Solenoid					
53		Rear LH wheel IN solenoid					
55		Rear RH wheel OUT solenoid					
49	Body ground	Primary-side VDC switch-over valve 1	When switch-over valve is active (in CONSULT-II actuator mode) Or, when actuator relay inactive (when fail-safe) When switch-over valve is inactive and actuator relay is active (when ignition switch ON)	Approx. 0V Battery voltage (approx. 12V)	Switch-over valve and circuit		
50		Secondary-side VDC switch-over valve 1					
52		Secondary-side VDC switch-over valve 2					
54		Primary-side VDC switch-over valve 2					
8	10	FR LH SENSOR [OPEN]	Wheel rotated (approx. 30 km/h (19 MPH) (Note 2))	Pulse generation : Approx. 200 Hz : 200Hz	Speed sensor and circuit		
11	12	RR RH SENSOR					
13	14	RR LH SENSOR					
15	16	FR RH SENSOR					
48	Body ground	Stop lamp signal	Depress brake pedal.	Battery voltage (approx. 12V)	Stop lamp switch and circuit		
			Release the brake pedal.	Approx. 0V			
44		VDC OFF switch	VDC OFF switch is pressed.	Approx. 10V	VDC OFF switch and circuit		
			VDC OFF switch is released.	Approx. 12V			
61	Body ground	CAN communication input/output signal (H)	Ignition switch ON	 PBI A0224J	-		
63		CAN communication input/output signal (L)	Ignition switch ON	 PBI A0223J			

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TROUBLE DIAGNOSIS

Measurement terminal		Measuring point	Standard value (Note 1)		(Reference) Check items for malfunction
+	-				
22		Pre charge pump (+)	When precharge pump is active (in CONSULT-II active mode)	Battery voltage (approx. 12V)	Precharge pump and circuit
			Precharge pump not activated	Approx. 0V	
24		Precharge pump (-)	When precharge pump is active and vehicle is stopped	Approx. 0V	
67		Pressure sensor	Ignition switch ON	Approx. 0V	Pressure sensor and circuit
68			When ignition switch ON and brake pedal released.	Approx. 0.6V	
69			Ignition switch ON	Approx. 0V	
18		Side G-sensor	Ignition switch ON	Approx. 2.5V	Yaw rate /Side G-sensor and circuit
34		Yaw rate /side G-sensor	Ignition switch ON	Battery voltage (approx. 12V)	Yaw rate /Side G-sensor and circuit
77			Ignition switch ON	 SFAIA0150E	
78			Ignition switch ON	Approx. 2.5V	
79	Body ground		Yaw rate sensor	Ignition switch ON	
80				Ignition switch ON	Approx. 0V
30		ABS warning lamp	ABS warning lamp turns on (Note 3)	Approx. 0V	ABS warning lamp and circuit
			ABS warning lamp turns off (note 3)	Battery voltage (approx. 12V)	
31		VDC OFF LED	VDC OFF indicator lamp turns on (Note 4)	Approx. 0V	VDC OFF warning lamp and circuit
			VDC OFF indicator lamp turns off (note 4)	Battery voltage (approx. 12V)	
83		SLIP LED	When SLIP indicator lamp is ON (Note 5)	Approx. 0V	SLIP indicator lamp and circuit
			SLIP indicator lamp turns off (note 5)	Battery voltage (approx. 12V)	
84		ASCD output signal	ASCD output signal ON (in CONSULT-II active mode test)	Approx. 1 V or less	Between VDC/TCS/ABS control unit and ASCD control unit circuit
			Ignition switch ON	Approx. 11 V	
40		Brake fluid level warning lamp	Brake fluid is not enough	Battery voltage (approx. 12V)	Brake fluid level warning lamp switch and circuit
			Brake fluid is enough	Approx. 0V	

TROUBLE DIAGNOSIS

Measurement terminal		Measuring point	Standard value (Note 1)		(Reference) Check items for malfunction
+	-				
76	Body ground	Parking brake signal	Apply the parking brake.	Battery voltage (approx. 12V)	Parking brake switch and circuit
			Release the parking brake.	Approx. 0V	

(Note 1): When the parking brake is checked using a circuit tester for voltage measurement, the connector terminals should not extend forcefully.

(Note 2): Check the pressure of the tire in normal condition.

(Note 3): ON/OFF timing of the ABS warning lamp

ON: When the ignition switch is turned ON (before engine start) or a malfunction is detected.

OFF: 2 seconds after the engine started (the system is in normal condition).

(Note 4): VDC OFF indicator lamp ON/OFF timing

ON: When the ignition switch is turned ON (before engine start) or a malfunction is detected, if the TCS OFF switch is ON.

OFF: 2 seconds after the engine started (the system is in normal condition) and TCS OFF switch is OFF.

(Note 5): ON/OFF timing of the SLIP indicator lamp

ON: When the ignition switch is turned ON (before engine start) or a malfunction is detected, if the VDC/TCS function is active during driving.

OFF: 2 seconds after the engine started (the system is in normal condition) and the VDC/TCS function is inactive.

Flashing: VDC/TCS function is active during driving.

STANDARDS WITH CONSULT-II

CAUTION:

The displayed item is the data calculated by the control unit, so it may indicate a normal value even if an output circuit (harness) is open or shorted.

Monitor item	Contents	Data monitor		(Reference) Check items for malfunction
		Condition	Reference value in normal operation	
N-position signal	Conditions of N, R, P-position signals	N - position	ON	A/T control unit and circuit VDC/TCS/ABS control unit and circuit
R-position signal		Any position other than N	OFF	
		When R - position	ON	
P-position signal		Not R - position	OFF	
		When P - position	ON	
		Not P - position	OFF	
Gear	A/T gear position	1: 1st gear 2: 2nd gear 3: 3rd gear 4: 4th gear 5: 5th gear	-	
Wheel speed	Wheel speed (Note 1)	Vehicle stopped	0 [km/h (MPH)]	Wheel sensor circuit
		During driving	Almost in accordance with the speedometer display (within $\pm 10\%$)	
Guide objective	Open/close condition of motor throttle	VDC/TCS not activated	100%	Control unit communication circuit between the VDC/TCS/ABS control unit and ECM
		VDC/TCS activated	0 - 100%	
Throttle guide	Open/close condition of throttle valve (linked with accelerator pedal)	Accelerator pedal not depressed (ignition switch is ON)	0%	Control unit communication circuit between the VDC/TCS/ABS control unit and ECM
		Accelerator pedal depressed (ignition switch is ON)	0 - 100%	

TROUBLE DIAGNOSIS

Monitor item	Contents	Data monitor		(Reference) Check items for malfunction
		Condition	Reference value in normal operation	
Engine speed	With the engine running	With the engine stopped	0rpm	Engine speed signal path
		Engine running	Almost in accordance with tachometer display	
ASCD output	ASCD operation condition	ASCD activated	ON	ASCD and circuit
		ASCD not activated	OFF	
Buzzer output	Buzzer operation condition	Buzzer activated	ON	Buzzer and circuit
		Buzzer not activated	OFF	
STEERING ANGLE SIGNAL	Steering angle detected by steering angle sensor	Straight-ahead condition	Approx. 0 deg	Steering angle sensor and circuit
		Steering	- 720 to 720deg	
Yaw rate sensor	Yaw rate detected by yaw rate sensor	Vehicle stopped	Approx. 0 d/s	Yaw rate sensor and circuit
		During driving	- 70 to 70d/s	
Side G-sensor	Transverse acceleration detected by side G-sensor	Vehicle stopped	Approx. 0 m/s ²	Side G-sensor and route
		During driving	- 24.3 to 24.1m/s ²	
Pressure sensor	Brake fluid pressure detected by pressure sensor	With the ignition switch turned ON and brake pedal released.	Approx. 0 bar	Pressure sensor and circuit
		With the ignition switch turned ON and brake pedal depressed.	- 40 to 300bar	
ABS control unit voltage	Battery voltage supplied to the VDC/TCS/ABS control unit	Ignition switch ON	10 - 16V	VDC/TCS/ABS control unit power supply circuit and ground circuit
STOP LAMP SW	Operating status of brake pedal	Depress brake pedal.	ON	Stop lamp switch circuit
		Release the brake pedal.	OFF	
Parking brake switch	Parking brake status	Parking brake activated	ON	Parking brake switch circuit
		Parking brake not activated	OFF	
OFF SW	OFF SW ON/OFF condition	VDC OFF switch ON (When DC OFF indicator lamp is ON.)	ON	VDC OFF switch circuit
		VDC OFF switch OFF (When VDC OFF indicator lamp is OFF.)	OFF	
ABS WARNING LAMP	ABS warning lamp status (Note 2)	When ABS warning lamp is ON.	ON	ABS warning lamp circuit
		When ABS warning lamp is OFF.	OFF	
When removing dirt or sealant from the OFF indicator lamp, never use an organic solvent (such as paint thinner or gasoline).	VDC OFF indicator lamp status (Note 3)	When VDC OFF indicator lamp is ON.	ON	VDC OFF indicator lamp circuit
		When VDC OFF indicator lamp is OFF.	OFF	
When removing dirt or sealant from the CONTROL lamp, never use an organic solvent (such as paint thinner or gasoline).	SLIP indicator lamp status (Note 4)	When SLIP indicator lamp is ON	ON	SLIP indicator lamp circuit
		When SLIP indicator lamp is OFF	OFF	

TROUBLE DIAGNOSIS

Monitor item	Contents	Data monitor		(Reference) Check items for malfunction	A
		Condition	Reference value in normal operation		
EV SIGNAL AV SIGNAL	Solenoid valve operation	Actuator (solenoid) is active ("Active Test" with CONSULT-II) or actuator relay is inactive (in fail-safe mode).	ON	Solenoid and circuit	B
		When the actuator (solenoid) is not active and actuator relay is active (the key switch ON).	OFF		C
USV SIGNAL MAV SIGNAL	VDC switch-over valve status	When the actuator (switch-over valve) is active ("Active test" with CONSULT-II) or the actuator relay is inactive (when fail-safe mode).	ON	Switch-over valve and circuit	D
		When the actuator (switch-over valve) is inactive or the actuator relay is active (the key switch ON).	OFF		E
V/R SIGNAL	Actuator relay activated (ON/OFF)	When the actuator relay is active (the engine is running).	ON	Actuator relay and circuit	G
		When the actuator relay is not active (before the engine get started and in the fail-safe mode).	OFF		H
M/R output	Actuator motor and motor relay status (ON/OFF)	When the actuator motor and motor relay are active ("Active test" with CONSULT-II).	ON	Actuator motor, motor relay, and circuit	I
		When the actuator motor and motor relay are inactive.	OFF		
Pre-CHG PMP (+)	Precharge pump status	Precharge pump activated	ON	Precharge pump and circuit	J
		Precharge pump not activated	OFF		
Pre-CHG PMP (-)	Precharge pump status	Precharge pump activated	ON	Precharge pump and circuit	K
		Precharge pump not activated	OFF		
Snow mode switch	Snow mode switch ON/OFF condition	Snow mode switch ON	ON	-	L
		Snow mode switch OFF	OFF		
Control BST activated	Control booster status	Control booster activated	ON	-	M
		Control booster not activated	OFF		

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(Note 1): Check the pressure of the tire in normal condition.

(Note 2): ON/OFF timing of the ABS warning lamp

ON: For approximately 0.5 seconds after the ignition switch is turned ON, or when a malfunction is detected.

OFF: Approximately 0.5 seconds after the ignition switch is turned ON (when the system is in normal operation).

(Note 3): ON/OFF timing of the VDC OFF indicator lamp

ON: For approximately 0.5 seconds after the ignition switch is turned ON, or when a malfunction is detected VDC OFF switch is ON.

OFF: Approximately 0.5 seconds after the ignition switch is turned ON (when the system is in normal operation) or when VDC OFF switch is OFF.

(Note 4): SLIP indicator lamp ON/OFF timing

ON: For approximately 0.5 seconds after the ignition switch is turned ON, or when a malfunction is detected VDC/TCS function is activated while driving.

OFF: Approximately 0.5 seconds after the ignition switch is turned ON (when the system is in normal operation) and VDC/TCS function is not activated.

Flashing: VDC/TCS function is active during driving.

TROUBLE DIAGNOSIS

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Functions of CONSULT-II CONSULT-II MAIN FUNCTION

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

Diagnostic test mode	Function	Reference
WORK SUPPORT	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-II.	BRC-5, "Adjustment of Neutral Position of Steering Angle Sensor"
SELF-DIAGNOSTIC RESULTS	Self-diagnostic results can be read and erased quickly.	BRC-33, "SELF-DIAGNOSIS"
DATA MONITOR	Input/Output data in the VDC/TCS/ABS control unit can be read.	BRC-30, "DATA MONITOR"
CAN DIAG SUPPORT MNTR	The results of transmit / receive diagnostic of CAN communication can be read.	—
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-36, "ACTIVE TEST"
FUNCTION TEST	Performed by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".	—
ECU PART NUMBER	VDC/TCS/ABS control unit part number can be read.	—

DATA MONITOR

For details of the data monitor function, refer to the CONSULT-II Instruction Manual.

Operation Procedure

1. Turn the ignition switch OFF.
2. Connect the CONSULT-II connector to the vehicle-side data link connector.
3. Turn the ignition switch ON.
4. Touch "START (NISSAN BASED VHCL)" on the display.
5. Touch "VDC" on the display.

CAUTION:

Just after the engine is started, or the ignition switch is turned ON, "VDC" may not be displayed on the system selection screen even if "START" is touched. In this case, start the self-diagnosis again from step 2.

6. Touch "DATA MONITOR".
7. Return to the monitor item selection screen, and touch any of "C/U INPUT ITEM", "MAIN ITEM" or "ITEM MENU SELECTION". Refer to [BRC-30, "Display Item List"](#).
8. Touch "START".
9. Screen of data monitor is displayed.

Display Item List

Item (Unit)	Monitor item selection			Remarks
	Control unit input item	Main item	Item menu select	
N-position signal (ON/OFF)	—	×	×	N-position signal status (ON/OFF) judged by the CAN communication signal is displayed.
R-position signal (ON/OFF)	—	×	×	R-position signal status (ON/OFF) judged by the CAN communication signal is displayed.
P-position signal (ON/OFF)	—	×	×	P-position signal status (ON/OFF) judged by the CAN communication signal is displayed.

TROUBLE DIAGNOSIS

Item (Unit)	Monitor item selection			Remarks
	Control unit input item	Main item	Item menu select	
Gear	×	×	×	Gear position judged by the A/T inhibitor switch signal is displayed.
Wheel sensor FR (km/h,MPH)	×	×	×	Wheel speed calculated by front RH wheel sensor signal is displayed.
Wheel sensor FL (km/h,MPH)	×	×	×	Wheel speed calculated by front LH wheel sensor signal is displayed.
Wheel sensor RR (km/h,MPH)	×	×	×	Wheel speed calculated by rear RH wheel sensor signal is displayed.
Wheel sensor RL (km/h,MPH)	×	×	×	Wheel speed calculated by rear LH wheel sensor signal is displayed.
Throttle guide (%)	×	×	×	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.
CAN communication start (ON/OFF)	-	×	×	Communication status of CAN communication is displayed.
ASCD output (ON/OFF)	-	×	×	ON/OFF status of the VDC/TCS operation signal to ASCD is displayed.
Steering angle signal (deg)	×	×	×	Steering angle detected by the steering angle sensor is displayed.
Yaw rate sensor (d/s)	×	×	×	Yaw rate detected by the yaw rate sensor is displayed.
Side G-sensor (m/s ²)	×	×	×	Transverse acceleration detected by the side G-sensor is displayed.
Pressure sensor (bar)	×	×	×	Brake fluid pressure detected by the pressure sensor is displayed.
ABS control unit voltage (V)	×	×	×	Voltage supplied to VDC/TCS/ABS control unit is displayed.
Stop lamp switch (ON/OFF)	×	×	×	Stop lamp switch (ON/OFF) status is displayed.
Parking brake switch (ON/OFF)	×	×	×	Parking brake switch (ON/OFF) status is displayed.
OFF switch (ON/OFF)	×	×	×	VDC OFF switch (ON/OFF) status is displayed.
ABS warning lamp (ON/OFF)	-	×	×	ABS warning lamp (ON/OFF) status is displayed.
OFF lamp (ON/OFF)	-	×	×	VDC warning lamp (ON/OFF) status is displayed.
Operation 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.

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Item (Unit)	Monitor item selection			Remarks
	Control unit input item	Main item	Item menu select	
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 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)	-	-	×	Valve relay operation signal (ON/OFF) status is displayed.
M/R OUTPUT (ON/OFF)	-	-	×	Front motor relay activation signal (ON/OFF) status is displayed.
PR-CHG PMP (+) (ON/OFF)	-	-	×	Precharge pump drive signal (+) (ON/OFF) status is displayed.
PR-CHG PMP (-) (ON/OFF)	-	-	×	Precharge pump drive signal (-) (ON/OFF) status is displayed.
VDC fuel signal (ON/OFF)	-	-	×	VDC fuel signal (ON/OFF) status is displayed.
TCS fuel signal (ON/OFF)	-	-	×	TCS fuel signal (ON/OFF) status is displayed.
ABS fuel signal (ON/OFF)	-	-	×	ABS fuel signal (ON/OFF) status is displayed.
EBD fuel signal (ON/OFF)	-	-	×	EBD fuel signal (ON/OFF) status is displayed.
Brake fluid level switch (ON/OFF)	-	-	×	Brake fluid level warning lamp switch (ON/OFF) status is displayed.
Snow mode switch (ON/OFF)	-	-	×	Snow mode switch (ON/OFF) status judged by CAN communication signal is displayed.
Control BST operation (ON/OFF)	-	-	×	Control booster activation signal (ON/OFF) status judged by CAN communication signal is displayed.
M-mode judgement (OK/UNKWN)	-	-	×	M-mode (ON/OFF) status judged by CAN communication signal is displayed.
OD cancel switch (ON/UNKWN)	-	-	×	OD cancel switch (ON/OFF) status judged by CAN communication signal is displayed.
EBD operation signal (ON/OFF)	-	-	×	EBD operation (ON/OFF) status is displayed.
ABS operation signal (ON/OFF)	-	-	×	ABS operation (ON/OFF) status is displayed.

TROUBLE DIAGNOSIS

Item (Unit)	Monitor item selection			Remarks
	Control unit input item	Main item	Item menu select	
TCS operation signal (ON/OFF)	–	–	×	TCS operation (ON/OFF) status is displayed.
VDC operation signal (ON/OFF)	–	–	×	VDC operation (ON/OFF) status is displayed.

×: Applicable

–: Not applicable

CAUTION:

1. Automatic vehicle distance control system main control unit

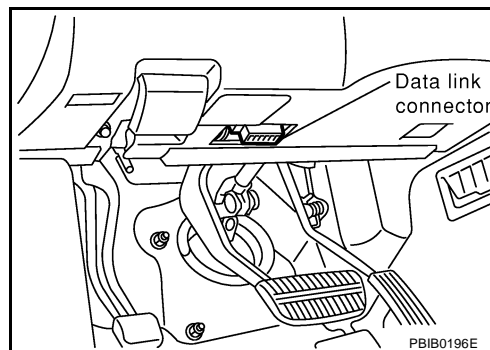
SELF-DIAGNOSIS

Description

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

Procedure

1. Perform a [BRC-40, "Basic Inspection"](#) using information from the customer.
2. After the ignition switch is turned OFF, connect the CONSULT-II connector to the vehicle-side data link connector. (The data link connector is on the lower instrument cover).
3. Start the engine and drive at approx. 30 km/h (19 MPH) for approx. 1 minute.
4. After stopping the vehicle, with the engine still idling, touch "START (NISSAN BASED VHCL)", "VDC", "SELF-DIAG RESULTS" on the CONSULT-II screen in this order.



CAUTION:

Just after starting the engine, or turning the ignition switch ON, "VDC" may not be displayed on the system selection screen even if "START (NISSAN BASED VHCL)" is touched.

In this case, start the self-diagnosis again from step 2. If it cannot be shown after several attempts, the VDC/TCS/ABS control unit may malfunction. Repair or replace the control unit.

5. The self-diagnosis result is displayed. (If necessary, touch "PRINT" to print the self-diagnosis result.)
 - When "NO FAILURE" is shown, check the ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp. [BRC-39, "Refer to "For Correct and Quick Diagnosis"."](#)
 - CONSULT-II self-diagnosis results are displayed without regard to occurrence timing. In some case, the later ones (timing value is small) appear on the next screen.
6. Go to appropriate "Inspection" chart according to "Indication item list" and repair or replace as necessary.
7. Start the engine and drive at approx. 30 km/h (19 MPH) for approx. 1 minute.

CAUTION:

Check again to make sure that there is NO MALFUNCTION on other parts.

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

CAUTION:

If the memory cannot be erased, go to step 6.

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

CAUTION:

TCS OFF switch is not cancelled.

TROUBLE DIAGNOSIS

Self-Diagnostic Items to Result Mode

Diagnostic item	Malfunction detecting condition	Check route
FR LH SENSOR [OPEN]	Circuit of front LH wheel sensor is open.	Wheel sensor and route [Inspection]
RR RH SENSOR [OPEN]	Circuit of rear RH wheel sensor is open.	
FR RH SENSOR [OPEN]	Circuit of front RH wheel sensor is open.	
RR LH SENSOR [OPEN]	Circuit of rear LH wheel sensor is open.	
FR LH SENSOR [SHORT]	Front LH wheel sensor is shorted or input signal is abnormal.	
RR RH SENSOR [SHORT]	Rear RH wheel sensor is shorted or input signal is abnormal.	
FR RH SENSOR [SHORT]	Front RH wheel sensor is shorted or input signal is abnormal.	
RR LH SENSOR [SHORT]	Rear LH wheel sensor is shorted or input signal is abnormal.	
ACTUATOR RELAY	During the ABS actuator relay operation with OFF, when the actuator relay turns ON. Or when the control line for the relay is shorted to the ground.	Actuator relay and circuit [Inspection 10] BRC-59
	During the ABS actuator relay operation with ON, when the actuator relay turns OFF. Or when the control line for the relay is open.	
STOP LAMP SW	Stop lamp switch path is open.	Stop lamp switch and circuit [Inspection 14]
PRESS SENSOR	Pressure sensor signal line is open or shorted, or pressure sensor, pre charge pump is abnormal.	Pressure sensor and circuit [Inspection 4]
STR ANGLE SIG	Neutral position of the steering angle sensor is dislocated, or the steering angle sensor is abnormal.	Steering angle sensor and route [inspection 5]
YAW RATE SEN	Yaw rate sensor is abnormal, or the yaw rate sensor signal line is open or shorted.	Yaw rate/transverse acceleration sensor and circuit [inspection 6]
FR LH IN ABS SOL	Circuit of the front LH ABS inlet solenoid valve is open or shorted, or the control line is open or shorted to the power supply or the ground.	Solenoid path and path [Inspection 8]
FR LH OUT ABS SOL	Circuit of the front LH ABS outlet solenoid valve is open or shorted, or the control line is open or shorted to the power supply or the ground.	
RR RH IN ABS SOL	Circuit of the rear RH ABS inlet solenoid valve is open or shorted, or the control line is open or shorted to the power supply or the ground.	
RR RH OUT ABS SOL	Circuit of the rear RH ABS inlet solenoid valve is open or shorted, or the control line is open or shorted to the power supply or the ground.	
FR RH IN ABS SOL	Circuit of the front RH ABS inlet solenoid valve is open or shorted, or the control line is open or shorted to the power supply or the ground.	
FR RH OUT ABS SOL	Circuit of the front RH ABS outlet solenoid valve is open or shorted, or the control line is open or shorted to the power supply or the ground.	
RR LH IN ABS SOL	Circuit of the rear LH ABS inlet solenoid valve is open or shorted, or the control line is open or shorted to the power supply or the ground.	
RR LH OUT ABS SOL	Circuit of the rear LH ABS outlet solenoid valve is open or shorted, or the control line is open or shorted to the power supply or the ground.	

TROUBLE DIAGNOSIS

Diagnostic item	Malfunction detecting condition	Check route
PRIMARY SIDE USV	VDC switch-over valve 1 on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	VDC switch-over valve and circuit [Inspection 8]
SECONDARY SIDE USV	VDC switch-over valve 1 on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
PRIMARY SIDE MAV	VDC switch-over valve 2 on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
SECONDARY SIDE MAV	VDC switch-over valve 2 on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
PUMP MOTOR, MOTOR RELAY	During the actuator motor operation with ON, when the actuator motor turns OFF. Or when the control line for actuator motor relay is open.	Actuator motor, motor relay, and circuit [Inspection 9]
	During the actuator motor operation with OFF, when the actuator motor turns ON. Or when the control line for relay is shorted to ground.	
PRE CHARGE PUMP MOTOR	During the pre-charging pump motor operation with ON, when the pre-charging pump motor turns OFF. Or when the pre-charging pump monitor is open.	Pre-charging pump motor and circuit [Inspection 7]
	During the pre-charging pump motor operation with OFF, when the pre-charging pump motor turns ON. Or when the pre-charging pump monitor is shorted.	
SENSOR SYSTEM	Wheel sensor input is abnormal.	Speed sensor and circuit
BATTERY VOLT	VDC/TCS/ABS control unit battery voltage is too low.	VDC/TCS/ABS control unit battery voltage path and ground circuit [Inspection 12]
STEERING ANGLE SENSOR HAS NOT BEEN CORRECTED	Neutral position correction of steering angle sensor is not finished.	Neutral position adjustment of steering angle sensor [Inspection 15]
STEERING ANGLE SENSOR COMMUNICATION SYSTEM	CAN communication system or steering angle sensor is abnormal.	Steering angle sensor and CAN communication circuit [Inspection 1]
SIDE G-SENSOR	Side G-sensor is abnormal, or the signal line of side G-sensor is open or shorted.	Yaw rate /Side G-sensor and circuit [Inspection 6]
EMERGENCY BRAKE	VDC/TCS/ABS control unit malfunction (pressure increase is too much or too little.)	VDC/TCS/ABS control unit [Inspection 14]
ABS CONTROLLER	VDC/TCS/ABS internal malfunction of control unit	VDC/TCS/ABS control unit [Inspection 3]
SHIFT POSITION	P- position switch stuck to ON or ACM internal malfunction, VDC/TCS/ABS control unit internal failure.	A/T control unit and circuit VDC/TCS/ABS control unit and route [inspection 13]
CAN COMMUNICATION SYSTEM	<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 interrupted instantaneously for approx. 0.5 seconds or more. 	Communication circuit between VDC/TCS/ABS control unit and units [Inspection 1]

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TROUBLE DIAGNOSIS

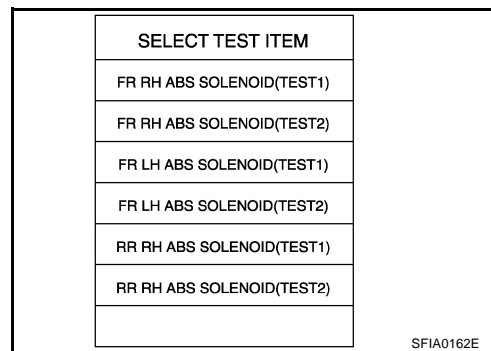
Diagnostic item	Malfunction detecting condition	Check route
LOW FLUID LEVEL	Brake fluid level drops or communication line between the VDC/TCS/ABS control unit and the fluid level warning switch is open or shorted.	Communication circuit between the VDC/TCS/ABS control unit and the fluid level warning switch. Reservoir tank fluid [Inspection 16]
ENGINE SYSTEM 1-6	Major engine components are abnormal	Engine system [Inspection 2]

ACTIVE TEST

Procedure

CAUTION:

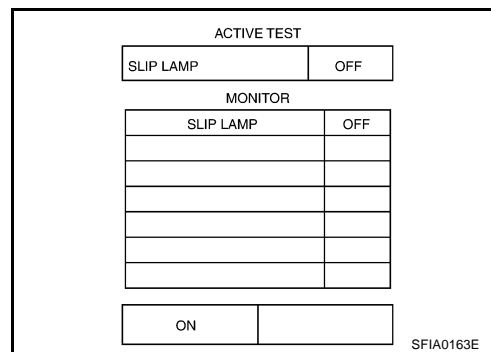
- Do not perform active test while driving the vehicle.
 - Make sure that completely bleed air from the brake system.
 - The active test cannot be performed with the ABS warning lamp on.
1. Connect the CONSULT-II connector to the vehicle-side data link connector and start the engine.
 2. Touch "START (NISSAN BASED VHCL)" on the display.
 3. Touch "VDC" and "ACTIVE TEST".
 4. The test item selection screen is displayed.
 5. Touch necessary test item.



6. Touch "START" with "MAIN SIGNALS" line inverted.
7. The active test screen is displayed.

Solenoid Valve

1. Select (test 1) from each test items for the ABS function active test, and (test 2) for VDC/TCS function active test.
2. Touch "UP", "KEEP", "and", "DOWN" for test 1 and "UP", "ACT UP", and "ACT KEEP" for test 2. And check that the solenoid valves operate as solenoid valve operation chart using the screen monitor. Refer to "Solenoid valve operation chart".



Solenoid Valve Operation Chart

Operation		Test 1			Test 2		
		Up	Keep	Down	Up	ACT Up	ACT Keep
FR RH ABS S/V	EV SIGNAL. FR	OFF	ON	ON	OFF	OFF	OFF
	AV SIGNAL. FR	OFF	OFF	ON*	OFF	OFF	OFF
	USV SIGNAL. P	OFF	OFF	OFF	OFF	ON	ON
	MAV SIGNAL. P	OFF	OFF	OFF	OFF	ON*	OFF

TROUBLE DIAGNOSIS

Operation		Test 1			Test 2		
		Up	Keep	Down	Up	ACT Up	ACT Keep
FR LH ABS S/V	EV SIGNAL. FL	OFF	ON	ON	OFF	OFF	OFF
	AV SIGNAL. FL	OFF	OFF	ON*	OFF	OFF	OFF
	USV SIGNAL. P	OFF	OFF	OFF	OFF	ON	ON
	MAV SIGNAL. P	OFF	OFF	OFF	OFF	ON*	OFF
RR RH ABS S/V	EV SIGNAL. RR	OFF	ON	ON	OFF	OFF	OFF
	AV SIGNAL. RR	OFF	OFF	ON*	OFF	OFF	OFF
	USV SIGNAL. S	OFF	OFF	OFF	OFF	ON	ON
	MAV SIGNAL. S	OFF	OFF	OFF	OFF	ON*	OFF
RR LH ABS S/V	EV SIGNAL. RL	OFF	ON	ON	OFF	OFF	OFF
	AV SIGNAL. RL	OFF	OFF	ON*	OFF	OFF	OFF
	USV SIGNAL. S	OFF	OFF	OFF	OFF	ON	ON
	MAV SIGNAL. S	OFF	OFF	OFF	OFF	ON*	OFF
FR ABS S/Vs	EV SIGNAL. FR	OFF	ON	ON	OFF	OFF	OFF
	AV SIGNAL. FR	OFF	OFF	ON	OFF	OFF	OFF
	EV SIGNAL. FL	OFF	ON	ON	OFF	OFF	OFF
	AV SIGNAL. FL	OFF	OFF	ON	OFF	OFF	OFF
RR ABS S/Vs	EV SIGNAL. RR	OFF	ON	ON	OFF	OFF	OFF
	AV SIGNAL. RR	OFF	OFF	ON	OFF	OFF	OFF
	EV SIGNAL. RL	OFF	ON	ON	OFF	OFF	OFF
	AV SIGNAL. RL	OFF	OFF	ON	OFF	OFF	OFF

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

NOTE:

- If the active test is performed with the brake pedal depressed, the pedal stroke may be changed. This is a normal condition.
- "TEST STOP" is displayed 6 seconds after the operation start.
- After "TEST STOP" is displayed, to perform the test again, repeat the step 6 of the operation procedure.

TROUBLE DIAGNOSIS

VDC Off Led

Touch "ON" and "OFF" to check that VDC OFF indicator lamp operates as follows.

Operation	ON	OFF
VDC OFF LED	ON	Lamp OFF

NOTE:

During the active test when "OFF" on the screen is touched, all of the VDC OFF indicator lamp, SLIP indicator lamp, and ABS warning lamp flash once. This is not abnormal.

ABS Motor

Touch "ON" and "OFF" on the screen to check that the M/R output operates as follows.

Operation	ON	OFF
M/R OUTPUT	ON	OFF

NOTE:

- If the active test is performed with the brake pedal depressed, the pedal stroke may be changed. This is a normal condition.
- "TEST STOP" is displayed 10 seconds after the operation start.

Precharge Pump

Touch "ON" and "OFF" on the screen to check that the pre-CHG PMP (+) and pre-CHG PMP (-) operate as follows.

Operation	ON	OFF
PR CHG PMP (+)	ON	OFF
PR-CHG PMP (-)	ON	ON*

*: Touch "ON", "OFF" in turn, "OFF" is shown and approx. 1 - 2 seconds later it changes to "ON".

SLIP LED

Touch "ON" and "OFF" on the screen to check that the SLIP indicator lamp operates as follows.

Operation	ON	OFF
SLIP LED	ON	Lamp OFF

NOTE:

During the active test when "OFF" on the screen is touched, all of the VDC OFF indicator lamp, SLIP indicator lamp, and ABS warning lamp flash once. This is not abnormal.

ABS Warning Lamp

Touch "ON" and "OFF" on the screen to check that the ABS warning lamp operates as follows.

Operation	ON	OFF
ABS WARNING LAMP	ON	Lamp OFF

NOTE:

During the active test when "OFF" on the screen is touched, all of the VDC OFF indicator lamp, SLIP indicator lamp, and ABS warning lamp flash once. This is not abnormal.

ASCD Output

Touch "ON" and "OFF" on the screen to check that the ASCD output operates as follows.

Operation	ON	OFF
ASCD OUTPUT	ON	OFF

TROUBLE DIAGNOSIS

Refer to “For Correct and Quick Diagnosis”.

EFS000HA

PRECAUTIONS FOR TROUBLE DIAGNOSIS

- Before performing the trouble diagnosis, always read the general information (GI) to confirm the general precautions.
- After replacement of VDC/TCS/ABS control unit, steering angle sensor, steering parts, suspension parts, or tires, and adjustment of alignment, always adjust the neutral position of steering angle sensor before driving.
- When the VDC/TCS/ABS control unit is replaced, check that the label on the computer unit is identical color.
- After completing the trouble diagnosis, always erase the malfunctioning memory. [BRC-30, "Functions of CONSULT-II"](#) or [BRC-41, "Self-Diagnoses"](#) .
- When inspection of the continuity or voltage between units is performed, check the connector terminals for disconnection, looseness, bend, or collapse. If any malfunction is detected, repair or replace the applicable part.
- Intermittent problems may be caused by a malfunction on harness, connector, or terminal. Move the harnesses, harness connectors, or terminals by hand to make sure that there is no contact malfunction.
- If a circuit tester is used for the check, be careful not to forcibly extend any connector terminal.
- For self-diagnosis, active test, and work support of VDC/TCS/ABS control unit with CONSULT-II, stop and connect CONSULT-II and select “VDC”.
- CONSULT-II self-diagnosis results are displayed without regard to occurrence timing. In some case, the later ones (timing value is small) appear on the next screen.
- While the self-diagnosis results of CONSULT-II shows a malfunction, if CONSULT-II active test is performed, an engine system malfunction may be indicated. In this case, start the engine to resume the normal screen.
- VDC/TCS/ABS system electronically controls the brake operation and engine output. The following symptoms may be caused by the normal operations.

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Symptom	Symptom description	Result
Motor operation noise	During VDC, TCS, or ABS operation, sometimes a faint noise can be heard. This is a motor or pre charge pump operation noise in the VDC/TCS/ABS actuator.	Normal
	Just after the engine starts, the motor operating noise may be heard. This is a normal status of the system operation check.	
System operation check noise	When the engine starts, a “click” noise may be heard from the engine compartment. This is a normal status of the system operation check.	Normal
TCS operation (SLIP lamp ON)	When the vehicle is passing through a road where the surface friction coefficient varies or the wheel speed changes suddenly by downshifting or depressing of the accelerator pedal fully, TCS may be activated temporarily.	Normal Cancel the VDC/TCS function for the inspection on a chassis dynamometer.
	Before the speedometer inspection, turn VDC OFF switch off to cancel the VDC/TCS function.	
	When the accelerator pedal is depressed on a chassis dynamometer (front wheel fixing type), the vehicle speed will not increase. This is not abnormal, because TCS is activated by the stationary front wheels. The warning lamp may also illuminate to show “sensor system failure” in this case. This is not abnormal either, because the stationary front wheels are detected. Restart the engine, and drive the vehicle at 30 km/h or higher to check that the warning lamp no longer illuminates.	
ABS operation (Longer stopping distance)	The stopping distance may be longer for the vehicles with ABS when the vehicle is driver on snowy and rough road. When driving on the road like that, slow down the speed.	Normal
Sluggish feel	Depending on road circumstances, the driver may have a sluggish feel. This is not abnormal, because the optimum traction has the highest priority (safety first) by TCS operation. Sometimes the driver has a slight sluggish feel against the substantial accelerator pedal operation.	Normal

TROUBLE DIAGNOSIS

ABS Warning Lamp, VDC OFF Indicator Lamp, SLIP Indicator Lamp ON/OFF Timing

×: ON –: Lamp OFF

Condition	ABS warning lamp	VDC OFF LED	SLIP LED	Remarks
When the ignition switch is OFF	–	–	–	–
After the ignition switch is turned ON For approx. 0.5 seconds	×	×	×	–
Ignition switch ON Approx. 0.5 seconds later	–	–	–	Lamp goes off approx. 2 seconds after the engine start.
When the VDC OFF switch turns ON (VDC function OFF).	–	×	–	–
VDC/TCS/ABS malfunction	×	×	×	–
	×	×	–	When the VDC/TCS/ABS control unit is abnormal (power supply or ground malfunction).
When the VDC/TCS is abnormal.	–	×	×	–

Basic Inspection

EFS000HB

PRELIMINARY CHECK 1: (BRAKE FLUID LEVEL AND LEAK INSPECTION)

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

CAUTION:

Do not disassemble the actuator body and the pre charge pump.

3. Check the brake disc rotor and pads.

PRELIMINARY 2: (INSPECTION FOR LOOSE POWER SUPPLY TERMINAL)

Check the battery for looseness on the battery positive/negative terminals and ground connection. If looseness is detected, tighten the piping to the specified torque. Check that the battery voltage does not drop and the alternator is normal.

PRELIMINARY 3: (INSPECTION FOR ABS WARNING LAMP, VDC OFF INDICATOR LAMP, AND SLIP INDICATOR LAMP)

1. Check that the ABS warning lamp is ON for approx. 0.5 seconds when the ignition switch is turned ON. If it does not turn on, check the ABS warning lamp and the circuit, and the combination meter.
2. Check that OFF indicator lamp is ON for approx. 0.5 seconds when the ignition switch is turned ON. If it does not turn ON, check the TCS OFF indicator lamp and the circuit, and the combination meter.
3. Check that the SLIP indicator lamp is ON for approx. 0.5 seconds when the ignition switch is turned ON. If it does not turn ON, check the SLIP indicator lamp and the circuit.
4. With the engine running, check the VDC OFF indicator lamp turns ON and OFF when the VDC OFF switch turns ON and OFF. If it dose not operate in accordance with the switch, check the VDC OFF switch and the circuit.

TROUBLE DIAGNOSIS

5. Check that the VDC OFF indicator lamp turns OFF after approx. 2 seconds delay when the VDC OFF switch turns OFF (not operated). If the VDC OFF indicator lamp does not turn OFF in 10 seconds from the engine start, perform the self-diagnosis of VDC/TCS/ABS control unit.

Self-Diagnoses FUNCTION

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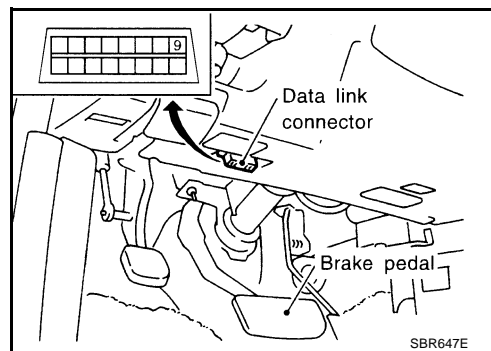
If a malfunction is detected in the system, the ABS warning lamp and VDC OFF indicator lamp in the meter turn ON. In this case, short-circuit the terminal No. 8 on the vehicle-side data link connector on the lower instrument panel to body ground in order to change to the self-diagnosis mode. Then the SLIP warning lamp blinks to display the malfunction part.

PROCEDURE

1. Perform a basic inspection based on the information from the customer.
2. Drive the vehicle at speed 30 km/h (19 MPH) or higher for 1 minute to check for any malfunction.
3. Stop the vehicle and turn the ignition switch OFF.
4. Short-circuit the vehicle-side data link connector terminal No. 9 to body ground.
5. Turn the ignition switch ON to start the self-diagnosis mode.

CAUTION:

- During the self-diagnosis, the vehicle-side data link connector terminal No. 8 must be shorted. Do not depress the brake pedal. Do not start the engine. (The self-diagnosis cannot be started.)
 - If the SLIP indicator lamp does not start flashing, check the VDC/TCS/ABS control unit switch power circuit and the ground circuit.
6. Approx. 3 seconds later from the start of the self-diagnosis mode, the SLIP indicator lamp flashes and the trouble code is displayed.



CAUTION:

If the SLIP indicator lamp does not start flashing, check the VDC/TCS/ABS control unit switch power circuit and the ground circuit.

NOTE:

The display stays on for 5 minutes (Max.) And then stops. But when the ignition switch is turned OFF to ON again, the lamp starts flashing.

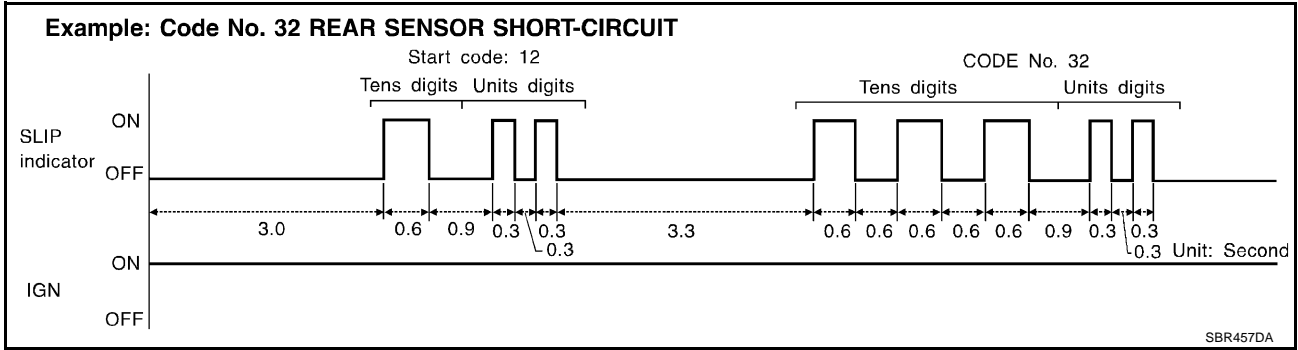
7. Read the trouble code to check the malfunctioning part, and repair according to the trouble diagnosis procedure.
8. After the malfunctioning part is repaired, erase the trouble code stored in the control unit. Refer to [BRC-42, "HOW TO ERASE SELF-DIAGNOSIS RESULTS \(MALFUNCTION\)"](#)
9. Start the self-diagnosis again to check that the code has been erased completely.
10. Disconnect the data link connector terminal No. 9 from body ground to complete the self-diagnosis.
11. Drive the vehicle at approx. 30 km/h (19 MPH) for approx. 1 minute to check that the VDC OFF indicator lamp, SLIP indicator lamp, and ABS warning lamp do not turn ON.

HOW TO READ SELF-DIAGNOSIS RESULTS (MALFUNCTION)

- Read the numbers as the first and second digits using the SLIP indicator lamp self-diagnosis. Refer to [BRC-42, "INDICATION ITEM"](#).
- When several malfunctions are detected at one time, a maximum of 3 code numbers can be stored; the latest malfunction will be displayed first.
- The display begins with the start code No. 12. After that 3 code numbers (Max) are displayed from the latest one. Then the display returns to the start code and repeats.

TROUBLE DIAGNOSIS

- If only NO FAILURE is detected, the start code No. 12 is displayed.

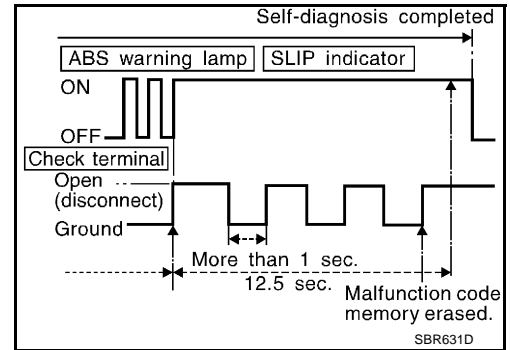


HOW TO ERASE SELF-DIAGNOSIS RESULTS (MALFUNCTION)

1. Turn the ignition switch ON, and start the engine.
2. Drive the vehicle at speed 30 km/h (19 MPH) or higher for 1 minute to check for any malfunction.
3. Stop the vehicle and turn the ignition switch OFF.
4. Short-circuit the vehicle-side data link connector terminal No. 9.
5. Turn the ignition switch ON to start the self-diagnosis mode.

CAUTION:

During the self-diagnosis, the vehicle-side data link connector terminal No. 8 must be short-circuited. Do not depress the brake pedal and start the engine.



6. Approx. 3 seconds later from the start of the self-diagnosis mode, the SLIP indicator lamp flashes and the trouble code is displayed.

CAUTION:

If the SLIP indicator lamp does not start flashing, check the VDC/TCS/ABS control unit switch power path and the ground circuit.

NOTE:

The display stays on for 5 minutes (Max.) And then stops. But when the ignition switch is turned OFF to ON again, the lamp starts flashing.

7. After starting the self-diagnosis, disconnect the vehicle-side data link connector terminal No. 9 from the short-circuited line to start the trouble code memory erasing mode.
8. After starting the trouble code memory erasing mode, short-circuit the vehicle-side data link connector terminal No. 9 intermittently three times or more within approximately 12.5 seconds. (Each terminal ground must last for 2 seconds or more.)
9. When the terminal finally remains open, the trouble codes are erased to complete the self-diagnosis.
10. Start the self-diagnosis mode again to check that the erasing has been completed.

NOTE:

If the erasing has been completed, display the start code 12.

11. Disconnect the vehicle-side data link connector terminal No. 9 from body ground to complete the self-diagnosis mode.
12. Connect the vehicle-side data link connector terminal No. 9 and drive the vehicle at 30 km/h (19 MPH) or higher for 1 minute to check that the warning lamp and the indicator lamp do NOT turn on.
13. Turn the ignition switch OFF.

INDICATION ITEM

DTC code No.	Location	Detection timing		Indicator lamp and warning lamp ON			Fail-safe in operation	Check route
		IGN ON	During driving	ABS	VDC OFF	SLIP		
7	CAN communication circuit or ECM (Note 3)	×	×	– (Note 1)	×	×	×	Inspection 2

TROUBLE DIAGNOSIS

DTC code No.	Location	Detection timing		Indicator lamp and warning lamp ON			Fail-safe in operation	Check route	
		IGN ON	During driving	ABS	VDC OFF	SLIP			
8	CAN communication circuit or ECM (Note 3)	×	×	– (Note 1)	×	×	×	–	
9	CAN communication circuit or ECM (Note 3)	×	×	– (Note 1)	×	×	×		
11	CAN communication circuit or ECM (Note 3)	×	×	– (Note 1)	×	×	×		
13	CAN communication circuit or ECM (Note 3)	×	×	– (Note 1)	×	×	×		
15	Stop lamp switch and circuit	×	×	×	×	×	×	Inspection 11	
18	Wheel sensor and route	×	×	×	×	×	×	–	
21	Front RH speed sensor and circuit [Open circuit]	×	×	×	×	×	×	–	
22	Front RH speed sensor and circuit	–	×	×	×	×	×		
25	Front LH speed sensor and circuit [Open circuit]	×	×	×	×	×	×		
26	Front LH speed sensor and circuit	–	×	×	×	×	×		
31	Rear RH speed sensor and circuit [Open circuit]	×	×	×	×	×	×		
32	Rear RH speed sensor and circuit	–	×	×	×	×	×		
35	Rear LH speed sensor and circuit [Open circuit]	×	×	×	×	×	×		
36	Rear LH speed sensor and circuit	–	×	×	×	×	×		
41	Front RH outlet ABS solenoid valve and route	×	×	×	×	×	×		Inspection 8
42	Front RH inlet ABS solenoid valve and route	×	×	×	×	×	×		
43	Primary-side VDC switch-over valve 1 and circuit	×	×	×	×	×	×		
44	Secondary-side VDC switch-over valve 1 and circuit	×	×	×	×	×	×		
45	Front LH outlet ABS solenoid valve and circuit	×	×	×	×	×	×		
46	Front LH inlet ABS solenoid valve and circuit	×	×	×	×	×	×		
47	Primary-side VDC switch-over valve 2 and circuit	×	×	×	×	×	×		
48	Secondary-side VDC switch-over valve 2 and circuit	×	×	×	×	×	×		
51	Rear RH outlet ABS solenoid valve and circuit	×	×	×	×	×	×		
52	Rear RH inlet ABS solenoid valve and circuit	×	×	×	×	×	×		
55	Rear LH outlet ABS solenoid valve and circuit	×	×	×	×	×	×	Inspection 16	
56	Rear LH inlet ABS solenoid valve and circuit	×	×	×	×	×	×		
57	VDC/TCS/ABS control unit power supply circuit and ground circuit	×	×	×	×	×	– (Note 1)		

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TROUBLE DIAGNOSIS

DTC code No.	Location	Detection timing		Indicator lamp and warning lamp ON			Fail-safe in operation	Check route
		IGN ON	During driving	ABS	VDC OFF	SLIP		
61	Actuator motor, motor relay, and circuit	×	×	×	×	×	×	Inspection 9
63	Actuator relay and circuit	×	×	×	×	×	×	Inspection 10
65	Pre-charging pump motor and circuit	×	×	– (Note 2)	×	×	×	Inspection 7
67	Reservoir tank brake fluid level and, communication circuit between the VDC/TCS/ABS control unit and fluid level warning switch	×	×	– (Note 2)	×	×	×	Inspection 16
71	VDC/TCS/ABS control unit	×	×	– (Note 2)	×	×	×	Inspection 3
77	CAN communication path, VDC/TCS/ABS control unit, and steering angle sensor	×	×	– (Note 2)	×	×	×	Inspection 1
78	Steering angle sensor and CAN communication circuit	×	×	– (Note 2)	×	×	×	Inspection 1
79	VDC/TCS/ABS control unit	–	×	×	×	×	×	Inspection 14
91	Pressure sensor and path	×	×	×	×	×	×	Inspection 4
92	Steering angle sensor and circuit	×	×	– (Note 2)	×	×	×	Inspection 5
93	Yaw rate sensor and circuit	×	×	– (Note 2)	×	×	×	Inspection 6
94	Side G-sensor and route	×	×	– (Note 2)	×	×	×	Inspection 6
97	A/T control unit and circuit, and VDC/TCS/ABS control unit and circuit	–	×	– (Note 2)	×	×	×	Inspection 13
99	Neutral position of steering angle sensor	×	–	– (Note 2)	×	×	×	Inspection 15
Not displayed (Not blink)	SLIP indicator lamp and circuit, and VDC/TCS/ABS control unit	×	×	–	–	–	–	–

×: Applicable

–: Not applicable

CAUTION:

- Depending on the malfunction points in the VDC/TCS/ABS control unit, only the SLIP indicator lamp will turn OFF.
- If an electronic malfunction occurs in the system components, the fail-safe function turns the ABS warning lamp ON.
Depending on the malfunction condition, ABS and EBD operate as follows.
 - ABS is inactive, and EBD is active.
 - Both ABS and EBD are inactive (normal braking status)
 - With the above status, the self-diagnosis when the ignition switch is turned on and the vehicle is initially started is performed. ABS self-diagnosis noise may be heard as usual.

(Note 1): The fail-safe is inactive, but the VDC/TCS/ABS operation is deactivated, resulting in the normal braking of models without VDC/TCS/ABS. After the power supply has resumed, the ABS warning lamp and VDC OFF indicator lamp and VDC/TCS/ABS can be operated.

(Note 2): Only the VDC/TCS control stops and the fail-safe is active, but ABS can be operated.

TROUBLE DIAGNOSIS

(Note 3): Refer to [EC-151, "DTC U1000 CAN COMMUNICATION LINE"](#) , [LAN-21, "CAN COMMUNICATION"](#) for details of malfunctioning part.

Inspection 1 CAN Communication Line or VDC/TCS/ABS Control Unit and Steering Angle Sensor System

EFS000HD

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.

Self-diagnosis results	
CONSULT-II indication item	Diagnostic trouble code
CAN communication system Steering angle sensor communication system	77,78

Are any items other than above indicated in self-diagnosis results?

- YES >> Repair or replace the indicated item.
NO >> GO TO 2.

2. CHECK THE HARNESS AND CONNECTORS BETWEEN VDC/TCS/ABS CONTROL UNIT AND STEERING WHEEL ANGLE SENSOR.

1. Disconnect VDC/TCS/ABS control unit connector and steering wheel angle sensor connector with the ignition switch OFF.
2. Check the harness between VDC/TCS/ABS control unit and steering wheel angle sensor for open and shorted circuit.
3. Check the connectors for each control unit and sensor. (Check the connector housing for disconnected, loose, bent, and collapsed terminals.)

OK or NG

- OK >> GO TO 3.
NG >> Repair disconnected harness or poorly connected connectors. GO TO 3.

3. SELF-DIAGNOSIS RESULT CHECK 2

1. Connect the connectors to each control unit and sensor and turn the ignition switch ON.
2. After erasing the self-diagnosis result, start the engine to perform the self-diagnosis again.

Is only "steering wheel angle sensor communication system" indicated in the self-diagnosis item display?

- YES >> Spiral cable (Replace steering wheel angle sensor to adjust the neutral position of the steering angle sensor. Refer to [PS-7, "CHECKING NEUTRAL POSITION ON STEERING WHEEL"](#) .
NO >> GO TO 4.

4. CHECK CONNECTOR

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

Self-diagnosis results	
CONSULT-II indication item	Diagnostic trouble code
CAN communication system Steering angle sensor communication system	77,78

Is above displayed in the self-diagnosis item?

- YES >> Print out self-diagnostic results and go to [LAN-21, "CAN COMMUNICATION"](#) .
NO >> Connector terminal connection is loose, damaged, open or shorted.

TROUBLE DIAGNOSIS

Inspection 2 Engine System

EFS000HE

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.

Self-diagnosis results	
CONSULT-II indication item	Diagnostic trouble code
Engine system 2	7
Engine system 3	8
Engine system 4	9
Engine system 5	13
Engine system 6	11

Are any items other than above indicated in self-diagnosis results?

- YES >> Repair or replace harness or connector.
NO >> GO TO 2.

2. SELF-DIAGNOSIS RESULT CHECK 2

1. Perform ECM self-diagnosis and repair or replace harness or connector, then perform the ECM self-diagnosis again.
2. Perform VDC/TCS/ABS control unit self-diagnosis again.

OK or NG

- OK >> Inspection End
NG >> Repair or replace harness or connector. Perform the self-diagnosis again.

Inspection 3 VDC/TCS/ABS Control Unit System

EFS000HF

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK

Check the self-diagnosis results.

Self-diagnosis results	
CONSULT-II indication item	Diagnostic trouble code
ABS controller	71

Are any items other than "ABS Controller" indicated in the self-diagnosis display item?

- YES >> Repair or replace harness or connector. Perform the self-diagnosis again.
NO >> Replace VDC/TCS/ABS control unit and perform VDC/TCS/ABS control unit self-diagnosis again.

TROUBLE DIAGNOSIS

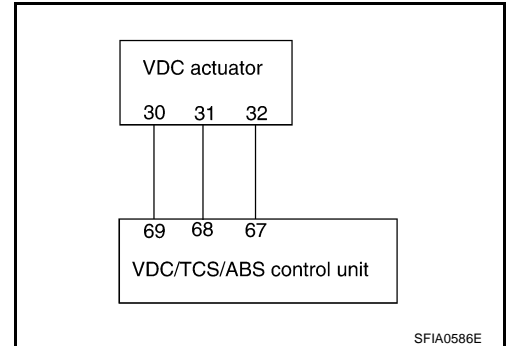
Inspection 4 Pressure Sensor and the Circuit between Pressure Sensor and VDC/TCS/ABS Control Unit

EFS000HG

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.



Self-diagnosis results

CONSULT-II indication item	Diagnostic trouble code
Pressure sensor system	91

Is "Pressure sensor" indicated in the self-diagnosis display item?

>> GO TO 2.

2. SELF-DIAGNOSIS RESULT CHECK 2

1. Disconnect the connectors of pressure sensor and VDC/TCS/ABS control unit, and connect them again correctly.
2. Perform VDC/TCS/ABS control unit self-diagnosis again.

OK or NG

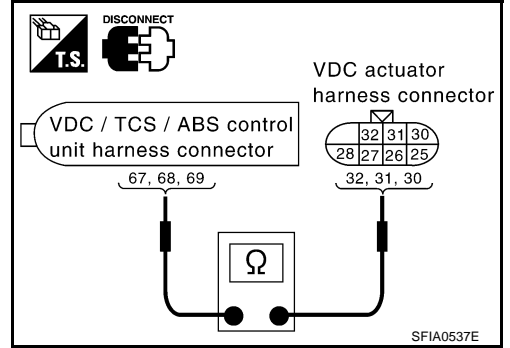
- OK >> Repair or replace the poorly connected connector, then perform self-diagnosis again.
NG >> GO TO 3.

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TROUBLE DIAGNOSIS

3. PRESSURE SENSOR CIRCUIT INSPECTION

1. Disconnect the connectors of pressure sensor and VDC/TCS/ABS control unit.
2. Check for continuity between VDC/TCS/ABS control unit harness connector E218 and pressure sensor harness connector E21.



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

OK or NG

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

4. PRESSURE SENSOR INSPECTION

Check the pressure sensor value in "data monitor".

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

OK or NG

- OK >> GO TO 5.
 NG >> Pressure sensor malfunction. Replace VDC/TCS/ABS actuator (with pressure sensor).

5. SELF-DIAGNOSIS RESULT CHECK 3

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

Are self-diagnosis item displays indicated?

- YES >> GO TO 6.
 NO >> Inspection End

6. SELF-DIAGNOSIS RESULT CHECK 4

Increase the engine speed up to 500 rpm and perform VDC/TCS/ABS control unit self-diagnosis.

Are self-diagnosis item displays indicated?

- YES >> Precharge pump malfunction. Repair or replace the precharge pump.
 NO >> Inspection End

TROUBLE DIAGNOSIS

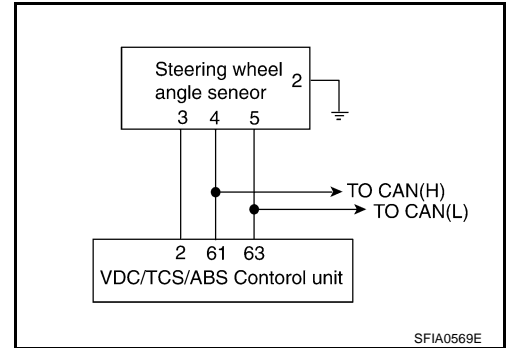
Inspection 5 Steering Wheel Angle Sensor and the Path between Steering Wheel Angle Sensor and VDC/TCS/ABS Control Unit

EFS000HH

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.



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Self-diagnosis results

CONSULT-II indication item	Diagnostic trouble code
Steering angle sensor system	92

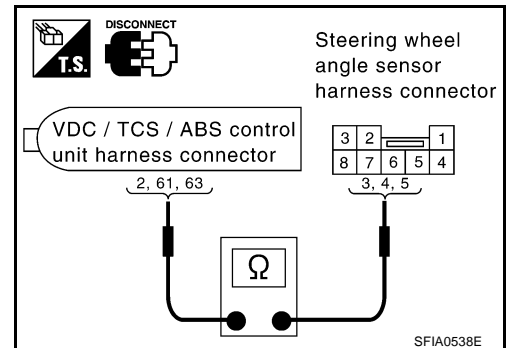
Perform inspection 1 CAN communication system.

Is "steering angle sensor" indicated in the self-diagnosis display item?

- YES >> ● Repair or replace the poorly connected connector.
 - Check the connector housing for disconnect, loose, bent and collapse terminals. If any malfunction is detected, repair or replace the applicable part.
- NO >> GO TO 2.

2. STEERING WHEEL ANGLE SENSOR CIRCUIT CHECK

1. Disconnect VDC/TCS/ABS control unit connector and steering wheel angle sensor connector.
2. Check for continuity between VDC/TCS/ABS control unit harness connector E218 and steering wheel angle sensor harness connector M52.



VDC/TCS/ABS control unit (Harness connector E218)	Steering wheel angle sensor (Harness connector M52)	Continuity
2 (S/B)	3 (S/B)	Yes
61 (LG/B)	4 (LG/B)	Yes
63 (P/B)	5 (P/B)	Yes

OK or NG

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

TROUBLE DIAGNOSIS

3. DATA MONITOR CHECK

Perform "data monitor" in "steering angle signal" and check that it is in normal condition.

Steering condition	Data monitor
Straight-ahead	- 5deg to +5deg
Turn the wheel to the right by 90°.	Approx. + 90deg
Turn the wheel to the left by 90°.	Approx. - 90deg

OK or NG

- OK >> Perform VDC/TCS/ABS control unit self-diagnosis again.
- NG >> Replace the spiral cable (steering wheel angle sensor) and adjust the neutral position of steering angle sensor. [BRC-5, "Adjustment of Neutral Position of Steering Angle Sensor"](#).

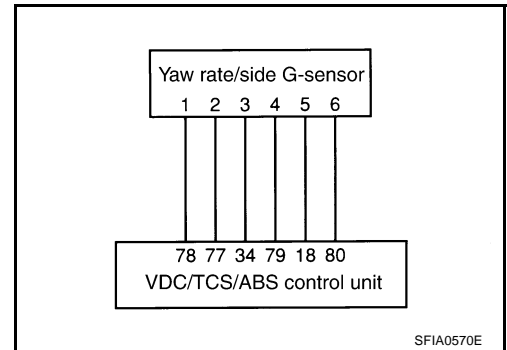
Inspection 6 Yaw Rate Sensor/Side G-sensor and Path between Yaw Rate Sensor/Side G-sensor and VDC/TCS/ABS Control Unit.

EFS000HI

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.



Self-diagnosis results	
CONSULT-II indication item	Diagnostic trouble code
Yaw rate sensor system Side G-sensor system	93,94

CAUTION:

When the vehicle on a turn-table at an entrance of parking lot or on a moving unit, the VDC OFF indicator lamp turns ON, and the self-diagnosis with CONSULT-II may indicate that the yaw rate sensor system is malfunction. In this case, the yaw rate sensor is not malfunction. Move the vehicle from the turn-table or other moving unit, and restart the engine. This will return the status normal.

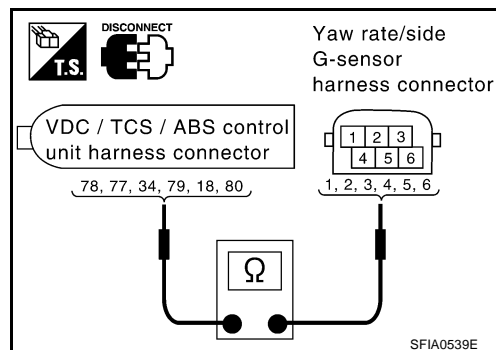
Are "yaw rate sensor system" and "Side G-sensor" indicated on self-diagnosis display.

>> GO TO 2.

TROUBLE DIAGNOSIS

2. SELF-DIAGNOSIS RESULT CHECK 2

1. Disconnect connectors of yaw rate/side G-sensor and VDC/TCS/ABS control unit.
2. Check for continuity between VDC/TCS/ABS control unit harness connector E218 and yaw rate/side G-sensor harness connector M99.



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

OK or NG

OK >> GO TO 3.

NG >> Repair or replace the disconnected harness.

3. YAW RATE SENSOR/SIDE G-SENSOR CIRCUIT CHECK

Vehicle status	Yaw rate sensor (Data monitor standard)	Side G-sensor (Data monitor standard9)
While the vehicle is stopped	- 4 to +4deg/s	- 1.1 to +1.1m/s2
Right-hand turn	Negative value	Negative value
Left turn	Positive value	Positive value

Check yaw rate /side G-sensor is in normal operation in "data monitor".

OK or NG

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

NG >> Yaw rate sensor/side G-sensor malfunction. After replacing the sensor, perform the self-diagnosis of VDC/TCS/ABS control unit again.

TROUBLE DIAGNOSIS

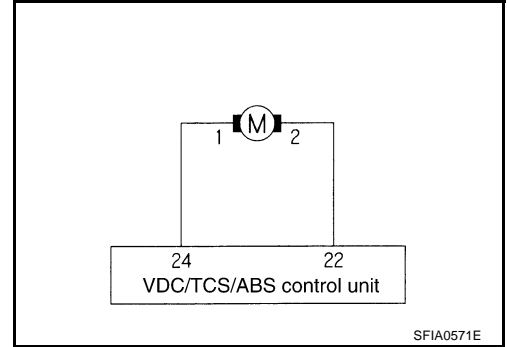
EFS000HJ

Inspection 7 Precharging Pump Motor and Circuit

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.



Self-diagnosis results

CONSULT-II indication item	Diagnostic trouble code
Precharge motor	65

Is "precharge motor" indicated in the self-diagnosis item display?

>> GO TO 2.

2. SELF-DIAGNOSIS RESULT CHECK 2

1. Remove the connectors for precharge pump motor and VDC/TCS/ABS control unit.
2. Securely connect the connectors. Perform the self-diagnosis again.

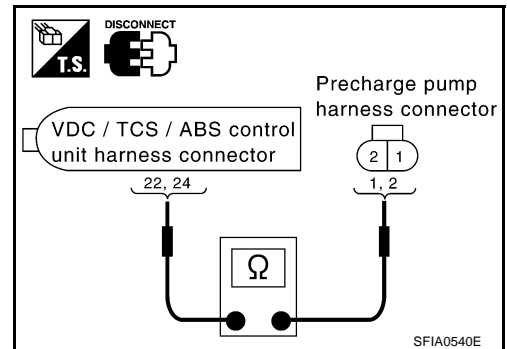
Are self-diagnosis item displays indicated?

YES >> GO TO 3.

NO >> Repair or replace the poorly connected connector.

3. PRECHARGE PUMP MOTOR PATH CHECK

1. Remove the connectors for the precharge pump motor and VDC/TCS/ABS control unit.
2. Check for continuity between VDC/TCS/ABS control unit harness connector E218 and precharge pump motor harness connector E72.



VDC/TCS/ABS control unit (Harness connector E218)	Precharge pump (Harness connector E72)	Continuity
24 (W/L)	1 (W/L)	Yes
22 (L/R)	2 (L/R)	Yes

OK or NG

OK >> GO TO 4.

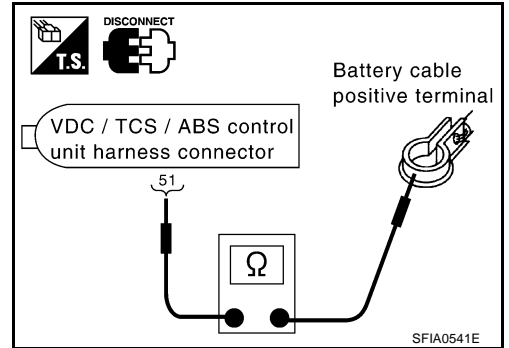
NG >> ● Harness disconnection

- Repair or replace the disconnected harness.

TROUBLE DIAGNOSIS

4. PRECHARGE PUMP MOTOR POWER SUPPLY SYSTEM INSPECTION

1. Remove the negative and positive terminals from battery terminal.
2. Check for continuity between VDC/TCS/ABS control unit harness connector E218 and battery positive terminal.



VDC/TCS/ABS control unit (Harness connector E218)	Battery terminals (Harness connector)	Continuity
51 (Y)	Positive terminal	Yes

OK or NG

- OK >> Replace the precharge pump motor. Perform the self-diagnosis again.
- NG >> Harness disconnection between VDC/TCS/ABS control unit harness connector E218 and the battery

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TROUBLE DIAGNOSIS

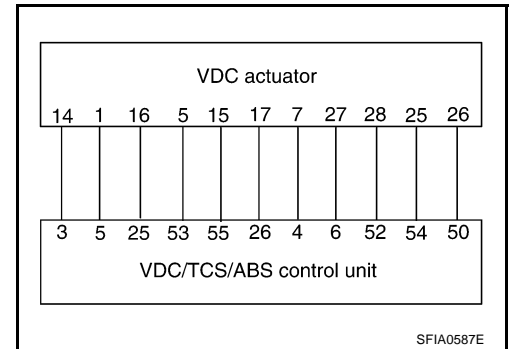
Inspection 8 Solenoid, VDC Switching Valve and Circuit

EFS000HK

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.



Self-diagnosis results

CONSULT-II indication item	Diagnostic trouble code
Front wheel left ABS inlet solenoid system	46
Front wheel left ABS outlet solenoid system	45
Rear wheel right-hand ABS inlet solenoid system	52
Rear wheel right-hand ABS outlet solenoid system	51
Front wheel right-hand ABS inlet solenoid system	42
Front wheel right-hand ABS outlet solenoid system	41
Rear wheel left ABS inlet solenoid system	56
Rear wheel left ABS outlet solenoid system	55
Primary-side USV	43
Secondary-side USV	44
Primary-side MAV	47
Secondary-side MAV	48

Are self-diagnosis result items above indicated?

>> GO TO 2.

2. SELF-DIAGNOSIS RESULT CHECK 2

1. Disconnect VDC/TCS/ABS control unit connector and solenoid connector. Securely connect them again.
2. Securely connect the connectors. Perform the self-diagnosis again.

Are self-diagnosis item displays indicated?

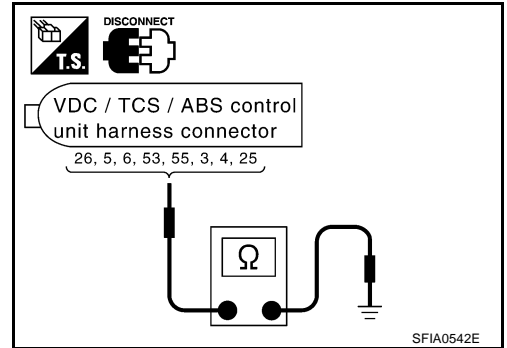
YES >> GO TO 3.

NO >> Repair or replace the poorly connected connector.

TROUBLE DIAGNOSIS

3. SOLENOID INPUT SIGNAL CHECK

1. Disconnect VDC/TCS/ABS control unit connector.
2. Check the resistance value between VDC/TCS/ABS control unit harness connector E218 and body ground.



VDC/TCS/ABS control unit (Harness connector E218)	Body ground	Resistance
26 (W/G)	–	6.0 – 11 Ω
5 (G/Y)	–	6.0 – 11 Ω
6 (L/W)	–	6.0 – 11 Ω
53 (P)	–	6.0 – 11 Ω
55 (R/Y)	–	3.0 – 5.0 Ω
3 (Y/G)	–	3.0 – 5.0 Ω
4 (BR)	–	3.0 – 5.0 Ω
25 (LG)	–	3.0 – 5.0 Ω

OK or NG

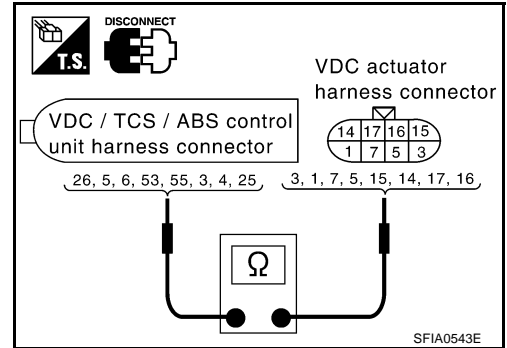
- OK >> Check VDC/TCS/ABS control unit power supply system.
 NG >> GO TO 4.

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TROUBLE DIAGNOSIS

4. SOLENOID PATH CHECK

1. Disconnect the connectors for VDC/TCS/ABS control unit and VDC actuator.
2. Check for continuity between VDC/TCS/ABS control unit harness connector E218 and VDC actuator harness connector E22.



VDC/TCS/ABS control unit (Harness connector E218)	VDC Actuator (Harness connector E22)	Continuity
26 (W/G)	3 (W/G)	Yes
5 (G/Y)	1 (G/Y)	Yes
6 (L/W)	7 (L/W)	Yes
53 (P)	5 (P)	Yes
55 (R/Y)	15 (R/Y)	Yes
3 (Y/G)	14 (Y/G)	Yes
4 (BR)	17 (BR)	Yes
25 (LG)	16 (LG)	Yes

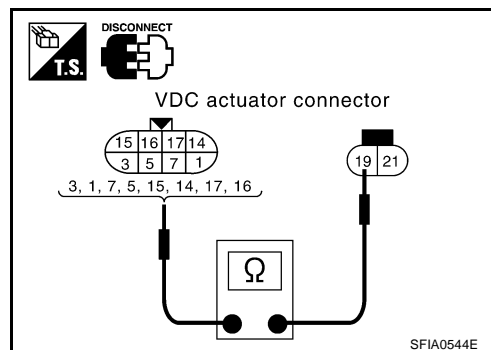
OK or NG

- OK >> Harness disconnection between VDC/TCS/ABS control unit and VDC actuator
 NG >> GO TO 5.

TROUBLE DIAGNOSIS

5. ACTUATION SOLENOID INSPECTION

1. Disconnect VDC actuator connector E22 and E23.
2. Check the resistance value at VDC actuator solenoid.



VDC Actuator (actuator side connector E22)	VDC Actuator (actuator side connector E23)	Resistance
3 (W/G)	19 (L/R)	6.0 – 11 Ω
1 (G/Y)	19 (L/R)	6.0 – 11 Ω
7 (L/W)	19 (L/R)	6.0 – 11 Ω
5 (P)	19 (L/R)	6.0 – 11 Ω
15 (R/Y)	19 (L/R)	3.0 – 5.0 Ω
14 (Y/G)	19 (L/R)	3.0 – 5.0 Ω
17 (BR)	19 (L/R)	3.0 – 5.0 Ω
16 (LG)	19 (L/R)	3.0 – 5.0 Ω

OK or NG

- OK >> Perform VDC/TCS/ABS control unit self-diagnosis again.
 NG >> Replace VDC actuator assembly.

Inspection 9 Actuator Motor, Motor Relay, and Circuit

EFS000HL

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.

Self-diagnosis results	
CONSULT-II indication item	Diagnostic trouble code
Pump motor, motor relay system	61

Are "pump motor" and "motor relay system" indicated in the self-diagnosis display item?

>> GO TO 2.

2. SELF-DIAGNOSIS RESULT CHECK 2

1. Disconnect the connectors for VDC/TCS/ABS control unit and actuator. Securely connect them again.
2. Securely connect the connectors. Perform the self-diagnosis again.

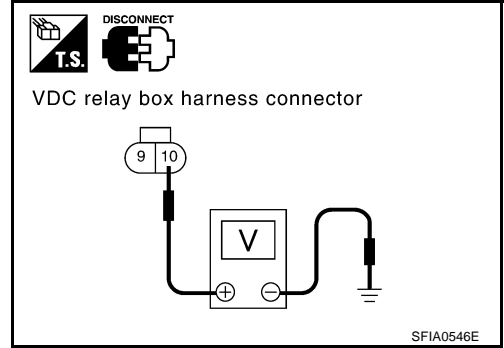
Are self-diagnosis item displays indicated?

- YES >> GO TO 3.
 NO >> Repair or replace the poorly connected connector.

TROUBLE DIAGNOSIS

3. ABS MOTOR, MOTOR RELAY POWER SUPPLY SYSTEM INSPECTION

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



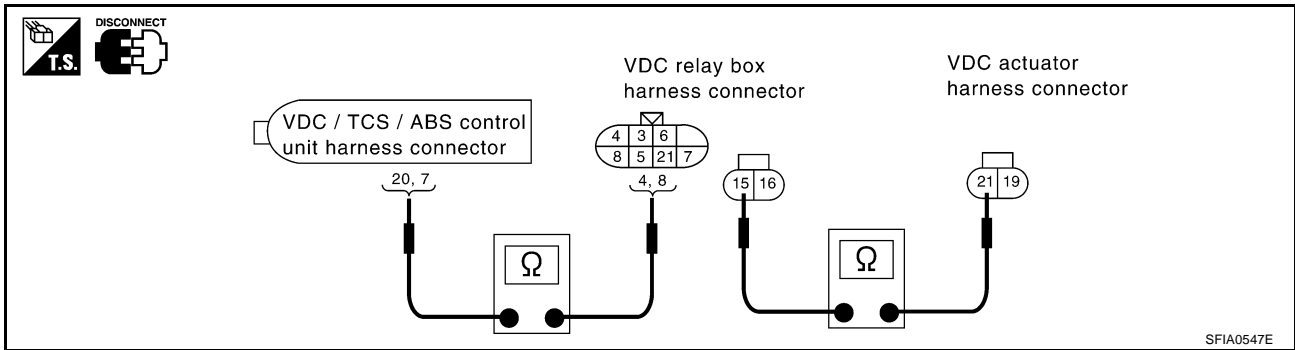
VDC relay box (Harness connector E57)	Body ground	Voltage value
10 (W/L)	–	Battery voltage (approx. 12V)

OK or NG

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

4. ABS MOTOR AND MOTOR RELAY CIRCUIT CHECK

1. Disconnect the connectors for the VDC/TCS/ABS control unit and the VDC relay box.
2. Check for continuity between VDC/TCS/ABS control unit harness connector E218, the VDC relay box, and VDC actuator harness connector E23.



VDC/TCS/ABS control unit (Harness connector E218)	VDC relay box (Harness connector E55,E56)	VDC actuator (Harness connector E23)	Continuity
20 (R/B)	4 (R/B)	–	Yes
7 (G/W)	8 (G/W)	–	Yes
–	15 (G)	21 (G)	Yes

OK or NG

- OK >> GO TO 5.
 NG >> Harness malfunction between VDC/TCS/ABS control unit, VDC relay box, and VDC actuator.

5. MOTOR RELAY UNIT INSPECTION

Check motor relay as a unit.

OK or NG

- OK >> Check VDC/TCS/ABS control unit power supply circuit. Refer to No. 3 in [BRC-57, "Inspection 9 Actuator Motor, Motor Relay, and Circuit"](#)
 NG >> Replace motor relay.

TROUBLE DIAGNOSIS

EFS000HM

Inspection 10 Actuator Relay and Route

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.

Self-diagnosis results	
CONSULT-II indication item	Diagnostic trouble
Actuator relay circuit	63

Is "actuator relay circuit" indicated in the self-diagnosis display?

>> GO TO 2.

2. SELF-DIAGNOSIS RESULT CHECK 2

1. Disconnect VDC/TCS/ABS control unit connector. Securely connect them again.
2. Perform VDC/TCS/ABS control unit self-diagnosis.

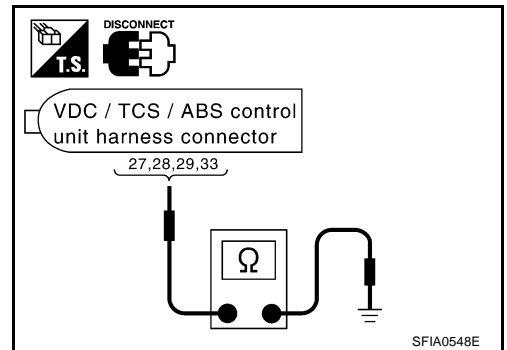
Are self-diagnosis item displays indicated?

YES >> GO TO 3.

NO >> Repair or replace the poorly connected connector.

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

1. Disconnect VDC/TCS/ABS control unit connector.
2. Check for continuity between the VDC/TCS/ABS control unit harness connector E218 and body ground.



VDC/TCS/ABS control unit (harness connector E218)	Body ground	Continuity
27 (B)	-	Yes
28 (B)	-	Yes
29 (B)	-	Yes
33 (B)	-	Yes

OK or NG

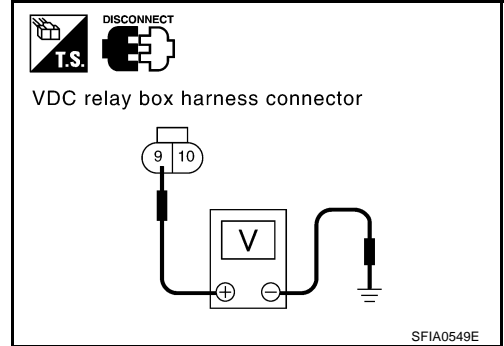
OK >> GO TO 4.

NG >> Poorly connection on VDC/TCS/ABS control unit connector or harness disconnection

TROUBLE DIAGNOSIS

4. ACTUATOR (SOLENOID VALVE) RELAY POWER SUPPLY SYSTEM INSPECTION

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



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

OK or NG

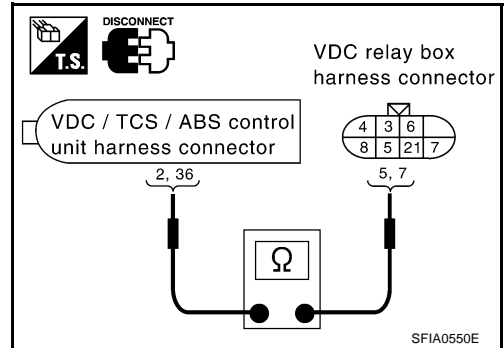
OK >> GO TO 5.

NG >> ● Check fuses 30A.

- Check for continuity between battery and VDC relay box terminal No. 10. If it is not OK, replace the fuse or harness.

5. ACTUATOR (SOLENOID VALVE) RELAY POWER PATH CHECK

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



VDC/TCS/ABS control unit (Harness connector E128)	VDC relay box (Harness connector E56)	Continuity
2 (SB)	5 (SB)	Yes
36 (GY/R)	7 (GY/R)	Yes

OK or NG

OK >> GO TO 6.

NG >> Harness disconnection between VDC/TCS/ABS control unit and VDC relay box

6. ACTUATOR (SOLENOID VALVE) RELAY UNIT INSPECTION

Check actuator (solenoid valve) relay as a unit.

OK or NG

OK >> Check VDC/TCS/ABS control unit power supply circuit. Refer to No.3 in [BRC-57, "Inspection 9 Actuator Motor, Motor Relay, and Circuit"](#)

NG >> Replace actuator relay.

TROUBLE DIAGNOSIS

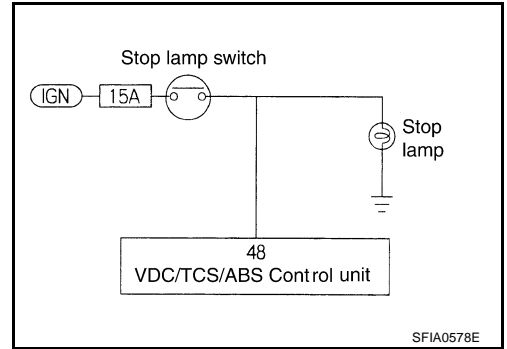
Inspection 11 Stop Lamp Switch and Path

EFS000HN

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.



Self-diagnosis results

CONSULT-II indication item	Diagnostic trouble code
Stop lamp switch system	15

Is "stop lamp switch system" indicated in the self-diagnosis item display?

>> GO TO 2.

2. STOP LAMP INSPECTION

1. Disconnect the connectors for stop lamp switch and VDC/TCS/ABS control unit.
2. Securely connect them again.
3. Start the engine.
4. Repeat depressing the brake pedal carefully several times, then perform the self-diagnosis again.

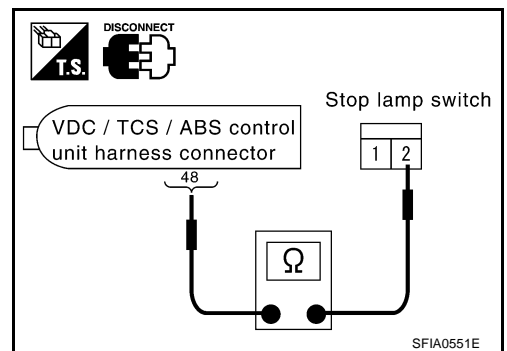
Are self-diagnosis item displays indicated?

YES >> GO TO 3.

NO >> Repair or replace the poorly connected connector.

3. STOP LAMP SWITCH PATH CHECK

1. Disconnect the connectors for stop lamp switch and VDC/TCS/ABS control unit.
2. Check for continuity between stop lamp switch harness connector M402 and VDC/TCS/ABS control unit harness connector E218.



VDC/TCS/ABS control unit (Harness connector E218)	STOP LAMP SWITCH (Harness connector M402)	Continuity
48 (R/W)	2 (R/W)	Yes

OK or NG

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

NG >> Harness disconnection between the VDC/TCS/ABS control unit and the stop lamp switch

TROUBLE DIAGNOSIS

Inspection 12 VDC/TCS/ABS Control Unit Power Supply Circuit

EFS000HO

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.

Self-diagnosis results	
CONSULT-II indication item	Diagnostic trouble code
Low battery voltage	57

Is "battery voltage low" indicated in the self-diagnosis item display?

>> GO TO 2.

2. INSPECTION START

1. Disconnect VDC/TCS/ABS control unit connector. Securely connect them again.
2. Perform the self-diagnosis.

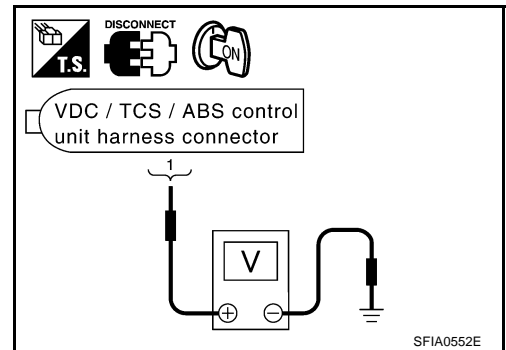
Are self-diagnosis item displays indicated?

YES >> GO TO 3.

NO >> Repair or replace the poorly connected connector.

3. VDC/TCS/ABS CONTROL UNIT POWER SUPPLY SYSTEM INSPECTION 1

1. Disconnect VDC/TCS/ABS control unit connector.
2. Turn the ignition switch ON (engine not running), and check the voltage between VDC/TCS/ABS control unit harness connector E218 and body ground.



VDC/TCS/ABS control unit (Harness connector E218)	Body ground	Voltage value
1 (GY)	-	Battery voltage (approx.12V)

OK or NG

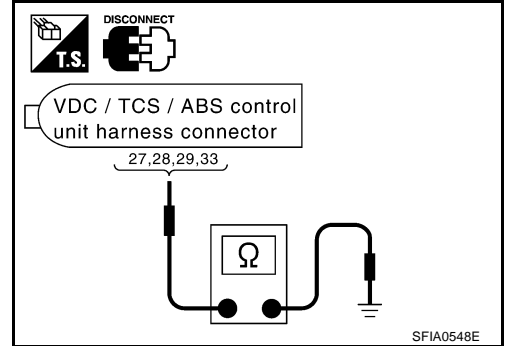
OK >> GO TO 4 .

NG >> GO TO 5 .

TROUBLE DIAGNOSIS

4. VDC/TCS/ABS CONTROL UNIT GROUND CIRCUIT INSPECTION

1. Disconnect VDC/TCS/ABS control unit connector.
2. Check for continuity between VDC/TCS/ABS control unit harness connector E218 and body ground.



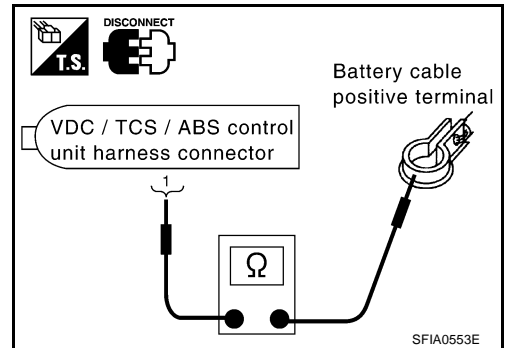
VDC/TCS/ABS control unit (Harness connector E218)	Body ground	Continuity
27 (B)	–	Yes
28 (B)	–	Yes
29 (B)	–	Yes
33 (B)	–	Yes

OK or NG

- OK >> Perform VDC/TCS/ABS control unit self-diagnosis again.
 NG >> Harness disconnection or improper installation of VDC/TCS/ABS control unit

5. VDC/TCS/ABS CONTROL UNIT POWER SUPPLY SYSTEM INSPECTION 2

1. Check fuses 10A.
2. Remove the negative and positive terminals from battery terminal.
3. Check for continuity between battery positive terminal and VDC/TCS/ABS control unit harness connector E218.



VDC/TCS/ABS control unit (Harness connector E218)	Battery positive terminal	Continuity
1 (GY)	–	Yes

OK or NG

- OK >> Check battery for a loose terminal and low voltage or the alternator for abnormality.
 NG >> ● Replace fuse 10A.
 ● Harness disconnection

TROUBLE DIAGNOSIS

Inspection 13 If “Shift Position Error” is Indicated in the Self-Diagnosis Item Display

EFS000HP

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.

Self-diagnosis results	
CONSULT-II indication item	Diagnostic trouble code
Shift position malfunction	97

Is “shift position error” is indicated in the self-diagnosis item display?

>> GO TO 2.

2. DATA MONITOR CHECK

1. Connect CONSULT-II and start the engine.
2. Select “item menu” in data monitor. Check the P position signal.

Selector lever position	P position signal (data monitor)
P position	ON
Not P position	OFF

OK or NG

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

3. A/T INHIBITOR SWITCH INSPECTION

Perform the A/T inhibitor switch inspection. [AT-209, "PARK/NEUTRAL POSITION \(PNP\) SWITCH"](#)

Are self-diagnosis item displays indicated?

- YES >> Perform VDC/TCS/ABS control unit self-diagnosis again.
NO >> After repairing the applicable items, perform VDC/TCS/ABS control unit self-diagnosis.

Inspection 14 When “Emergency Brake” is Displayed in the Self-Diagnosis Item Display

EFS000HQ

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.

Self-diagnosis results	
CONSULT-II indication item	Diagnostic trouble code
Emergency brake	79

When any items other than “emergency brake” is displayed in the self-diagnosis item display (note), follow the instructions below.

CAUTION:

“Emergency brake” is indicated when the control unit itself is detected internal error. If this display item was indicated, replace the control unit.

Is “Emergency brake” is indicated in the self-diagnosis item display?

>> Replace VDC/TCS/ABS control unit, and perform the self-diagnosis again.

TROUBLE DIAGNOSIS

Inspection 15 When “Steering Wheel Angle Sensor has not been Corrected” is Indicated in the Self-Diagnosis Display

EFS000HR

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.

Self-diagnosis results	
CONSULT-II indication item	Diagnostic trouble code
Steering wheel angle sensor has not been corrected.	99

When any item other than “steering wheel angle sensor has not been corrected” is displayed in the self-diagnosis item display:

- YES >> Check and repair the applicable item. Perform the self-diagnosis.
- NO >> Perform steering wheel angle sensor neutral position adjustment. GO TO 2.

2. SELF-DIAGNOSIS RESULT CHECK 2

1. Turn the ignition switch OFF, and ON to erase the self-diagnosis results. And perform VDC/TCS/ABS control unit self-diagnosis again.

Is the self-diagnosis result displayed?

- YES >> After replacing the steering wheel angle sensor, perform the neutral position adjustment. Then conduct the self-diagnosis again.
- NO >> Inspection End

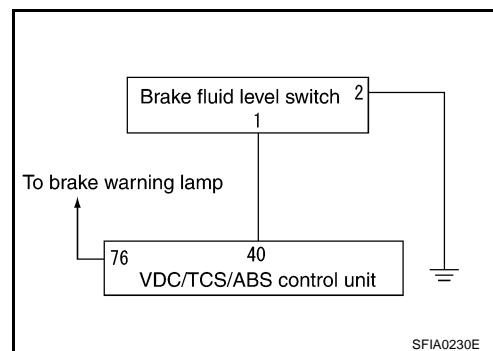
Inspection 16 Communication Circuit between Brake Fluid Level of Reservoir Tank, VDC/TCS/ABS Control Unit and Brake Fluid Level Switch

EFS000HS

Inspection procedure

1. SELF-DIAGNOSIS RESULT CHECK 1

Check the self-diagnosis results.



Self-diagnosis results	
CONSULT-II indication item	Diagnostic trouble code
Low fluid level	67

Does the brake warning light turn on?

- YES >> Check the pad for wear. Check the brake fluid for leakage.
- NO >> GO TO 2.

2. SELF-DIAGNOSIS RESULT CHECK 2

1. Disconnect the connectors for the fluid level switch and the VDC/TCS/ABS control unit.
2. Securely connect the connectors. Perform the VDC/TCS/ABS control unit self-diagnosis.

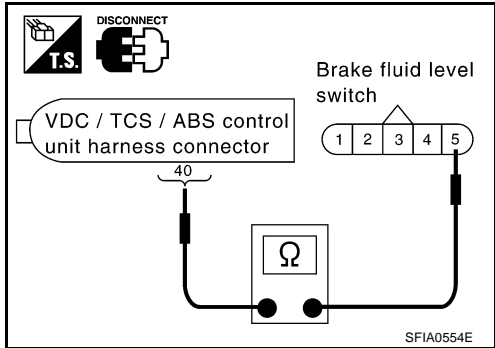
Is the self-diagnosis result displayed?

- YES >> Poor connection of connector. Repair or replace the poorly connected connector.
- NO >> GO TO 3.

TROUBLE DIAGNOSIS

3. CIRCUIT CHECK BETWEEN THE BRAKE FLUID LEVEL SWITCH AND THE VDC/TCS/ABS CONTROL UNIT

1. Disconnect the connectors for brake fluid level switch and VDC/TCS/ABS control unit.
2. Check for continuity between brake fluid level switch harness connector E73 and VDC/TCS/ABS control unit harness connector E218.



VDC/TCS/ABS control unit (Harness connector E218)	Fluid level switch (Harness connector E73)	Continuity
40 (Y/G)	5 (Y/G)	Yes

OK or NG

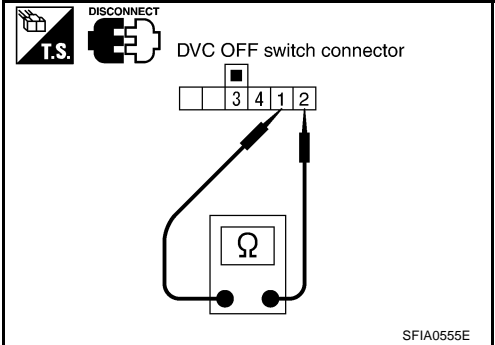
- OK >> Perform VDC/TCS/ABS control unit self-diagnosis again.
- NG >> Repair or replace the disconnected harness.

Component Check VDC OFF SWITCH

EFS000HT

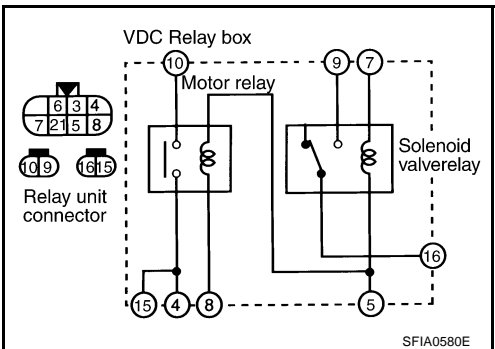
- Disconnect VDC switch connector M13. Check for continuity between the terminal No. 1 and No. 2.

1 - 2 : Pressing the switch will make a continuity, and releasing it will stop the continuity.



VDC RELAY BOX

Disconnect VDC relay box connectors E55, E56 and E57. Check for continuity, resistance value, and insulation between any pair of terminals in VDC relay box.



TROUBLE DIAGNOSIS

Continuity and Resistance

Item	VDC relay box									Condition
	16	2	4	1	9	4	15	10	5	
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 ○ — W — ○ Approx. 80 Ω ○ — W — ○			—

○ — ○ : Conductivity ○ — ○ : Open between terminals (0V) ○ — W — ○ : Resistance between terminals is 100 Ω
 ○ — X — ○ : Not conductivity ○ — 12V — ○ : Add 12V between terminals

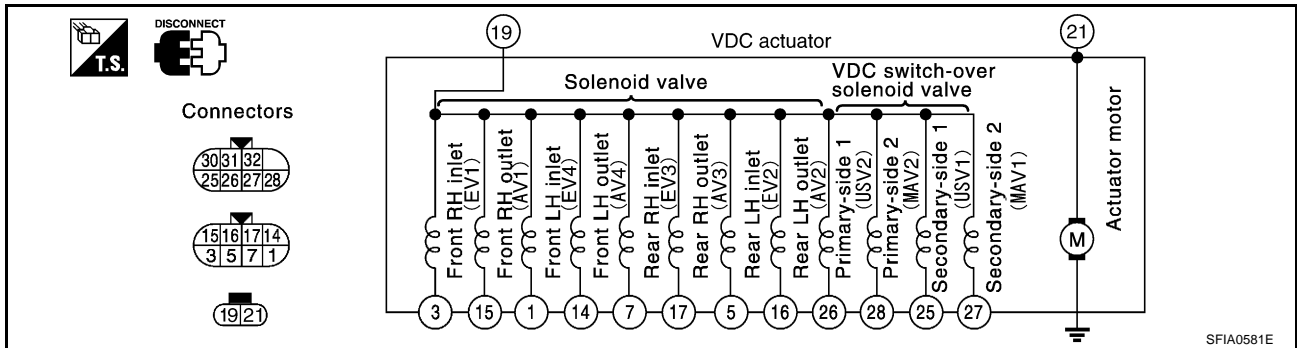
SFIA0582E

VDC ACTUATOR

Disconnect VDC actuator connectors E21, E22 and E23. Check for continuity, resistance value between any pair of terminals in VDC actuator.

CAUTION:

Confirm that the earth of actuator motor is completely removed



SFIA0581E

TROUBLE DIAGNOSIS

Continuity and Resistance

Item	VDC actuator connector terminal number &l number	Condition
	19 3 15 1 14 7 17 5 16 26 25 28 27 21 Body ground	
Solenoid valve		Check the resistance
VDC switch-over solenoid valve		
Actuator motor		—
(Resistance) : Continuity: Yes : Continuity: Yes		

SFIA0583E

Check The Resistance

Standard value (Ω)

Solenoid valves

Outlet - Outlet	: 6.0 - 10.0
Outlet - Inlet	: 9.0 - 16.0
Inlet - Inlet	: 12.0 - 22.0

VDC switch-over solenoid valve

Primary-side 1 - Secondary-side 1	: 12.0 - 22.0
Primary-side 2 - Secondary-side 2	: 6.0 - 10.0
Primary-side 1 - Primary-side 2, Secondary-side 2	: 9.0 - 16.0
Secondary-side 1 - Primary-side 2, Secondary-side 2	: 9.0 - 16.0

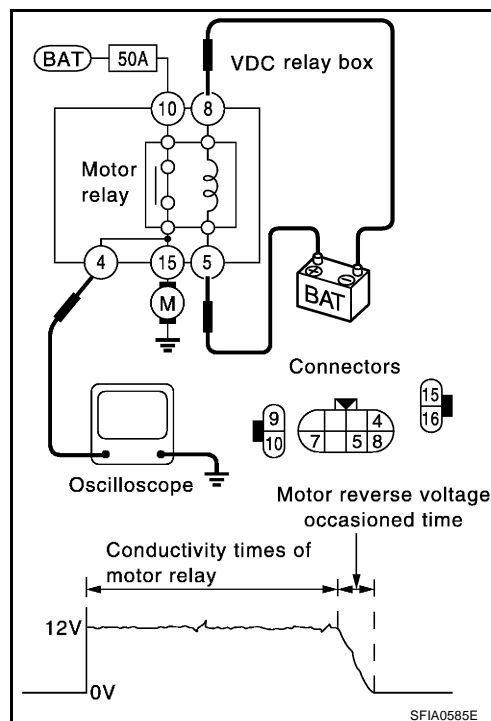
TROUBLE DIAGNOSIS

Actuator Operation Check

1. Connect E55 terminals of actuator to 15 (G) and 16 (L/R) terminals of relay box.
2. Measure the motor voltage [No. 4 (R/B) terminal to body ground] with oscilloscope. Then check the motor reverse voltage occasioned time. The motor reverse voltage occasioned time is more than 0.1 sec.

3. CAUTION:

- Perform checking of motor relay unit. Then confirm that relay functions.
- Driving actuator motor is within 4 sec. To prevent heating up.
- Standard condition of the motor reverse voltage occasioned time is: Battery voltage is 12V. Temperature 20°. when the battery voltage or temperature is lower than the standard, the motor reverse voltage occasioned time becomes slightly shorter.



Symptom 1: ABS Works Frequently.

Inspection procedure

1. INSPECTION START

Check the wheel sensor system.

- Sensor mounting inspection
- Sensor pick-up inspection for iron chips
- Sensor rotor inspection (e.g. number of teeth, damaged teeth)
- Sensor connector engagement inspection

OK or NG

OK >> GO TO 2.

NG >> Wheel sensor and rotor lines repair

2. LOOSENESS INSPECTION

Check the front and rear axle for looseness.

OK or NG

OK >> [BRC-69, "Symptom 2: Unexpected Pedal Action"](#)

NG >> Axle inspection and repair

Symptom 2: Unexpected Pedal Action

Inspection procedure

1. BRAKE PEDAL STROKE INSPECTION

Check the brake pedal stroke.

Is stroke excessively long?

YES >> Check the bleeding and brake system.

NO >> GO TO 2.

TROUBLE DIAGNOSIS

2. PEDAL FORCE INSPECTION

Check that the brake is effective with the pedal depressed.

Is the pedal heavy, but effective?

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

3. CONNECTOR AND PERFORMANCE INSPECTION

Disconnect actuator relay unit connector to deactivate the ABS function. Check that the brake is effective.

Is the brake effective?

- YES >> GO TO 4.
NO >> Brake line inspection

4. ABS WARNING LAMP INDICATOR INSPECTION

Check ABS warning lamp illuminates.

OK or NG

- OK >> Perform the self-diagnosis.
NG >> GO TO 5.

5. WHEEL SENSOR INSPECTION

Check wheel sensor system.

- Sensor mounting inspection
- Sensor pick-up inspection for iron chips
- Sensor rotor inspection (e.g. number of teeth, damaged teeth)
- Sensor connector engagement inspection

OK or NG

- OK >> Normal
NG >> Wheel sensor and rotor lines repair

Symptom 3: Longer Stopping Distance

EFS000HW

Inspection procedure

1. INSPECTION START

Check stopping distance when braking becomes longer only on a snowy or gravel road.

OK or NG

- OK >> It may be longer than that of vehicle without ABS.
NG >> Proceed to 2.

2. PERFORMANCE CHECK

Disconnect actuator relay box to deactivate ABS function.

Is the stopping distance still longer?

- YES >> ● Brake line air bleeding
● Brake line inspection
NO >> GO TO 2.

3. ABS WARNING LAMP INDICATOR INSPECTION

Check ABS warning lamp illuminates.

OK or NG

- OK >> Perform the self-diagnosis.
NG >> GO TO 4.

4. WHEEL SPEED INSPECTION

Check wheel sensor system.

- Sensor mounting inspection
- Sensor pick-up inspection for iron chips
- Sensor rotor inspection (e.g. number of teeth, damaged teeth)
- Sensor connector engagement inspection

OK or NG

OK >> Normal

NG >> Wheel sensor and rotor lines repair

Symptom 4: ABS Does Not Work.

EFS000HX

Inspection procedure

1. ABS WARNING LAMP INDICATOR INSPECTION

Check ABS warning lamp illuminates.

OK or NG

OK >> Perform the self-diagnosis.

NG >> GO TO 2.

2. WHEEL SENSOR INSPECTION

Check wheel sensor system.

- Sensor mounting inspection
- Sensor pick-up inspection for iron chips
- Sensor rotor inspection (e.g. number of teeth, damaged teeth)
- Sensor connector engagement inspection

OK or NG

OK >> Normal

NG >> Wheel sensor and rotor lines repair

Symptom 5: Pedal Vibration and Noise

EFS000HY

Inspection procedure

1. SYMPTOM CHECK

Check brake system for pedal vibration or noise at the engine start.

OK or NG

OK >> Perform the self-diagnosis.

NG >> GO TO 2.

2. SYMPTOM CHECK 2

Check the brake system for pedal vibration or noise when the pedal depressed lightly (just put a foot on).

CAUTION:

Under the following driving conditions, the wheel speed will fluctuates, resulting in ABS activation.

- **When shifting gears**
- **High speed cornering**
- **When a gust of wind**

OK or NG

OK >> GO TO 3.

NG >> Normal

TROUBLE DIAGNOSIS

3. SYMPTOM CHECK 3

Does symptom appear during normal braking operation?

CAUTION:

ABS may work in following driving conditions even if there is no sudden brake.

- When μ road friction is low.
- High speed cornering
- When a gust of wind

OK or NG

OK >> GO TO 4.
NG >> Normal

4. SYMPTOM CHECK 4

Check symptom is reproduce when engine speed is increased with vehicle stopped.

OK or NG

OK >> GO TO 5.
NG >> ● Normal.

CAUTION:

This symptom may appear with vehicle stopped.

5. SYMPTOM CHECK 5

Check symptom is reproduce when any switch of electrical equipment is operated.

OK or NG

OK >> Check that there are no radio, antenna, and antenna lead-in wires (including wiring) near control unit.
NG >> GO TO 6.

6. ABS WARNING LAMP INDICATOR INSPECTION

Check ABS warning lamp turns on.

OK or NG

OK >> Perform the self-diagnosis.
NG >> GO TO 7.

7. WHEEL SENSOR INSPECTION

Check wheel sensor system.

- Sensor mounting inspection
- Sensor pick-up inspection for iron chips (e.g. number of teeth, damaged teeth)
- Sensor connector engagement inspection
- Wheel sensor path harness and connector inspection

OK or NG

OK >> Normal
NG >> Wheel sensor and rotor lines repair

Symptom 6: VDC OFF Indicator Lamp Does Not Illuminate

EFS000HZ

Inspection procedure

1. VDC OFF INDICATOR LAMP INSPECTION

Disconnect VDC/TCS/ABS control unit connector.

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

YES >> VDC/TCS/ABS control unit malfunction. Repair or replace control unit.
NO >> Combination meter system malfunction. Check combination meter.

TROUBLE DIAGNOSIS

Symptom 7: SLIP Indicator Lamp Does Not Illuminate

EFS00010

Inspection procedure

1. SLIP INDICATOR LAMP BURNED-OUT BULB INSPECTION

Check for continuity between power supply terminal of meter and terminal of ABS warning lamp.

OK or NG

OK >> GO TO 2.

NG >> Circuit malfunction in SLIP indicator lamp or combination meter

2. SLIP INDICATOR LAMP POWER PATH INSPECTION

Disconnect meter connector. Check voltage between the vehicle-side harness terminal and body ground is battery voltage (approx. 12V).

OK or NG

OK >> GO TO 3.

NG >> ● Fuse inspection

- Inspection for harness and connectors between fuse block and meter
- Check power supply system (battery and ignition switch circuit).

3. SLIP INDICATOR LAMP PATH HARNESS INSPECTION

1. Disconnect the connectors for VDC/TCS/ABS control unit and meter vehicle-side harness.

2. Check the harness between the meter and VDC/TCS/ABS control unit for an open/shorted circuit.

OK or NG

OK >> GO TO 4.

NG >> Repair or replace the disconnected harness.

4. SLIP INDICATOR LAMP PATH CONNECTOR INSPECTION

Check the connectors for VDC/TCS/ABS control unit and meter vehicle-side harness.

OK or NG

OK >> Connect connectors, and perform the self-diagnosis. The vehicle harness has the intermediate connector. Refer to the vehicle wiring diagram, always check it.

NG >> Repair or replace the disconnected connector.

Symptom 8: During VDC/TCS/ABS Control, Vehicle Behavior is Jerky.

EFS00011

Inspection procedure

1. ENGINE SPEED SIGNAL INSPECTION

Perform "data monitor" with CONSULT-II for VDC/TCS/ABS control unit.

Is engine speed at idle 400 rpm or higher?

YES >> Normal

NO >> GO TO 2.

2. SELF-DIAGNOSIS RESULT ITEM CHECK 1

Perform VDC/TCS/ABS control unit self-diagnosis.

Is self-diagnosis result displayed?

YES >> After checking and repairing applicable item, perform VDC/TCS/ABS control unit self-diagnosis again.

NO >> GO TO 3.

TROUBLE DIAGNOSIS

3. ECM SELF-DIAGNOSIS RESULT ITEM CHECK

Perform ECM self-diagnosis.

Does self-diagnosis result indicate “camshaft position sensor”?

- YES >> Repair or replace camshaft position sensor system.
- NO >> GO TO 4.

4. SELF-DIAGNOSIS RESULT ITEM CHECK 2

Disconnect the connectors for VDC/TCS/ABS control unit and ECM, and reconnect them correctly to perform self-diagnosis again.

OK or NG

- OK >> Connector malfunction. Repair or replace the connector.
- NG >> GO TO 5.

5. SELF-DIAGNOSIS RESULT ITEM CHECK 3

Perform the A/T self-diagnosis.

OK or NG

- OK >> GO TO 6.
- NG >> Repair or replace the applicable part.

6. SELF-DIAGNOSIS RESULT ITEM CHECK 4

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

Is self-diagnosis result displayed?

- YES >> Repair or replace the applicable item.
- NO >> GO TO 7.

7. CIRCUIT CHECK BETWEEN VDC/TCS/ABS CONTROL UNIT AND ECM

1. Disconnect the connectors for VDC/TCS/ABS control unit and ECM.
2. Check engine speed signal harness between VDC/TCS/ABS control unit and ECM for an open/shorted circuit.
3. Check the connectors for VDC/TCS/ABS control unit and ECM.

OK or NG

- OK >> Inspection end
- NG >> Connect the connectors to perform VDC/TCS/ABS control unit self-diagnosis again.

WHEEL SENSORS

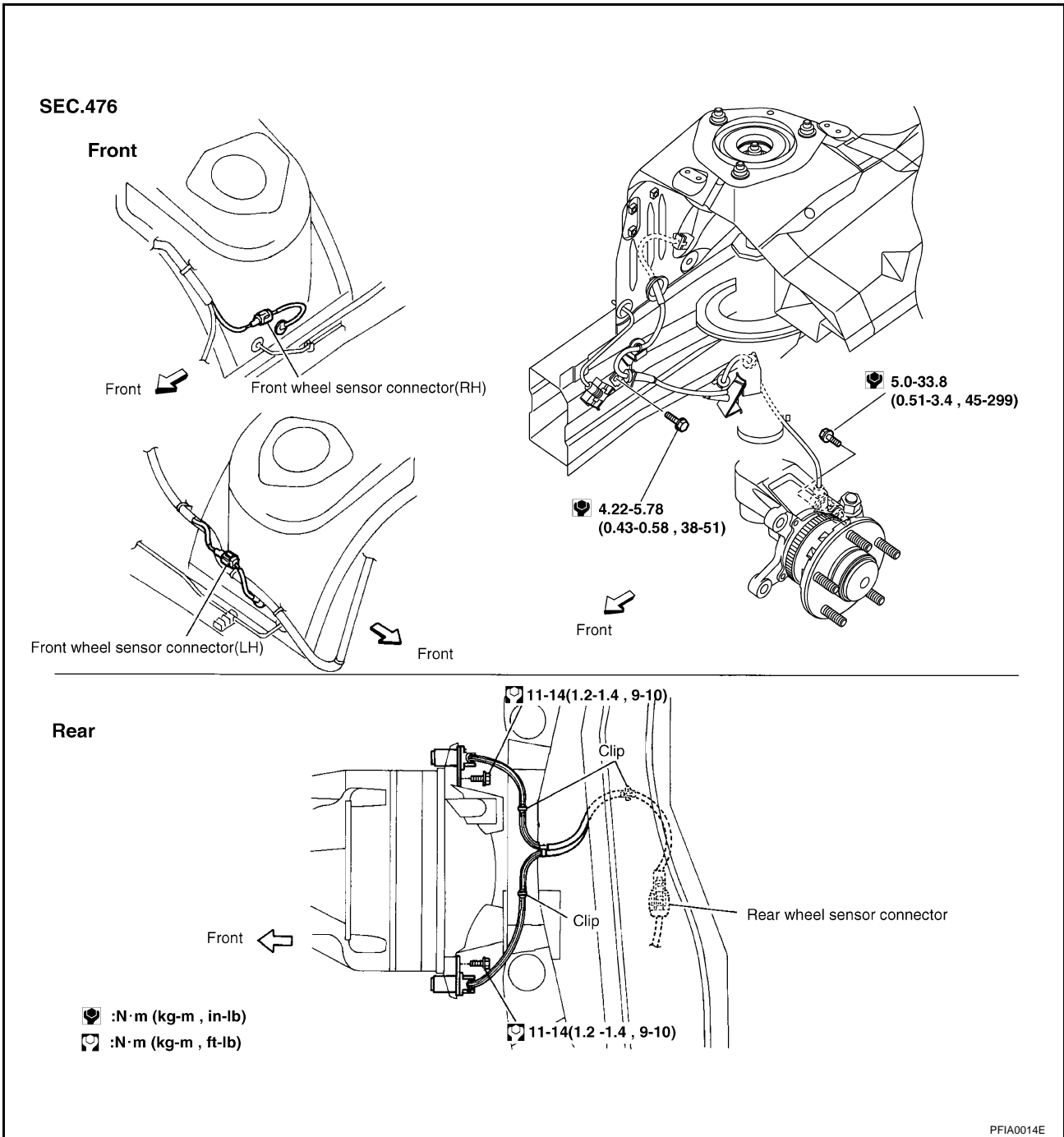
WHEEL SENSORS

PFP:47910

Removal and Installation

EFS001XG

A
B
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BRC
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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.

- When installing, check that there is no foreign material such as iron chips on the pick-up and mounting hole of the sensor, and check that no foreign material has been caught in the sensor rotor motor. Remove any foreign material to clean the mount.

VDC/TCS/ABS CONTROL UNIT

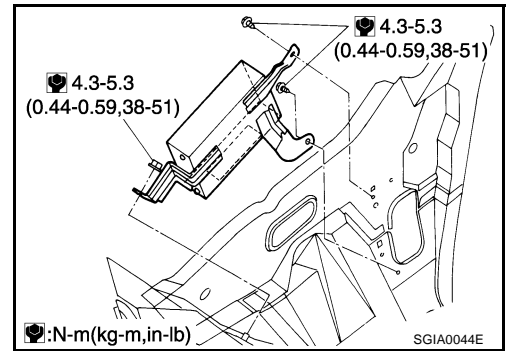
VDC/TCS/ABS CONTROL UNIT

PFP:47660

Removal and Installation

EFS00015

1. Removal and installation of lower instrument panel.
2. Removal and installation of glove box.
3. Removal and installation of passenger-side lower instrument panel.
4. Removal and installation of ECM.



SENSOR ROTOR

SENSOR ROTOR

PFP:47970

Removal and Installation

EFS00016

REMOVAL

Front

Refer to [FAX-4, "REMOVAL"](#) in "FAX" section.

Rear

- Remove the rear sensor rotor in following procedure.
 - Remove the side flange. Refer to [RFD-7, "SIDE OIL SEAL"](#) in "RFD" section.
 - Using a bearing replacer (special service tool) and puller (commercial service tool), remove the sensor rotor from the companion flange.

INSTALLATION

Front

Refer to [FAX-5, "INSTALLATION"](#) in "FAX" section.

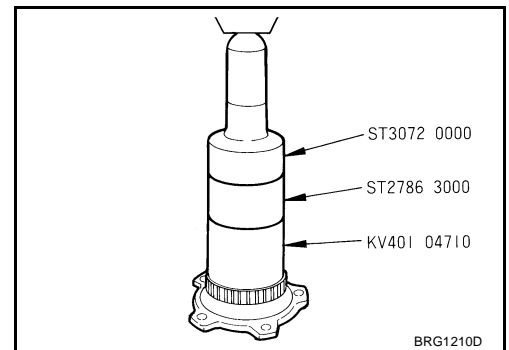
Rear

- Install the rear sensor rotor in following procedure.
 - Using a drift (special service tool), press the rear sensor rotor into the side flange.
 - Install the side flange.

Number of sensor rotor teeth

Front : 46

Rear : 46



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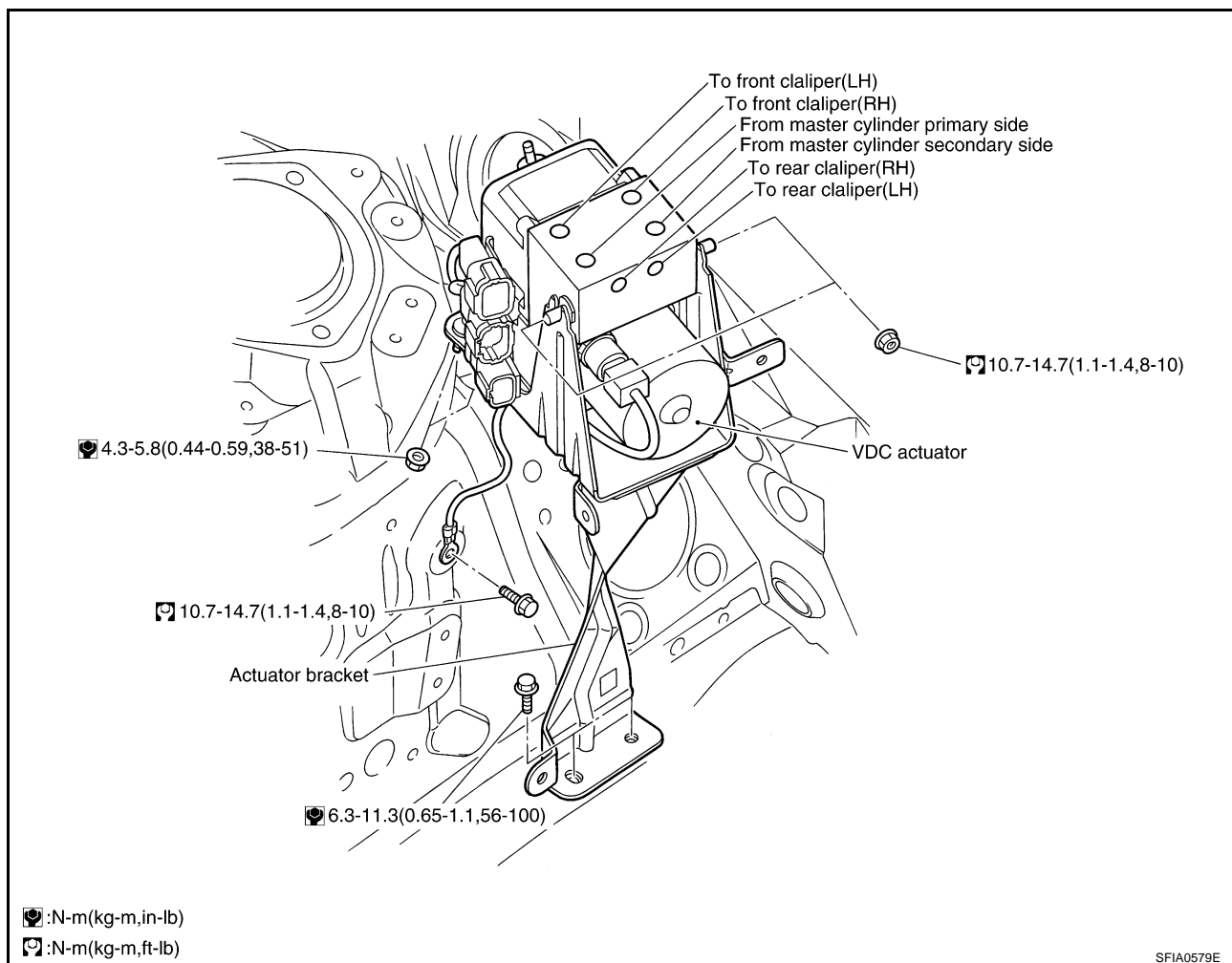
VDC/TCS/ABS ACTUATOR

VDC/TCS/ABS ACTUATOR

PF:47660

Removal and Installation

EFS00017



Be careful of the following.

CAUTION:

- Before servicing, disconnect the battery terminals.
- To remove the brake tube, use a flare nut wrench to prevent the flare nuts and brake tube from being damaged. To install, use a brake tube torque wrench.
- Do not remove and install the actuator by holding the harness.
- After completing the work, bleed the precharge pump assembly and the brake piping. Refer to [BR-9, "Refilling and Bleeding"](#).
- Make sure to connect the ground terminal securely.

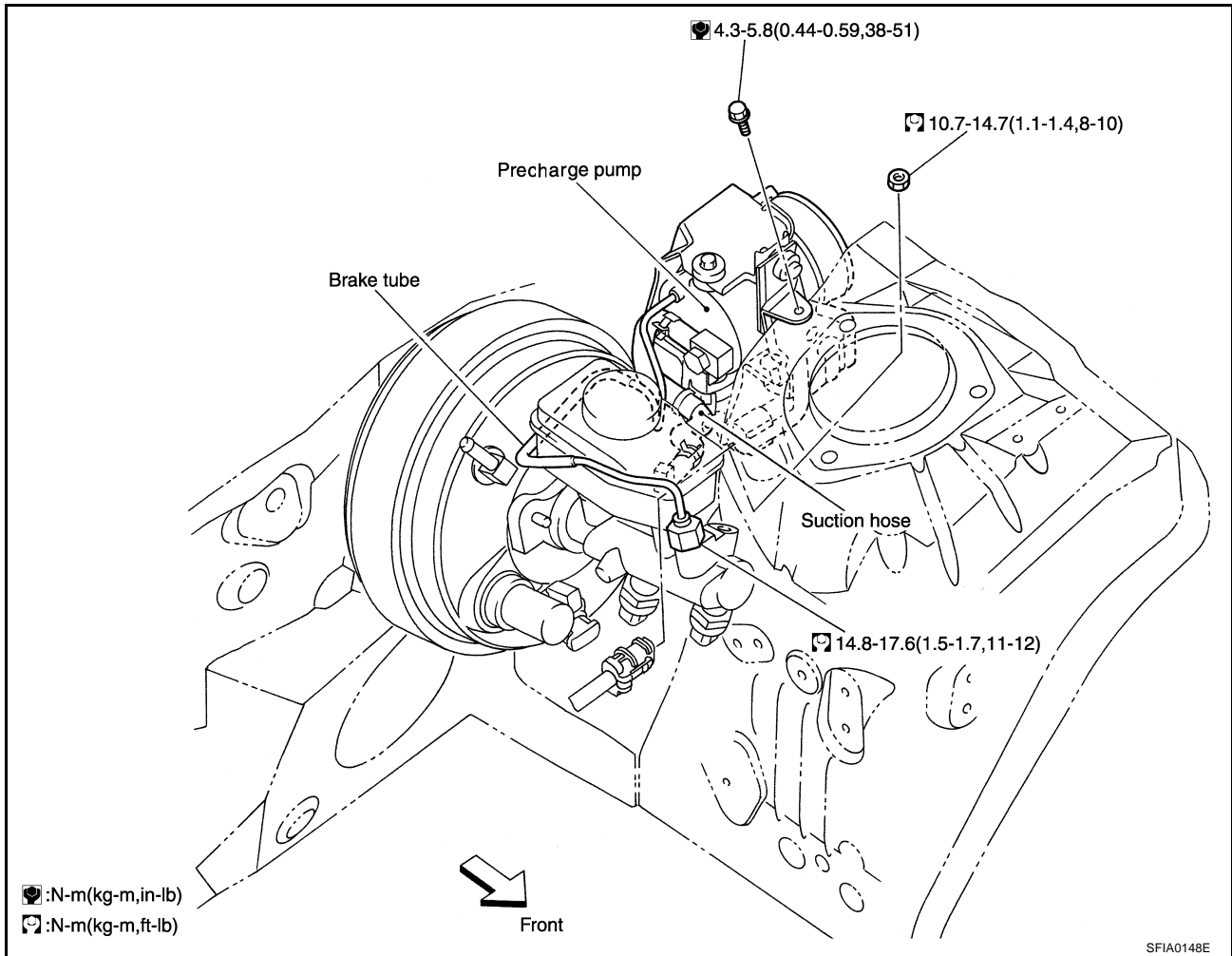
PRECHARGE PUMP ASSEMBLY

PRECHARGE PUMP ASSEMBLY

PFP:47810

Removal and Installation

EFS00018



REMOVAL

During removal, be careful of the following.

- When removing and installing the pre-charge pump, do not apply excessive force to the harness.

INSTALLATION

During removal, be careful of the following. Tighten mounting bolts and nuts to the specified torque.

- After the work, bleed air from the pre-charge pump assembly and the brake piping. Refer to [BR-9, "Refilling and Bleeding"](#).

G SENSOR

G SENSOR

PFP:47930

Removal and Installation

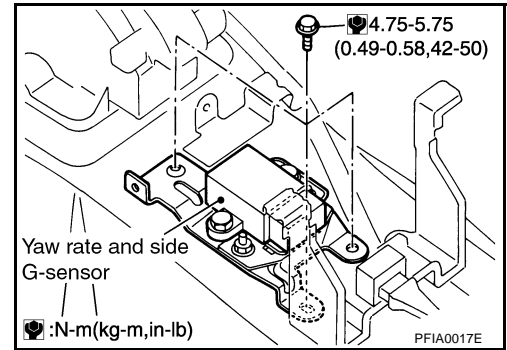
REMOVAL

EFS00019

1. Remove the console box.
2. Disconnect the harness connector.
3. Remove the mounting bolts, and remove the Yaw rate and side G-sensor.

CAUTION:

Do not drop or strike the Yaw rate and side G-sensor, because it has little endurance against impact.



INSTALLATION

Install in the reverse order of removal.

CAUTION:

Do not drop or strike the Yaw rate and side G-sensor, because it has little endurance against impact.

VDC/TCS/ABS RELAY BOX

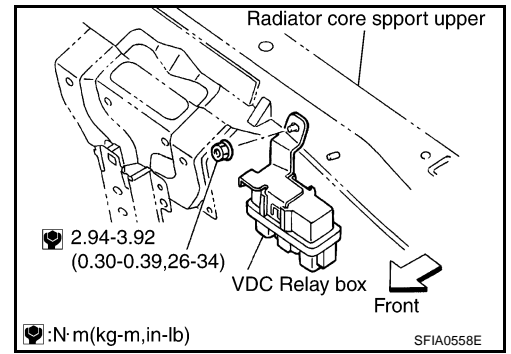
VDC/TCS/ABS RELAY BOX

PF:47605

Removal and Installation

EF:0000A

Show in the figure.



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BRC

VDC/TCS/ABS RELAY BOX
