

# SECTION **BRC**

## BRAKE CONTROL SYSTEM

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## PRECAUTIONS

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

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

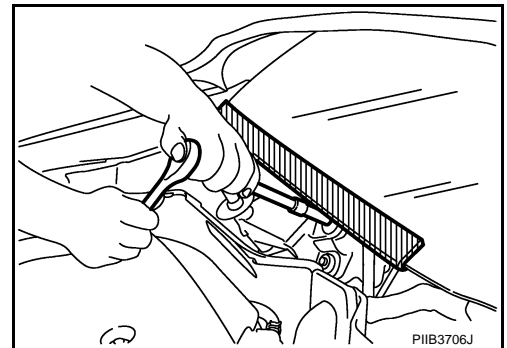
#### WARNING:

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

### Precautions for Procedures without Cowl Top Cover

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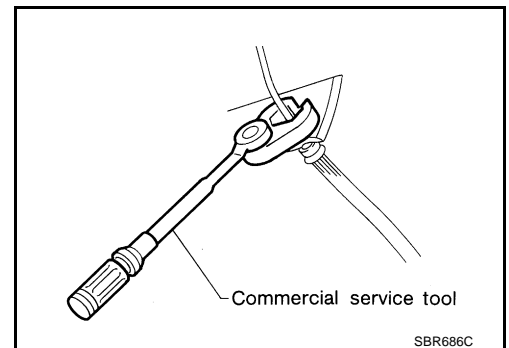
When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



### Precautions for Brake System

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- Recommended fluid is brake fluid “DOT 3”. Refer to [MA-12, "RECOMMENDED FLUIDS AND LUBRICANTS"](#).
- Do not reuse drained brake fluid.
- Be careful not to splash brake fluid on painted surface of body. If brake fluid is splashed on painted surfaces of body immediately wipe off then with cloth and then wash it away with water.
- Do not use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use a flare nut wrench when removing flare nuts, and use a flare nut crowfoot and torque wrench when tighten brake tube flare nuts.
- When installing brake tubes, be sure to check torque.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Before working, turn ignition switch OFF and disconnect connectors of ABS actuator and electric unit (control unit) or battery negative terminal.



#### WARNING:

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

### Precautions for Brake Control

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- Just after starting vehicle after ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is normal condition.
- When an error is indicated by ABS or another warning lamp, collect all necessary information from customer (what symptoms are present under what conditions) and check for simple causes before starting diagnostic servicing. Besides electrical system inspection, check brake booster operation, brake fluid level, and oil leaks.
- If tire size and type are used in an improper combination, or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- ABS might be out of order or malfunctions by putting a radio (wiring inclusive), an antenna and a lead-in wire near the control unit.
- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits, and improper wiring.
- VDC system may not operate normally or a VDC OFF indicator lamp or SLIP indicator lamp may light.
  - When replacing the following parts with parts other than genuine parts or making modifications: Suspension-related parts (shock absorber, spring, bushing, etc.), tires, wheels (other than specified sizes), brake-related parts (pad, rotor, caliper, etc.), engine-related parts (muffler, ECM, etc.) and body reinforcement-related parts (roll bar, tower bar, etc.).
  - When driving with worn or deteriorated suspension, tires and brake-related parts.

# PREPARATION

[VDC/TCS/ABS]

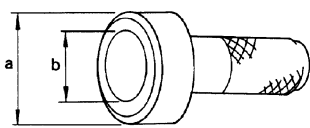
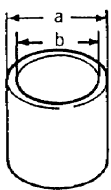
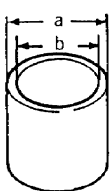
## PREPARATION

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### Special Service Tools

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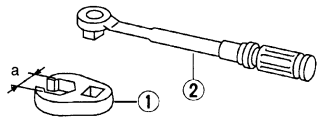
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST30720000 (J-25405) Drift a: 77 mm (3.03 in) dia. b: 55.5 mm (2.19 in) dia.	 <p style="text-align: right;">ZZA0701D</p>
ST27863000 ( — ) Drift a: 74.5 mm (2.93 in) dia. b: 62.5 mm (2.46 in) dia.	 <p style="text-align: right;">ZZA0832D</p>
KV40104710 ( — ) a: 76.3 mm (3.00 in) dia. b: 67.9 mm (2.67 in) dia.	 <p style="text-align: right;">ZZA0832D</p>

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### Commercial Service Tools

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

### ON-VEHICLE SERVICE

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### Adjustment of Steering Angle Sensor Neutral Position

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

Situation	Adjustment of Steering Angle Sensor Neutral Position
Removing/Installing ABS actuator and electric unit (control unit)	-
Replacing ABS actuator and electric unit (control unit)	×
Removing/Installing steering angle sensor	×
Removing/Installing steering components	×
Removing/Installing suspension components	×
Change tires to new ones	-
Tire rotation	-
Adjusting wheel alignment	×

×: Required

-: Not required

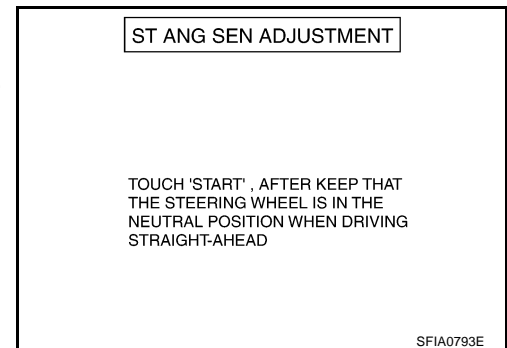
**CAUTION:**

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

1. Stop vehicle with front wheels in straight-ahead position.
2. Perform "CONSULT-II Starting Procedure". Refer to [GI-38, "CONSULT-II Start Procedure"](#).
3. Turn ignition switch ON and touch the CONSULT-II screen in the order of "ABS", "WORK SUPPORT" and "ST ANG SEN ADJUSTMENT".
4. Touch "START".
 

**CAUTION:**  
**Do not touch steering wheel while adjusting steering angle sensor.**
5. After approximately 10 seconds, touch "END". (After approximately 60 seconds, it ends automatically.)
6. Turn ignition switch OFF, then turn it ON again.
 

**CAUTION:**  
**Be sure to perform above operation.**
7. Run vehicle with front wheels in straight-ahead position, then stop.
8. Select "DATA MONITOR", "ECU INPUT SIGNALS", and "STR ANGLE SIG" on CONSULT-II screen. Then make sure "STR ANGLE SIG" is within  $0 \pm 2.5^\circ$ . If value is more than specification, repeat steps 1 to 7.
9. Erase memory of ABS actuator and electric unit (control unit) and ECM. ABS actuator and electric unit (control unit): Refer to [BRC-24, "ERASE MEMORY"](#). ECM: Refer to [EC-90, "TROUBLE DIAGNOSIS"](#) (VQ35DE), [EC-792, "TROUBLE DIAGNOSIS"](#) (VK45DE).
10. Turn ignition switch OFF.

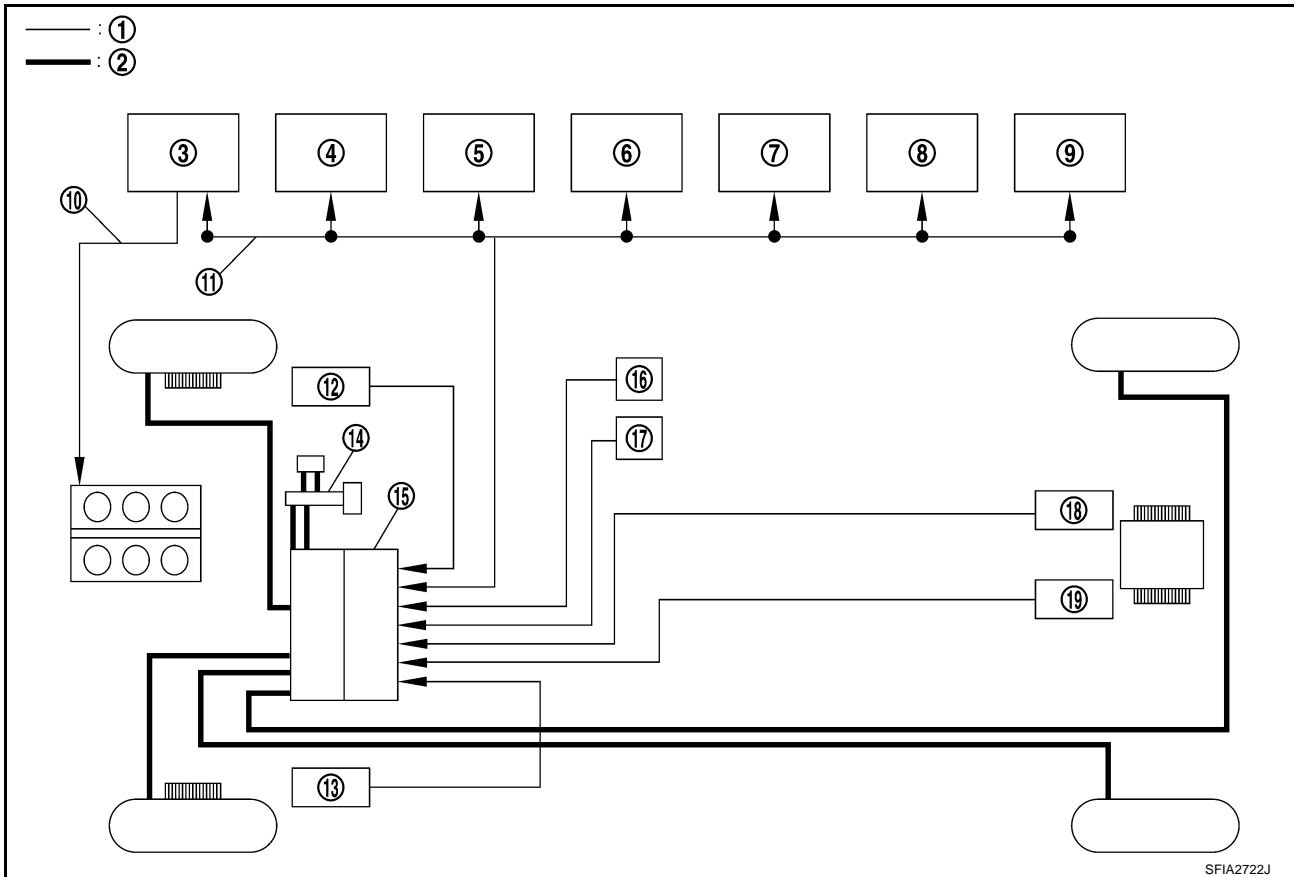


SYSTEM DESCRIPTION

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System Diagram

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- |                                  |  |   |
|----------------------------------|--|---|
| 1. Electric line                 | 2. Brake hydraulic line                  | 3. ECM  |
| 4. TCM                           | 5. Steering angle sensor                 | 6. Warning lamp, indicator lamp (combination meter) |
| 7. AWD control unit (AWD models) | 8. ICC sensor integrated unit (with ICC) | 9. RAS control unit (with RAS)                      |
| 10. Injector operation signal    | 11. CAN communication                    | 12. Front RH wheel sensor                           |
| 13. Front LH wheel sensor        | 14. Master cylinder                      | 15. ABS actuator and electric unit (control unit)   |
| 16. VDC OFF switch               | 17. Yaw rate/side G sensor               | 18. Rear RH wheel sensor                            |
| 19. Rear LH wheel sensor         |  |   |

Functions

ABS

- Anti-Lock Brake System is a function that detects wheel revolution while braking, electronically controls braking force, and prevents wheel locking during sudden braking. It improves handling stability and maneuverability for avoiding obstacles.
- Electrical system diagnosis by CONSULT-II is available.

EBD

- Electronic Brake force Distribution is a following function. ABS actuator and electric unit (control unit) detects subtle slippages between the front and rear wheels during braking. Then it electronically controls the rear braking force (brake fluid pressure) to reducing and reduces rear wheel slippage. Accordingly it improves vehicle stability.
- Electrical system diagnosis by CONSULT-II is available.

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**TCS**

- Traction Control System is a function that electronically controls engine torque, brake fluid pressure and A/T gear position to ensure the optimum slippage ratio at drive wheels by computing wheel speed signals from 4 wheel sensors. When ABS actuator and electric unit (control unit) detects a spin at drive wheels (rear wheels), it compares wheel speed signals from all 4 wheels. At this time, LH and RH rear brake fluid pressure are controlled, while fuel being cut to engine and throttle valve being closed to reduce engine torque by the control unit. Further more, throttle position is continuously controlled to ensure the optimum engine torque at all times.
- During TCS operation, it informs driver of system operation by flashing SLIP indicator lamp.
- Electrical system diagnosis by CONSULT-II is available.

**VDC**

- Vehicle Dynamics Control system detects driver's steering operation amount and brake pedal travel from steering angle sensor and pressure sensor. Using information from yaw rate/side G sensor and wheel sensor, VDC judges driving condition (conditions of under steer and over steer) to improve vehicle driving stability by controlling brake application to 4 wheels and engine output.
- During VDC operation, it informs driver of system operation by flashing SLIP indicator lamp.
- Electrical system diagnosis by CONSULT-II is available.

**ECD**

Receives deceleration degree commandment value signal from ICC sensor integrated unit, and controls brake fluid pressure with the motor [built-in ABS actuator and electric unit (control unit)].

**Operation That Is Not "System Error"**

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**ABS**

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

**TCS**

- Depending on road circumstances, driver may have a sluggish feel. This is normal, because optimum traction has highest priority under TCS operation.
- When vehicle is passing through a road where surface friction varies, downshifting or depressing accelerator pedal fully may activate TCS temporarily.

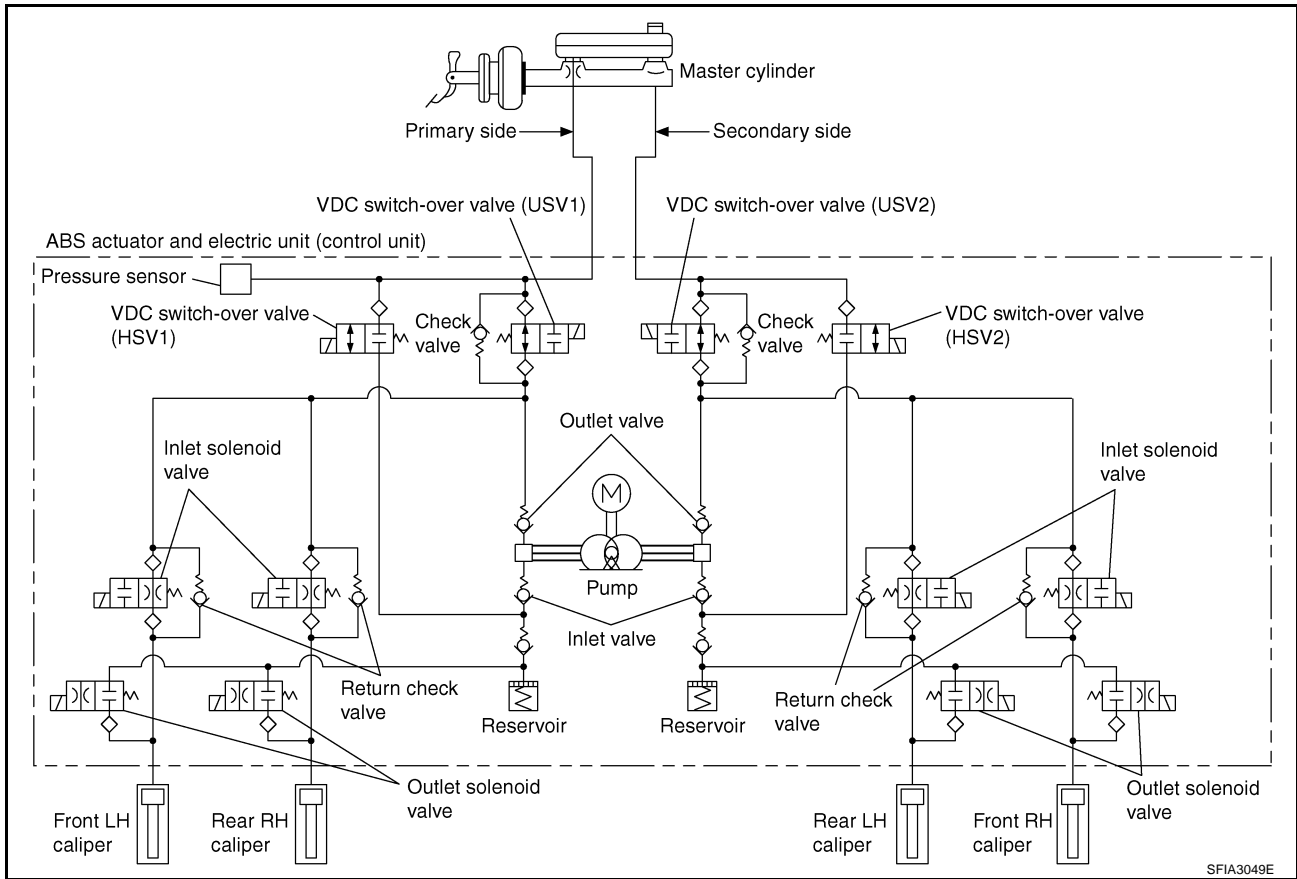
**VDC**

- During VDC operation, body and brake pedal lightly vibrate and mechanical sounds may be heard. This is normal.
- If vehicle is rotated on turn table, or rolled and rocked on ship, ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp may turn on. In this case, start engine on normal road again. If ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp turn off after restart, it is normal.
- When starting TCS or VDC under rapid acceleration or hard turn, operating sound by brake pedal is generated. However, this is not malfunction. This is because TCS and VDC are functioning normally.
- VDC may not operate normally or ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp may turn on when driving special roads with extremely steep slant (banks on circuit road and so on.) However, it is not malfunction when returning to a normal state after restarting the engine. In that case, be sure to erase the memory of self-diagnosis. Refer to [BRC-24, "ERASE MEMORY"](#) .
- Yaw rate /side G sensor malfunction may occur under hard turn like spin turn, rapid acceleration turn, drift run, etc., when VDC function is OFF (VDC OFF switch is turned on). It is not malfunction if it is possible to return to a normal position after restarting engine. Then erase the memory of self-diagnosis. Refer to [BRC-24, "ERASE MEMORY"](#) .
- VDC OFF indicator lamp and SLIP indicator lamp may simultaneously turn on when low tire pressure warning lamp turns on. This is not a VDC system error but results from characteristic change of tires.



Hydraulic Circuit Diagram

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CAN Communication SYSTEM DESCRIPTION

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CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. Refer to [LAN-50, "CAN System Specification Chart"](#).

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## TROUBLE DIAGNOSIS

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Fail-Safe Function  
ABS, EBD SYSTEM

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In the event there is a malfunction with the electrical system, the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp will turn on when it is the ABS that is malfunctioning, and the brake warning lamp, ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp will turn on when it is the EBD that is malfunctioning. At the same time, the VDC/TCS/ABS will be put in one of the following states by the fail-safe function.

- When the ABS malfunctions, only the EBD operates. The condition is the same as that of models without VDC/TCS/ABS.

**NOTE:**

ABS self-diagnosis sound may be heard. This is normal condition because a self-diagnosis for "Ignition switch ON" and "The first starting" are being performed.

- When the EBD malfunctions, the EBD and ABS will not operate. The condition is the same as that of models without VDC/TCS/ABS and EBD.

## VDC/TCS

In case of VDC/TCS system malfunction, the VDC OFF indicator lamp and SLIP indicator lamp or only VDC OFF indicator lamp are turned on, and the condition of the vehicle is the same as the condition of vehicles without VDC/TCS equipment. In case of electrical malfunction with the VDC/TCS system, the ABS control continues to operate normally even though VDC/TCS does not operate.

**CAUTION:**

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

How to Perform Trouble Diagnoses  
BASIC CONCEPT

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

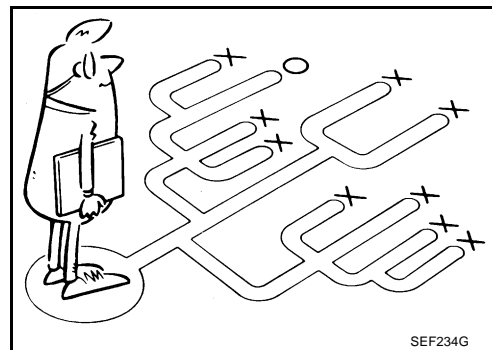
- It is also important to clarify customer complaints before inspection.

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

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

**CAUTION:**

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

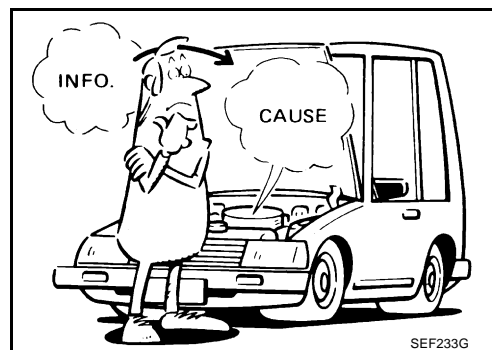


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- It is essential to check symptoms right from beginning in order to repair a malfunction completely.

For an intermittent malfunction, it is important to reproduce symptom based on interview with customer and past examples. Do not perform inspection on ad hoc basis. Most intermittent malfunctions are caused by poor contacts. In this case, it will be effective to shake suspected harness or connector by hand. When repairs are performed without any symptom check, no one can judge if malfunction has actually been eliminated.

- After diagnostic, make sure to perform "ERASE MEMORY". Refer to [BRC-24, "ERASE MEMORY"](#).
- Always read "GI General Information" to confirm general precautions. Refer to [GI-4, "General Precautions"](#).

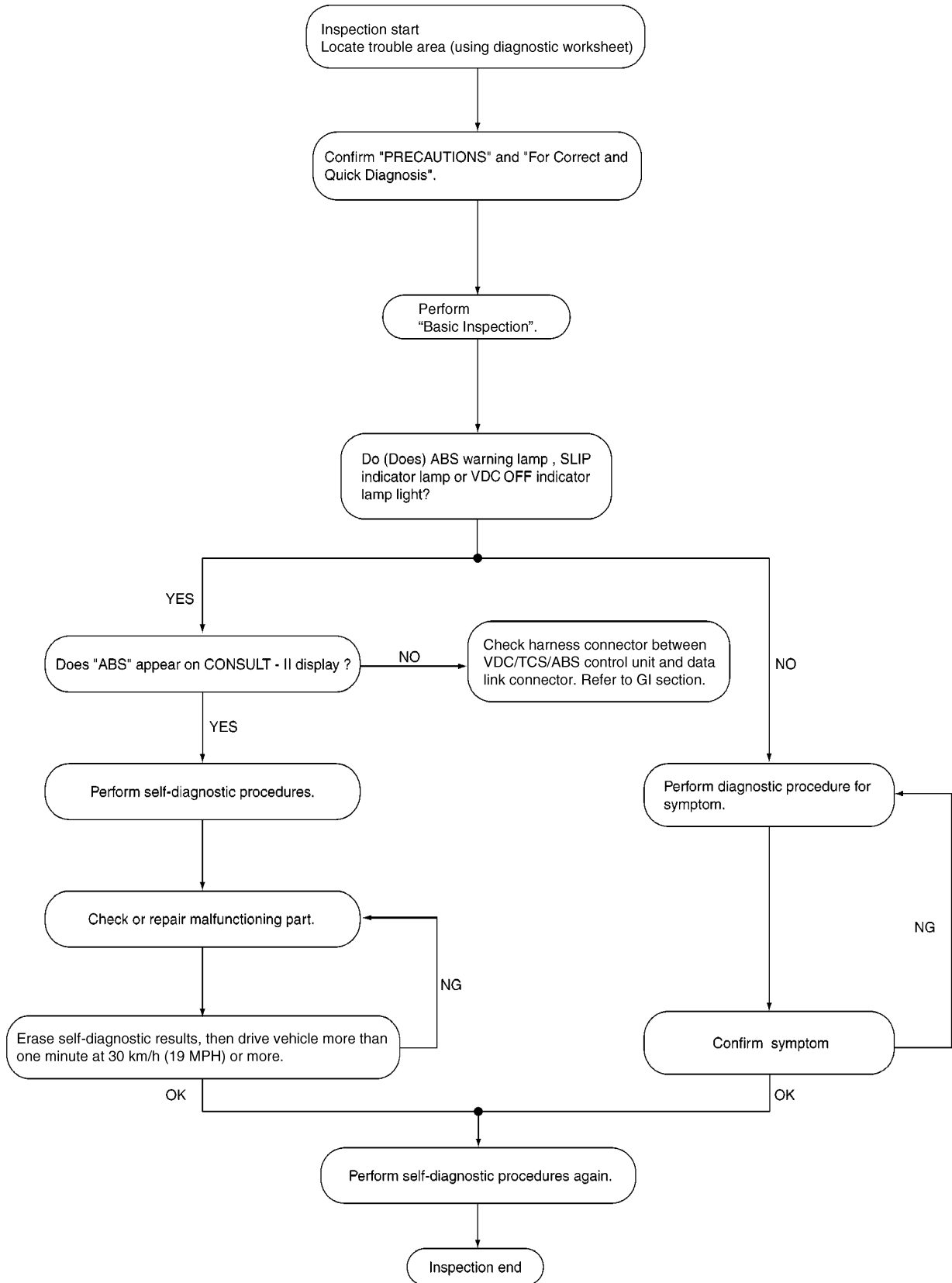


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# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

## DIAGNOSIS FLOW CHART



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# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

## ASKING COMPLAINTS

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

### KEY POINTS

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

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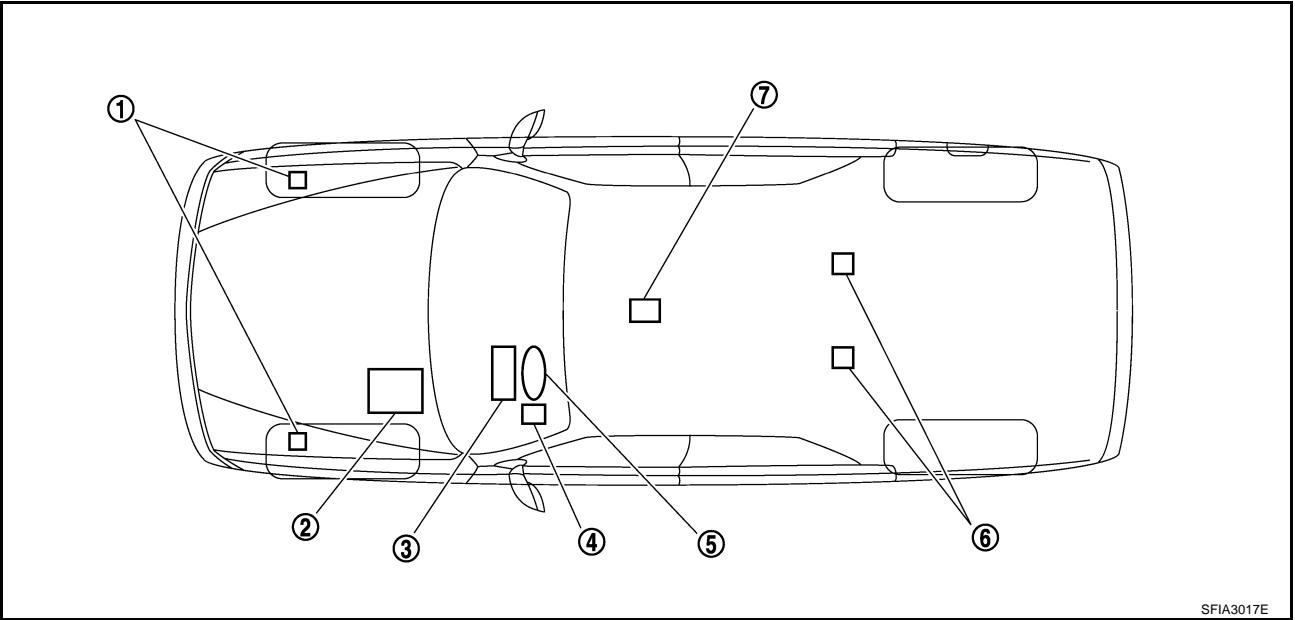
## EXAMPLE OF DIAGNOSIS WORKSHEET

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

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### Component Parts Location

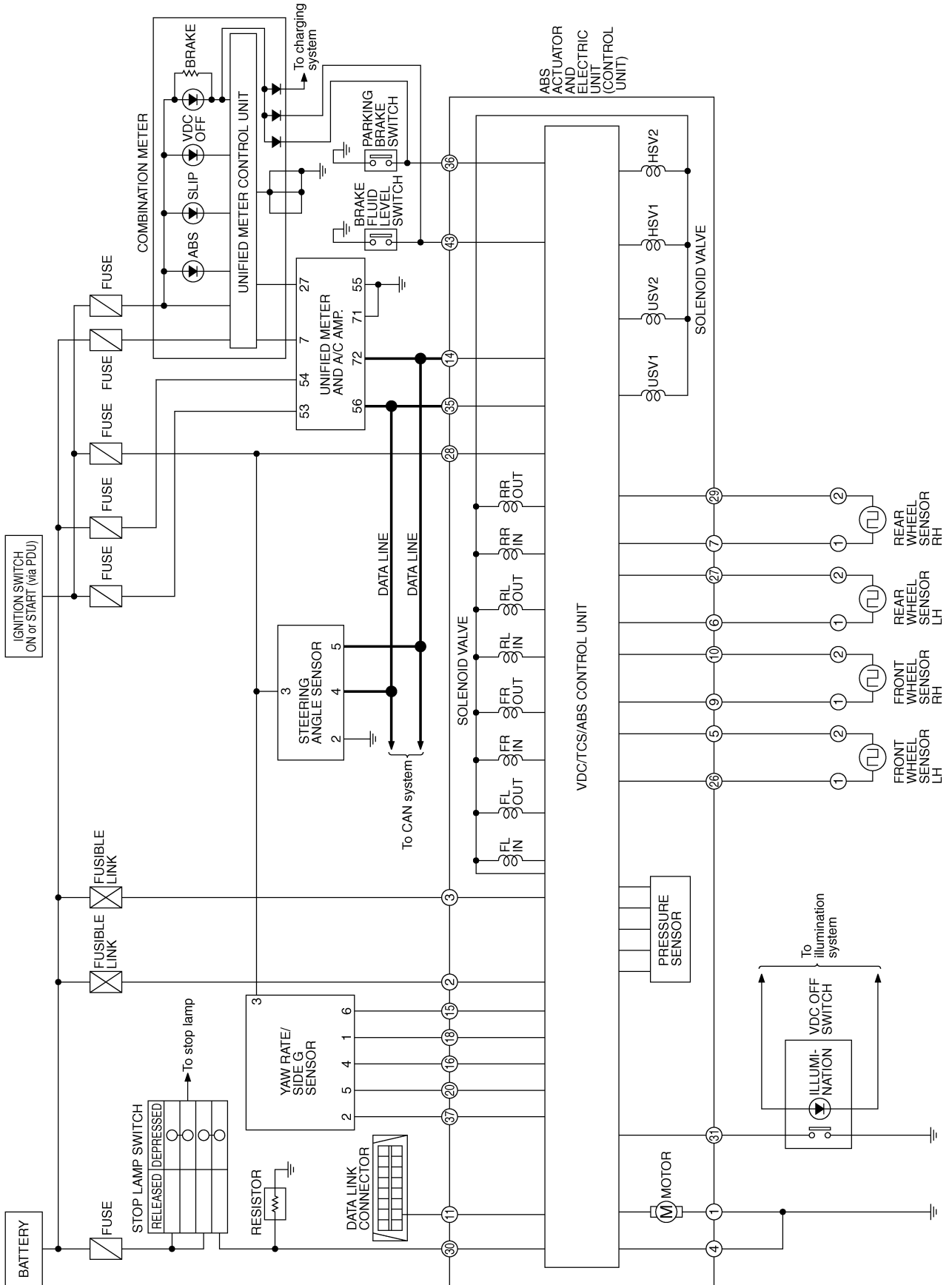
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- |                           |  |   |
|---------------------------|--|---|
| 1. Front wheel sensor     | 2. ABS actuator and electric unit (control unit) | 3. Warning lamp, Indicator lamp (Combination meter) |
| 4. VDC OFF switch         | 5. Steering angle sensor                         | 6. Rear wheel sensor                                |
| 7. Yaw rate/side G sensor |  |   |

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### Schematic



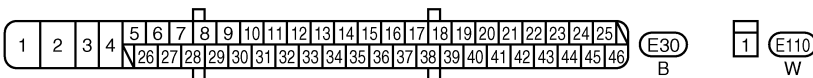
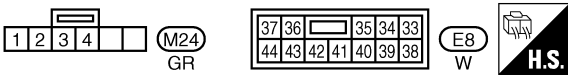
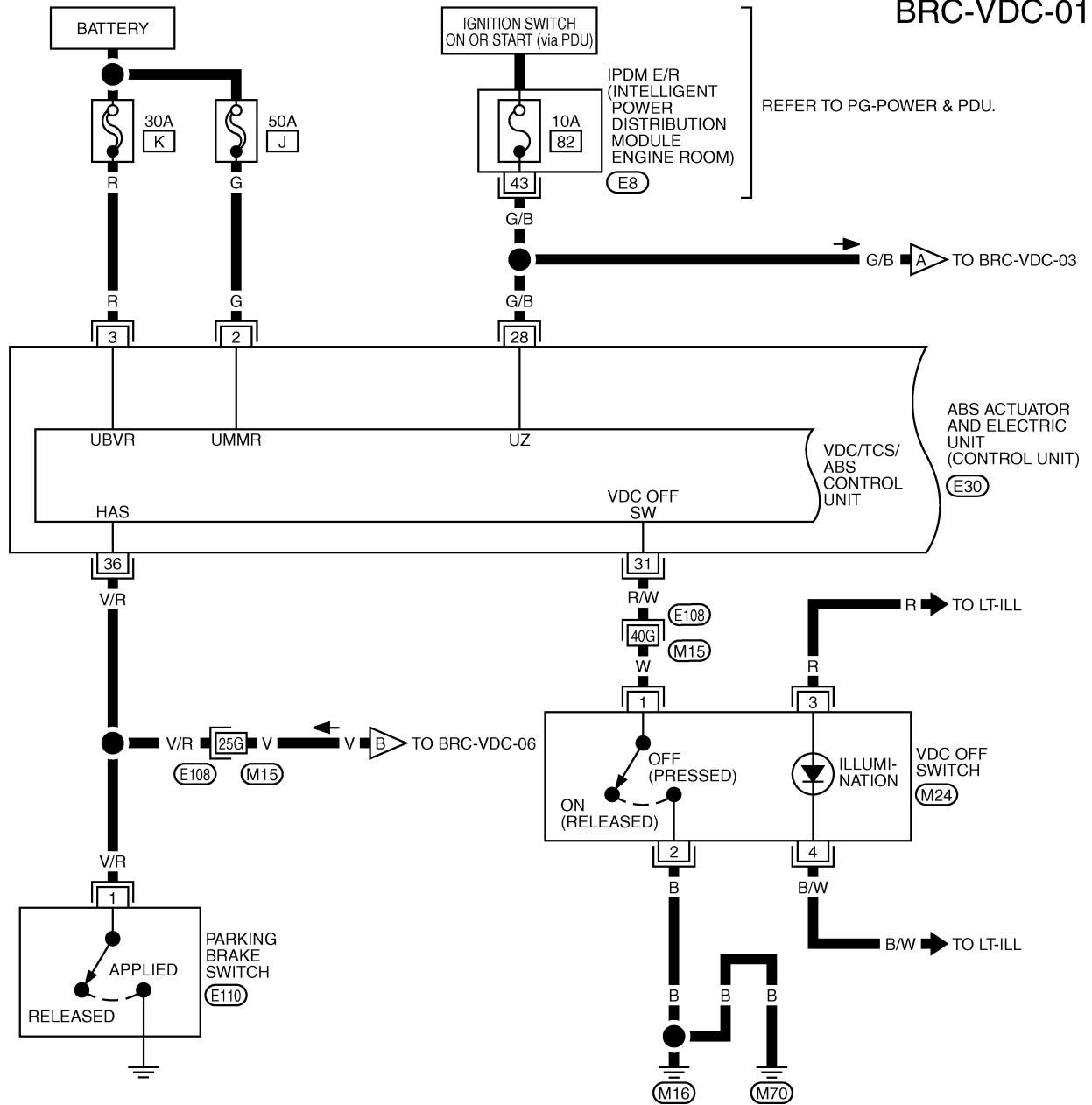
# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

## Wiring Diagram — VDC —

NFS000QE

BRC-VDC-01



REFER TO THE FOLLOWING.

(E108) -SUPER MULTIPLE JUNCTION (SMJ)

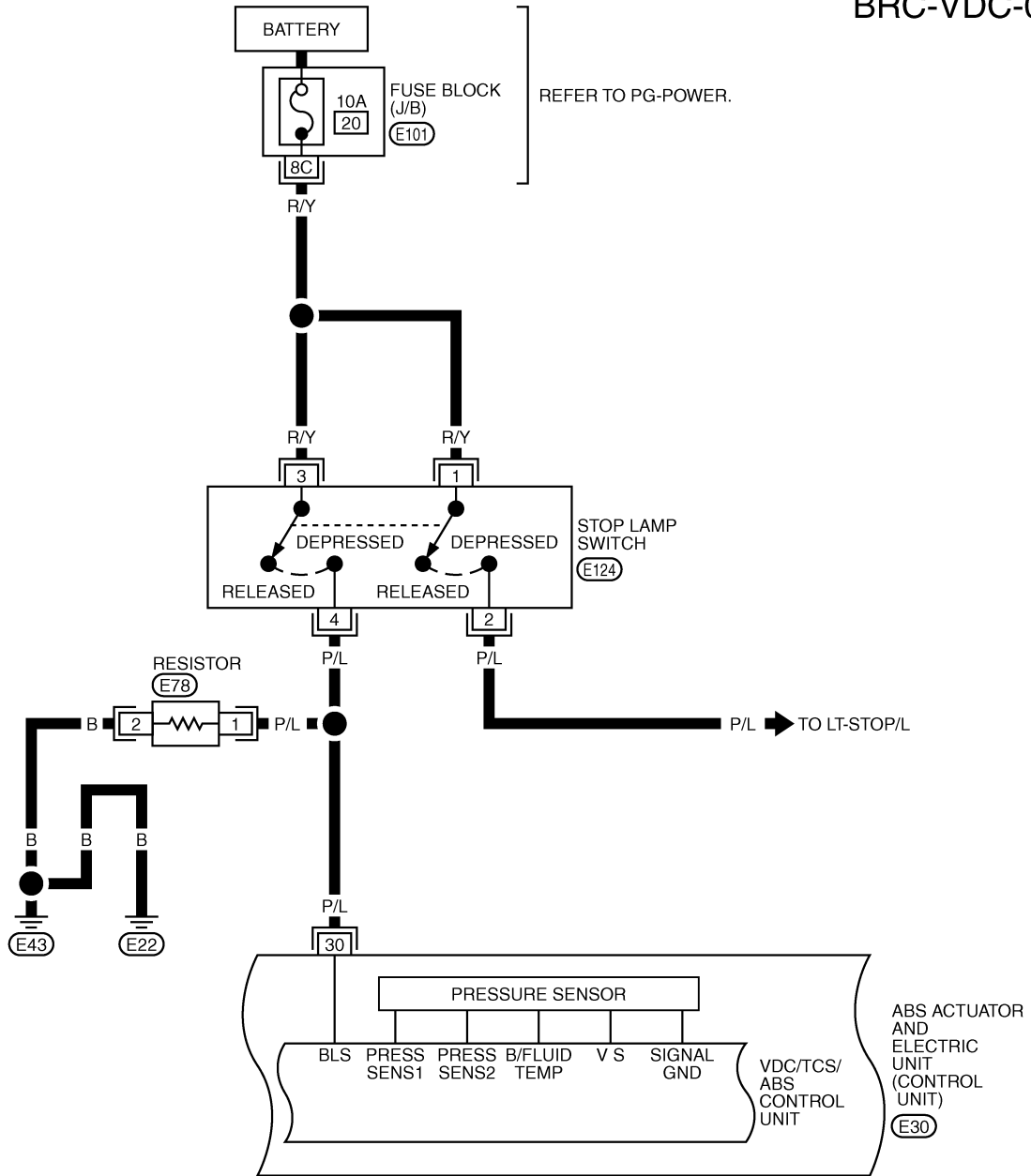
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BRC

# TROUBLE DIAGNOSIS

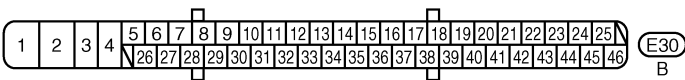
[VDC/TCS/ABS]

BRC-VDC-02

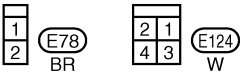


REFER TO PG-POWER.

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) (E30)



REFER TO THE FOLLOWING.  
 (E101) - FUSE BLOCK-JUNCTION BOX (J/B)



TFWT0262E

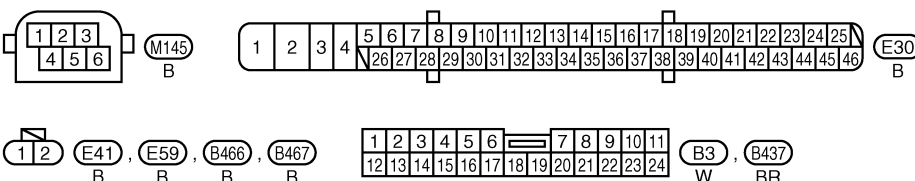
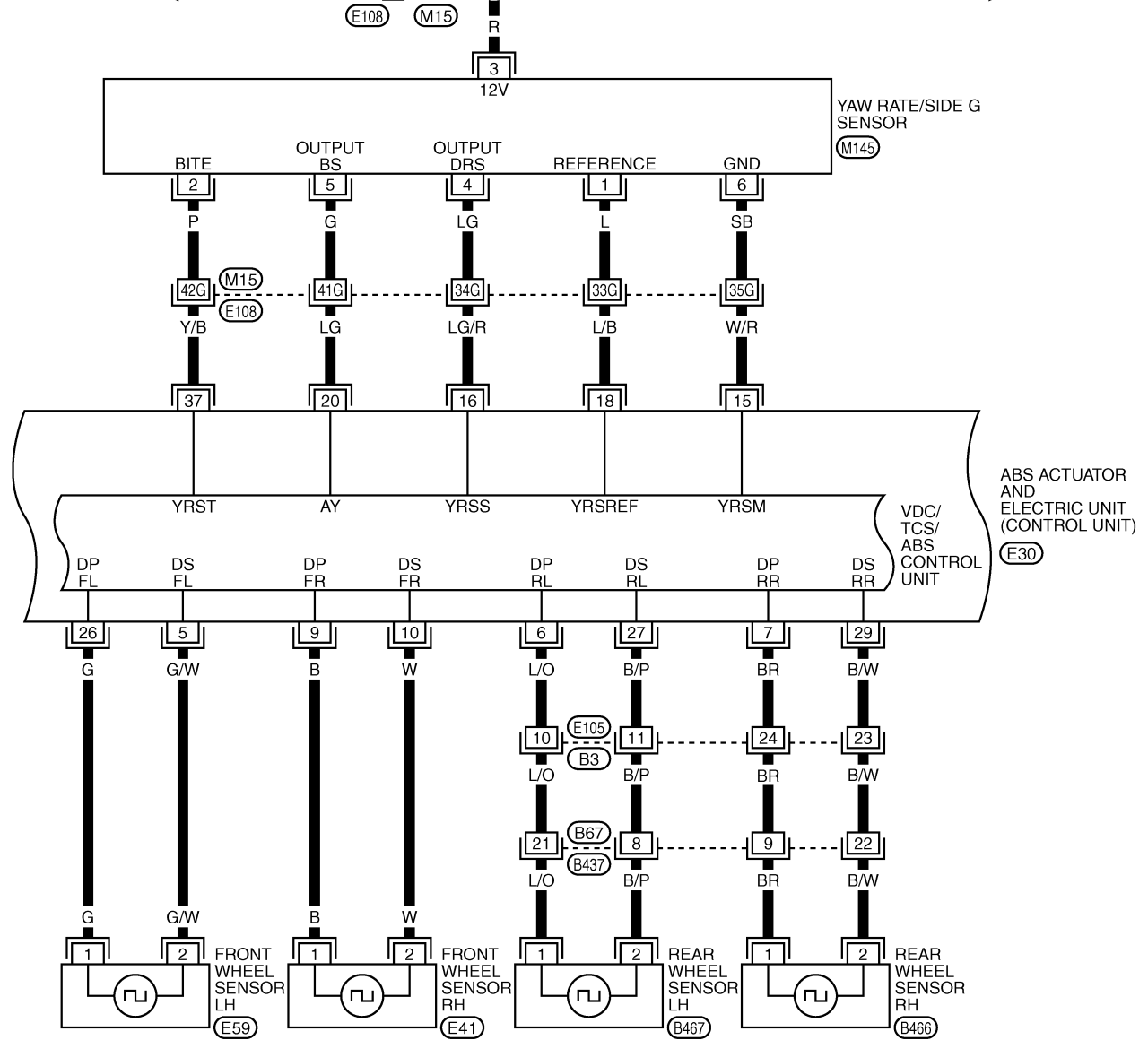


# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-03

TO BRC-VDC-01 ◀ A G/B → G/B [39G] GR ● GR → C NEXT PAGE



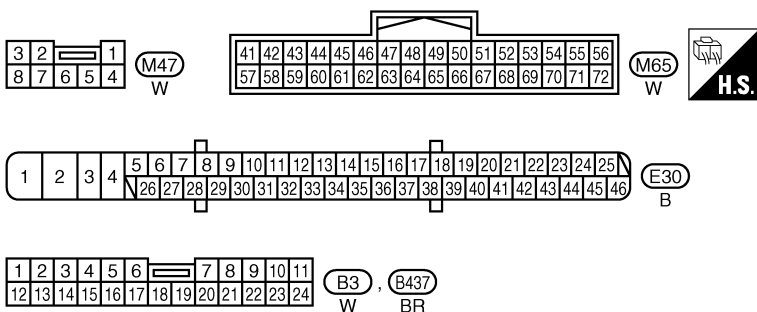
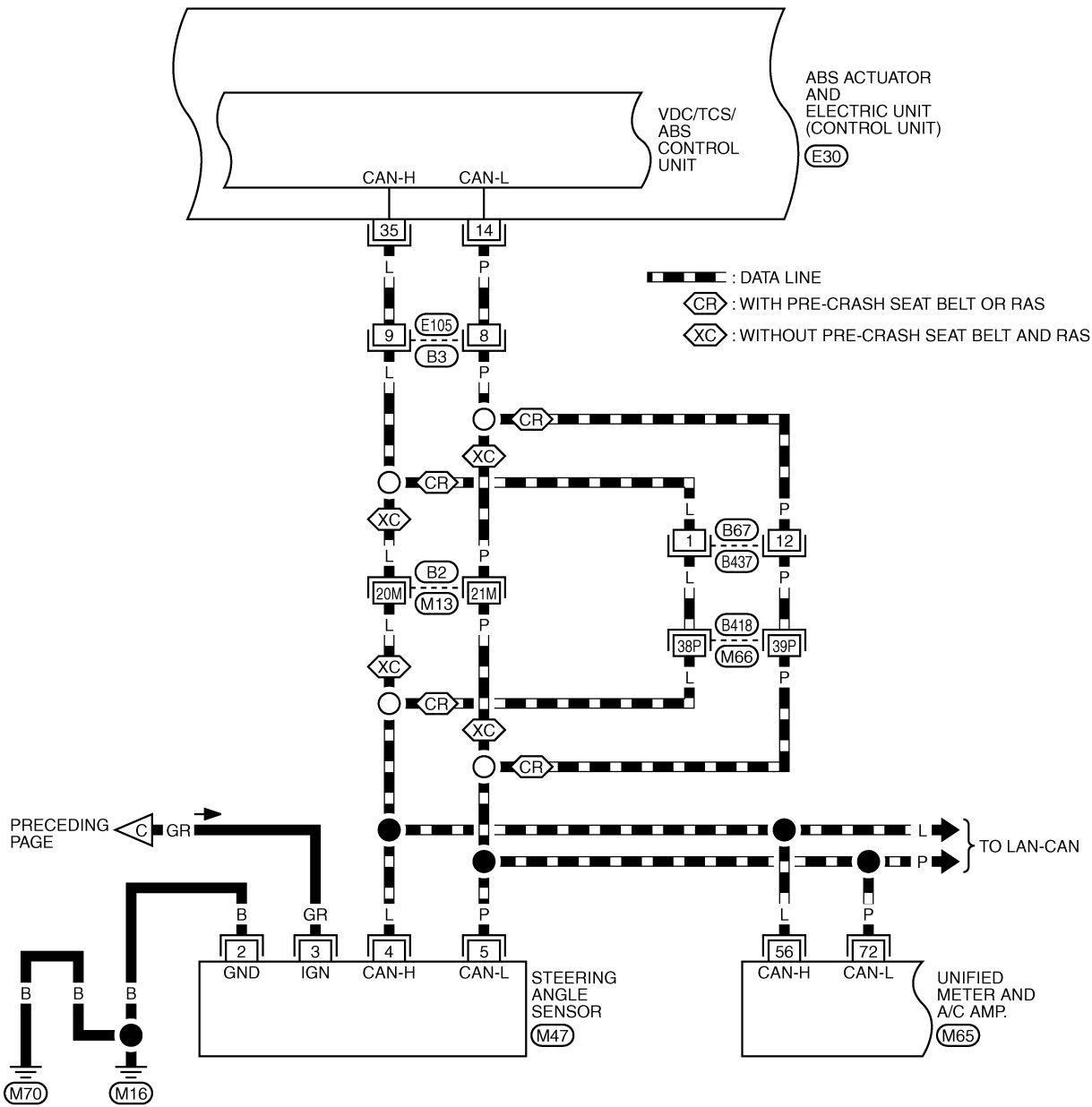
REFER TO THE FOLLOWING.  
 (E108) -SUPER MULTIPLE JUNCTION (SMJ)

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# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-04



REFER TO THE FOLLOWING.  
 (B2), (B418) -SUPER MULTIPLE JUNCTION (SMJ)

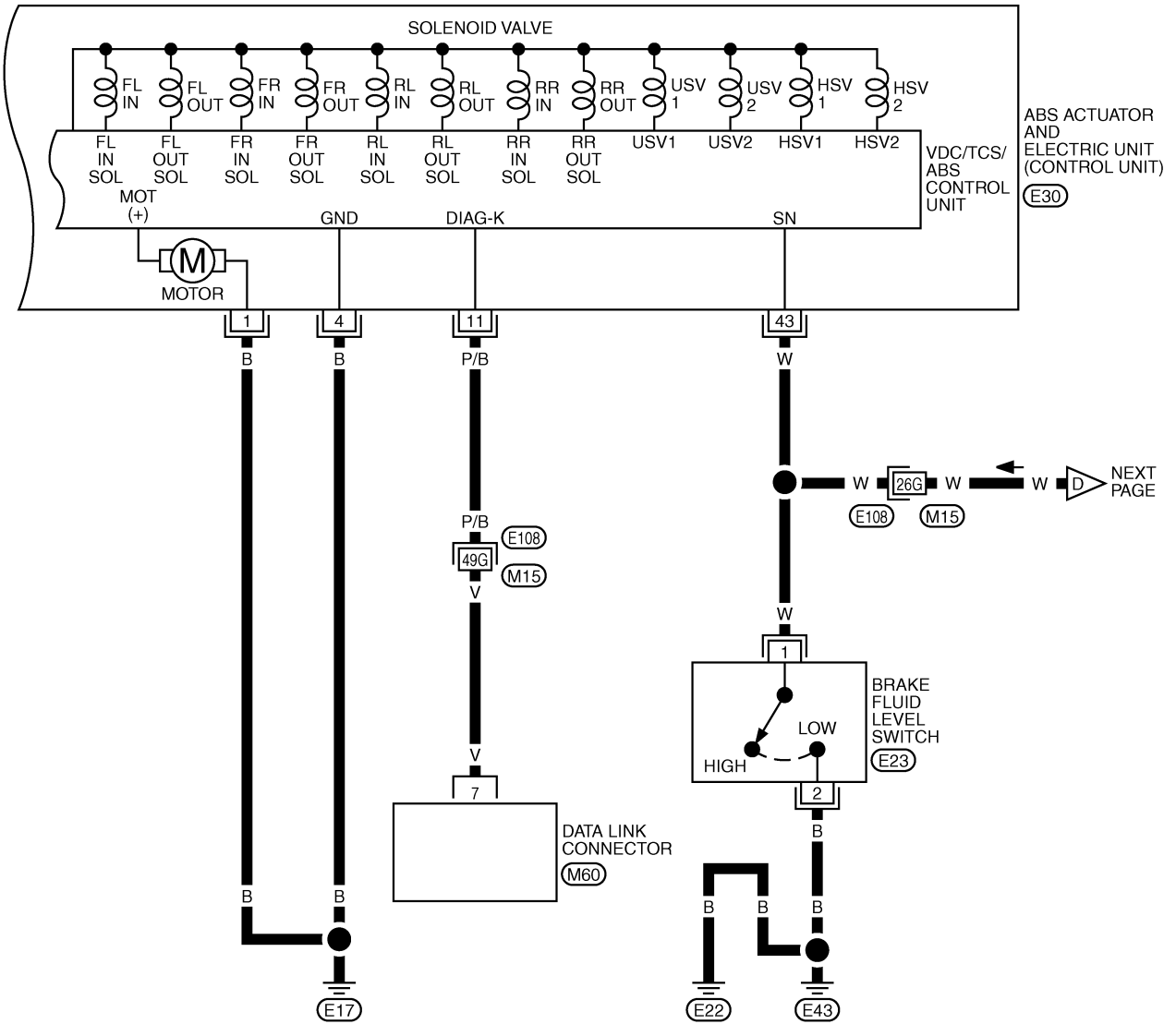
TFWT0351E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

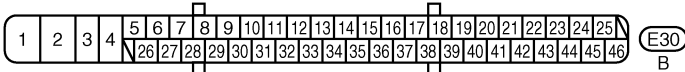
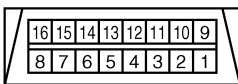
BRC-VDC-05

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**BRC**

▶ NEXT PAGE



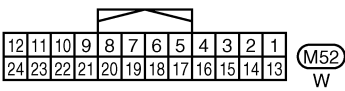
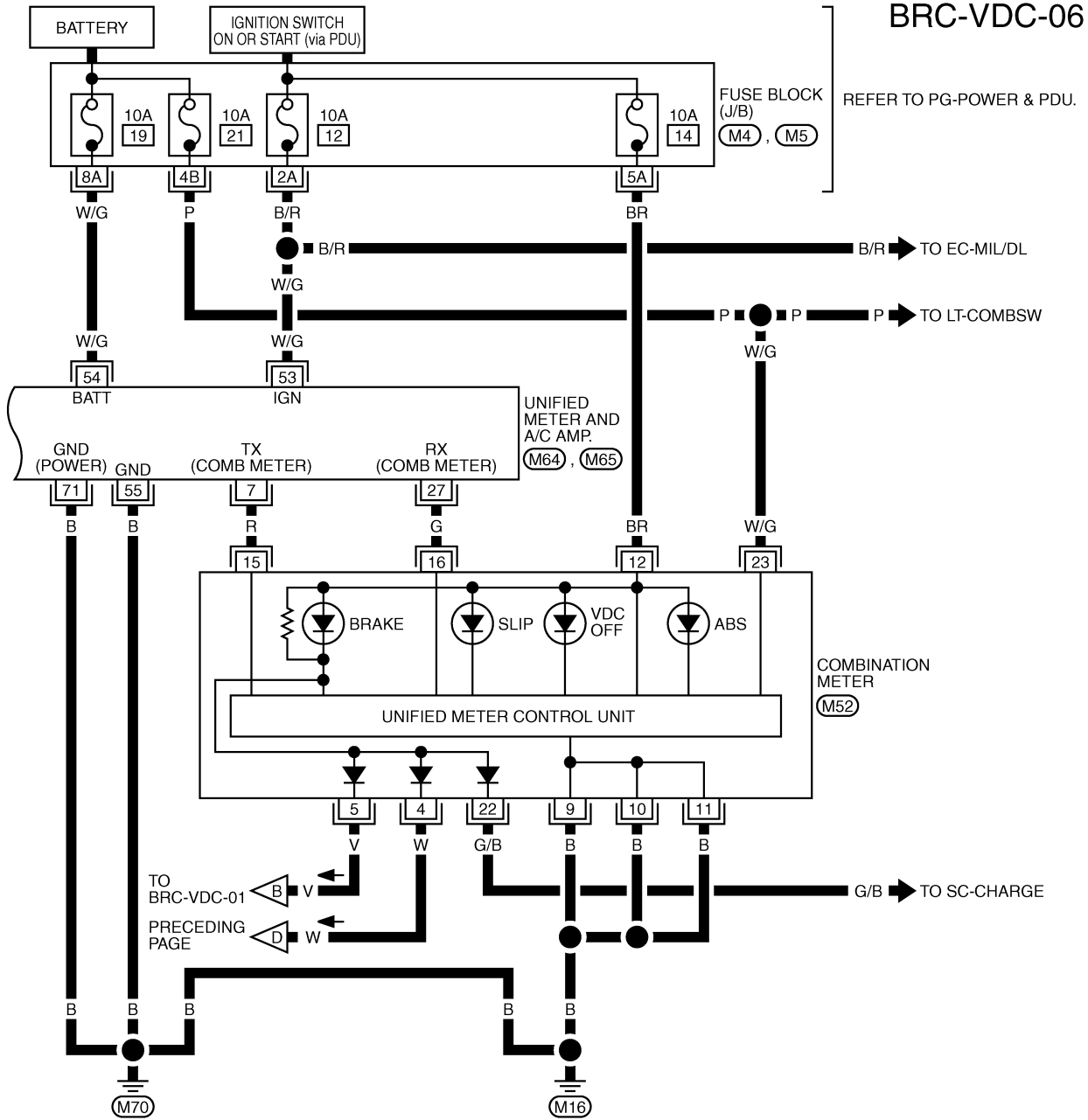
REFER TO THE FOLLOWING.  
E108 -SUPER MULTIPLE JUNCTION (SMJ)

TFWT0352E

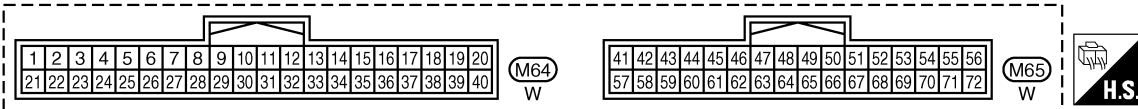
# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

## BRC-VDC-06



REFER TO THE FOLLOWING.  
(M4), (M5) - FUSE BLOCK-JUNCTION BOX (J/B)



TFWT0353E

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

## Control Unit Input/Output Signal Standard

NFS000RH

### REFERENCE VALUE FROM CONSULT-II

**CAUTION:**

The display shows ABS actuator and electric unit (control unit) calculation data, so a normal value might be displayed even in the event the output circuit (harness) is open or short-circuited.

Monitor item	Display content	Data monitor	
		Condition	Reference value in normal operation
FR LH SENSOR FR RH SENSOR RR LH SENSOR RR RH SENSOR	Wheel speed	Vehicle stopped	0 [km/h (MPH)]
		Vehicle running (Note 1)	Nearly matches the speedometer display (± 10 % or less)
STOP LAMP SW	Brake pedal operation	When brake pedal is depressed	ON
		When brake pedal is not depressed	OFF
BATTERY VOLT	Battery voltage supplied to the ABS actuator and electric unit (control unit)	Ignition switch ON	10 – 16 V
GEAR	Gear position determined by TCM	1st gear	1
		2nd gear	2
		3rd gear	3
		4th gear	4
		5th gear	5
SLCT LVR POSI	A/T select lever position	P position	P
		R position	R
		N position	N
		D position	D
OFF SW	VDC OFF switch	VDC OFF switch :ON (When VDC OFF indicator lamp is ON)	ON
		VDC OFF switch :OFF (When VDC OFF indicator lamp is OFF)	OFF
YAW RATE SEN	Yaw rate detected by yaw rate/side G sensor	When vehicle stop	Approx. 0 d/s
		When vehicle turning	(-75 to 75 d/s)
4WD MODE MON (Note 2)	AWD activated	Engine running	AUTO
ACCEL POS SIG	Throttle actuator opening/closing is displayed (linked with accelerator pedal)	Accelerator pedal not depressed (Engine stopped)	0 %
		Depress accelerator pedal (Engine stopped)	0 - 100 %
SIDE G-SENSOR	Transverse G detected by side G sensor	Vehicle stopped	Approx. 0 m/s <sup>2</sup>
		Vehicle turning right	Negative value (m/s <sup>2</sup> )
		Vehicle turning left	Positive value (m/s <sup>2</sup> )
STR ANGLE SIG	Steering angle detected by steering angle sensor	Straight-ahead	Approx. 0°
		Steering wheel turned	-720 to 720°
PRESS SENSOR	Brake fluid pressure detected by pressure sensor	With ignition switch turned ON and brake pedal released	Approx. 0 bar
		With ignition switch turned ON and brake pedal depressed	-40 to 300 bar
ENGINE RPM	Engine speed	With engine stopped	0 rpm
		Engine running	Almost in accordance with tachometer display

# TROUBLE DIAGNOSIS

**[VDC/TCS/ABS]**

Monitor item	Display content	Data monitor	
		Condition	Reference value in normal operation
FLUID LEV SW	Brake fluid level switch	Brake fluid level switch ON	ON
		Brake fluid level switch OFF	OFF
PARK BRAKE SW	Parking brake switch	Parking brake switch is active	ON
		Parking brake switch is inactive	OFF
FR RH IN SOL FR RH OUT SOL FR LH IN SOL FR LH OUT SOL RR RH IN SOL RR RH OUT SOL RR LH IN SOL RR LH OUT SOL	Operation status of all solenoid valve	Actuator (solenoid valve) is active ("ACTIVE TEST" with CONSULT-II) or actuator relay is inactive (in fail-safe mode)	ON
		When the actuator (solenoid valve) is not active and actuator relay is active (ignition switch ON)	OFF
MOTOR RELAY	Motor and motor relay operation	When the motor relay and motor are operating	ON
		When the motor relay and motor are not operating	OFF
ACTUATOR RLY (Note 3)	Actuator relay operation	When the actuator relay is operating	ON
		When the actuator relay is not operating	OFF
ABS WARN LAMP	ABS warning lamp (Note 4)	When ABS warning lamp is ON	ON
		When ABS warning lamp is OFF	OFF
OFF LAMP	VDC OFF indicator lamp (Note 4)	When VDC OFF indicator lamp is ON	ON
		When VDC OFF indicator lamp is OFF	OFF
SLIP LAMP	SLIP indicator lamp (Note 4)	When SLIP indicator lamp is ON	ON
		When SLIP indicator lamp is OFF	OFF
4WD FAIL REQ (Note 2)	AWD control unit fail-safe signal	When AWD control unit is fail-safe mode	ON
		When AWD control unit is normal	OFF
SNOW MODE SW	Snow mode switch	When snow mode switch is ON	ON
		When snow mode switch is OFF	OFF
BST OPER SIG	Not applied but displayed	—	OFF
M-MODE SIG	Manual mode operation	When the manual mode is active	ON
		When the manual mode is inactive	OFF
EBD SIGNAL	EBD operation	EBD is active	ON
		EBD is inactive	OFF
ABS SIGNAL	ABS operation	ABS is active	ON
		ABS is inactive	OFF
TCS SIGNAL	TCS operation	TCS is active	ON
		TCS is inactive	OFF
VDC SIGNAL	VDC operation	VDC is active	ON
		VDC is inactive	OFF
EBD FAIL SIG	EBD fail-safe signal	In EBD fail-safe	ON
		EBD is normal	OFF
ABS FAIL SIG	ABS fail-safe signal	In ABS fail-safe	ON
		ABS is normal	OFF
TCS FAIL SIG	TCS fail-safe signal	In TCS fail-safe	ON
		TCS is normal	OFF

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Monitor item	Display content	Data monitor	
		Condition	Reference value in normal operation
VDC FAIL SIG	VDC fail-safe signal	In VDC fail-safe	ON
		VDC is normal	OFF
CRANKING SIG	Crank operation	Crank is active	ON
		Crank is inactive	OFF
USV[FR-RL] USV[FL-RR] HSV[FR-RL] HSV[FL-RR] (Note 3)	VDC switch-over valve	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-II) or actuator relay is inactive (when in fail-safe mode)	ON
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON)	OFF
V/R OUTPUT (Note 3)	Solenoid valve relay activated	When the solenoid valve relay is active	ON
		When the solenoid valve relay is not active (in the fail-safe mode)	OFF
M/R OUTPUT	Actuator motor and motor relay activated	When the actuator motor and motor relay are active ("ACTIVE TEST" with CONSULT-II)	ON
		When the actuator motor and motor relay are inactive	OFF

Note 1: Confirm tire pressure is normal.

Note 2: Only AWD models.

Note 3: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

Note 4: On and off timing for warning lamp and indicator lamp. Refer to [BRC-33, "ON and OFF Timing for Warning Lamp and Indicator Lamp"](#).

## CONSULT-II Functions (ABS)

NFS000QF

### CONSULT-II MAIN FUNCTION

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

Diagnostic test mode	Function	Reference
WORK SUPPORT	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-II.	<a href="#">BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"</a>
SELF-DIAG RESULTS	Self-diagnostic results can be read and erased quickly.	<a href="#">BRC-24, "Self-Diagnosis"</a>
DATA MONITOR	Input/Output data in the ABS actuator and electric unit (control unit) can be read.	<a href="#">BRC-28, "Data Monitor"</a>
CAN DIAG SUPPORT MNTR	The results of transmit/receive diagnosis of communication can be read.	<a href="#">LAN-44, "CAN Diagnostic Support Monitor"</a>
ACTIVE TEST	Diagnostic Test Mode in which CONSULT-II drives some actuators apart from the ABS actuator and electric unit (control unit) and also shifts some parameters in a specified range.	<a href="#">BRC-30, "Active Test"</a>
FUNCTION TEST	Performed by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".	—
ECU PART NUMBER	ABS actuator and electric unit (control unit) part number can be read.	—

### CONSULT-II SETTING PROCEDURE

Refer to [GI-38, "CONSULT-II Start Procedure"](#).

**Self-Diagnosis****OPERATION PROCEDURE**

1. Turn ignition switch OFF.
2. Perform "CONSULT-II Starting Procedure". Refer to [GI-38, "CONSULT-II Start Procedure"](#) .
3. Turn ignition switch ON.
4. Start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.
5. After stopping vehicle, with the engine running, touch "ABS", "SELF-DIAG RESULTS" in order on the CONSULT-II screen.

**CAUTION:**

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

6. The self-diagnostic results are displayed. (Touch "PRINT" to print out self-diagnostic results, if necessary.)
  - Check ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp if "NO FAILURE" is displayed. Refer to [BRC-50, "Warning Lamp and Indicator Lamp Circuit"](#) .
7. Perform the appropriate inspection from display item list, and repair or replace the malfunctioning component. Refer to [BRC-25, "DISPLAY ITEM LIST"](#) .
8. Start engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.

**CAUTION:**

When the wheel sensor malfunctions, after inspecting the wheel sensor system, the ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp will not turn off even when the system is normal unless the vehicle is driving at approximately 30 km/h (19 MPH) or more for approximately 1 minute.

**ERASE MEMORY**

1. Turn ignition switch OFF.
2. Start engine and touch "ABS", "SELF-DIAG RESULTS", "ERASE MEMORY" in order on the CONSULT-II screen to erase the diagnostic memory.  
If "ABS" is not indicated, go to [GI-39, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#) .

**CAUTION:**

If the diagnostic memory is not erased, re-perform the operation from step 4.

3. Perform self-diagnosis again, and make sure that diagnostic memory is erased.
4. Drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute as the final inspection, and make sure that the ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp turn off.

**NOTE:**

- Brake warning lamp will turn on in case of parking brake operation (when switch is ON) or of brake fluid level switch operation (when brake fluid is insufficient).
- VDC OFF switch should not stay "ON" position.



# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

## DISPLAY ITEM LIST

Code	Display item	Malfunction detecting condition	Check item
C1101	RR RH SENSOR-1	Circuit of rear RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	BRC-34. "Wheel Sensor Circuit" (Note 1)
C1102	RR LH SENSOR-1	Circuit of rear LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
C1103	FR RH SENSOR-1	Circuit of front RH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
C1104	FR LH SENSOR-1	Circuit of front LH wheel sensor is open. Or when the sensor power voltage is outside the standard.	
C1105	RR RH SENSOR-2	When the circuit in the rear RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	
C1106	RR LH SENSOR-2	When the circuit in the rear LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	
C1107	FR RH SENSOR-2	When the circuit in the front RH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	
C1108	FR LH SENSOR- 2	When the circuit in the front LH wheel sensor is short-circuited. Or when the distance between the wheel sensor and sensor rotor is too large and the sensor pulse cannot be recognized by the control unit.	
C1109	BATTERY VOLTAGE [ABNORMAL]	When the ABS actuator and electric unit (control unit) power supply voltage is lower than normal.	BRC-37. "ABS Actuator and Electric Unit (Control Unit) Power Supply and Ground Circuit"
C1110	CONTROLLER FAILURE	When there is an internal malfunction in the ABS actuator and electric unit (control unit).	BRC-36. "ABS Actuator and Electric Unit (Control Unit)"
C1111	PUMP MOTOR	During the actuator motor operating with ON, when the actuator motor turns OFF, or when the control line for actuator motor relay is open.	BRC-38. "ABS Motor and Motor Relay Circuit"
		During the actuator motor operating with OFF, when the actuator motor turns ON, or when the control line for relay is shorted to ground.	
C1114	MAIN RELAY	During the actuator relay operating with OFF, when the actuator relay turns ON, or when the control line for the relay is shorted to the ground.	BRC-39. "Solenoid, VDC Change-Over Valve and Actuator Relay Circuit"
		During the actuator relay operating with ON, when the actuator relay turns OFF, or when the control line for the relay is open.	
C1115	ABS SENSOR [ABNORMAL SIGNAL]	When wheel sensor input signal is malfunctioning.	BRC-34. "Wheel Sensor Circuit" (Note 1)
C1116	STOP LAMP SW	When stop lamp switch circuit is open.	BRC-43. "Stop Lamp Switch Circuit"

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Code	Display item	Malfunction detecting condition	Check item
C1120	FR LH IN ABS SOL	When the control unit detects a malfunction in the front left inlet solenoid circuit.	
C1121	FR LH OUT ABS SOL	When the control unit detects a malfunction in the front left outlet solenoid circuit.	
C1122	FR RH IN ABS SOL	When the control unit detects a malfunction in the front right inlet solenoid circuit.	
C1123	FR RH OUT ABS SOL	When the control unit detects a malfunction in the front right outlet solenoid circuit.	<a href="#">BRC-39. "Solenoid, VDC Change-Over Valve and Actuator Relay Circuit"</a>
C1124	RR LH IN ABS SOL	When the control unit detects a malfunction in the rear left inlet solenoid circuit.	
C1125	RR LH OUT ABS SOL	When the control unit detects a malfunction in the rear left outlet solenoid circuit.	
C1126	RR RH IN ABS SOL	When the control unit detects a malfunction in the rear right inlet solenoid circuit.	
C1127	RR RH OUT ABS SOL	When the control unit detects a malfunction in the rear right outlet solenoid circuit.	
C1130	ENGINE SIGNAL 1	Major engine components are malfunctioning.	<a href="#">BRC-36. "Engine System"</a>
C1131	ENGINE SIGNAL 2		
C1132	ENGINE SIGNAL 3		
C1133	ENGINE SIGNAL 4		
C1136	ENGINE SIGNAL 6		
C1137	RAS CIRCUIT		
C1142	PRESS SEN CIRCUIT	Pressure sensor signal line is open or shorted, or pressure sensor is malfunctioning.	<a href="#">BRC-40. "Pressure Sensor Circuit"</a>
C1143	ST ANG SEN CIRCUIT	Neutral position of steering angle sensor is dislocated, or the steering angle sensor is malfunctioning.	<a href="#">BRC-41. "Steering Angle Sensor Circuit"</a>
C1144	ST ANG SEN SIGNAL	Neutral position correction of steering angle sensor is not finished.	<a href="#">BRC-6. "Adjustment of Steering Angle Sensor Neutral Position"</a>
C1145	YAW RATE SENSOR	Yaw rate sensor is malfunctioning, or the yaw rate sensor signal line is open or shorted.	<a href="#">BRC-44. "Yaw Rate/Side G Sensor Circuit"</a>
C1146	SIDE G-SEN CIRCUIT	Side G sensor is malfunctioning, or circuit of side G sensor is open or shorted.	
C1147	USV LINE [FL-RR]	VDC switch-over solenoid valve (USV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	<a href="#">BRC-39. "Solenoid, VDC Change-Over Valve and Actuator Relay Circuit"</a>
C1148	USV LINE [FR-RL]	VDC switch-over solenoid valve (USV2) on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
C1149	HSV LINE [FL-RR]	VDC switch-over solenoid valve (HSV1) on the primary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
C1150	HSV LINE [FR-RL]	VDC switch-over solenoid valve (HSV2) on the secondary side is open circuit or shorted, or the control line is open or shorted to the power supply or the ground.	
C1153	EMERGENCY BRAKE	When ABS actuator and electric unit (control unit) is malfunctioning. (Pressure increase is too much or too little)	

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Code	Display item	Malfunction detecting condition	Check item
C1155	BR FLUID LEVEL LOW	Brake fluid level is low or communication line between the ABS actuator and electric unit (control unit) and brake fluid level switch is open or shorted.	<a href="#">BRC-46, "Brake Fluid Level Switch Circuit"</a>
C1156	ST ANG SEN COM CIR	CAN communication circuit or steering angle sensor is malfunctioning.	<a href="#">BRC-48, "CAN Communication Circuit"</a>
C1170	VARIANT CODING	In a case where VARIANT CODING is different.	<a href="#">BRC-36, "ABS Actuator and Electric Unit (Control Unit)"</a>
C1185	ACC CONT	ICC sensor integrated unit internal malfunction.	<a href="#">BRC-48, "ICC Sensor Integrated Unit Circuit (With ICC)"</a>
U1000	CAN COMM CIRCUIT	When ABS actuator and electric unit (control unit) is not transmitting or receiving CAN communication signal for 2 seconds or more.	<a href="#">BRC-48, "CAN Communication Circuit"</a> (Note 2)
U1100	ACC COMM CIRCUIT	When there is a malfunction in the CAN communication circuit or ICC sensor integrated unit.	<a href="#">BRC-48, "CAN Communication Circuit"</a>

Note 1: After completing repairs of shorted sensor circuit, when ignition switch is turned ON, ABS warning lamp turns on. Make sure that ABS warning lamp turns off while driving vehicle at 30 km/h (19 MPH) or more for approximately 1 minute according to self-diagnosis procedure. In addition, if wheel sensor 2 is displayed for wheels, check wheel sensor circuit and also check control unit power voltage.

Note 2: When malfunctions are detected in several systems, including CAN communication circuit [U1000], troubleshoot CAN communication circuit. Refer to [BRC-48, "CAN Communication Circuit"](#).

**Data Monitor****OPERATION PROCEDURE**

1. After ignition switch OFF, perform "CONSULT-II Starting Procedure". Refer to [GI-38. "CONSULT-II Start Procedure"](#).
2. Touch "ABS", "DATA MONITOR" in order on CONSULT-II screen.

**CAUTION:**

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

3. At the monitor item selection screen, touch one of the items "ECU INPUT SIGNALS", "MAIN SIGNALS" or "SELECTION FROM MENU".
4. Touch "START" to proceed to the data monitor screen.

**DISPLAY ITEM LIST**

Item (Unit)	Data monitor item selection			Display content
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
FR LH SENSOR [km/h (MPH)]	×	×	×	Wheel speed
FR RH SENSOR [km/h (MPH)]	×	×	×	
RR LH SENSOR [km/h (MPH)]	×	×	×	
RR RH SENSOR [km/h (MPH)]	×	×	×	
STOP LAMP SW (ON/OFF)	×	×	×	Brake pedal operation
BATTERY VOLT (V)	×	×	×	Battery voltage supplied to the ABS actuator and electric unit (control unit)
GEAR	×	×	×	Gear position determined by TCM
SLCT LVR POSI	×	×	×	A/T select lever position
OFF SW (ON/OFF)	×	×	×	VDC OFF switch
ACCEL POS SIG (%)	×	—	×	Throttle actuator opening/closing is displayed (Linked with accelerator pedal)
SIDE G-SENSOR (m/s <sup>2</sup> )	×	—	×	Transverse G detected by side G sensor
STR ANGLE SIG (°)	×	—	×	Steering angle detected by steering angle sensor
PRESS SENSOR (bar)	×	—	×	Brake fluid pressure detected by pressure sensor
ENGINE RPM (rpm)	×	—	×	With engine running
YAW RATE SEN (d/s)	×	×	×	Yaw rate detected by yaw rate/side G sensor
FLUID LEV SW (ON/OFF)	×	—	×	Brake fluid level switch
PARK BRAKE SW (ON/OFF)	×	—	×	Parking brake switch
4WD MODE MON (Note)	×	×	×	AWD activated

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Item (Unit)	Data monitor item selection			Display content	
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU		
FR RH IN SOL (ON/OFF)	—	×	×	Operation status of all solenoid valve	A
FR RH OUT SOL (ON/OFF)	—	×	×		B
FR LH IN SOL (ON/OFF)	—	×	×		C
FR LH OUT SOL (ON/OFF)	—	×	×		D
RR RH IN SOL (ON/OFF)	—	×	×		E
RR RH OUT SOL (ON/OFF)	—	×	×		
RR LH IN SOL (ON/OFF)	—	×	×		
RR LH OUT SOL (ON/OFF)	—	×	×		
MOTOR RELAY (ON/OFF)	—	×	×	Motor and motor relay operation	G
ACTUATOR RLY (ON/OFF)	—	×	×	Actuator relay operation	H
ABS WARN LAMP (ON/OFF)	—	×	×	ABS warning lamp	
OFF LAMP (ON/OFF)	—	×	×	VDC OFF indicator lamp	I
SLIP LAMP (ON/OFF)	—	×	×	SLIP indicator lamp	J
4WD FAIL REQ (ON/OFF) (Note)	—	—	×	AWD control unit fail-safe signal	
SNOW MODE SW (ON/OFF)	—	—	×	Snow mode switch	K
BST OPER SIG	—	—	×	Not applied but displayed.	
M-MODE SIG (ON/OFF)	—	—	×	Manual mode activated	L
EBD SIGNAL (ON/OFF)	—	—	×	EBD operation	M
ABS SIGNAL (ON/OFF)	—	—	×	ABS operation	
TCS SIGNAL (ON/OFF)	—	—	×	TCS operation	
VDC SIGNAL (ON/OFF)	—	—	×	VDC operation	
EBD FAIL SIG (ON/OFF)	—	—	×	EBD fail-safe signal	
ABS FAIL SIG (ON/OFF)	—	—	×	ABS fail-safe signal	
TCS FAIL SIG (ON/OFF)	—	—	×	TCS fail-safe signal	
VDC FAIL SIG (ON/OFF)	—	—	×	VDC fail-safe signal	
CRANKING SIG (ON/OFF)	—	—	×	Crank operation	

# TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Item (Unit)	Data monitor item selection			Display content
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
USV[FR-RL] (ON/OFF)	—	—	×	VDC switch-over valve
USV[FL-RR] (ON/OFF)	—	—	×	
HSV[FR-RL] (ON/OFF)	—	—	×	
HSV[FL-RR] (ON/OFF)	—	—	×	
V/R OUTPUT (ON/OFF)	—	—	×	Solenoid valve relay activated
M/R OUTPUT (ON/OFF)	—	—	×	Actuator motor and motor relay activated

×:Applicable

—:Not applicable

Note: Only AWD models

## Active Test

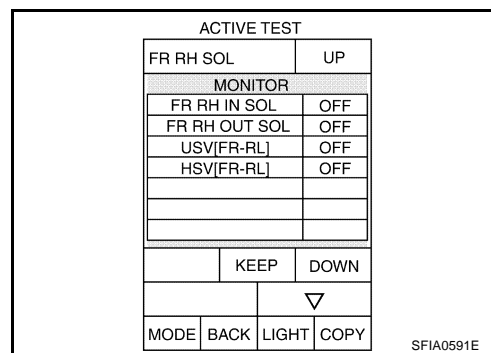
NFS000QI

### CAUTION:

- Do not perform active test while driving vehicle.
- Make sure to completely bleed air from brake system.
- The active test cannot be performed with the ABS warning lamp, VDC indicator lamp, SLIP indicator lamp and brake warning lamp are on.
- ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp and brake warning lamp are on during active test.
- Erase memory of ICC system after implementing active test. Refer to [ACS-34, "Self-Diagnostic Function"](#) .

### OPERATION PROCEDURE

1. Perform "CONSULT-II Starting Procedure". Refer to [GI-38, "CONSULT-II Start Procedure"](#) .
2. Touch "SELECT TEST ITEM" is displayed.
3. Touch necessary test item.



4. While "MAIN SIGNALS" indication is inverted, touch "START".
5. "ACTIVE TEST" screen will be displayed so perform the following test.

#### NOTE:

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

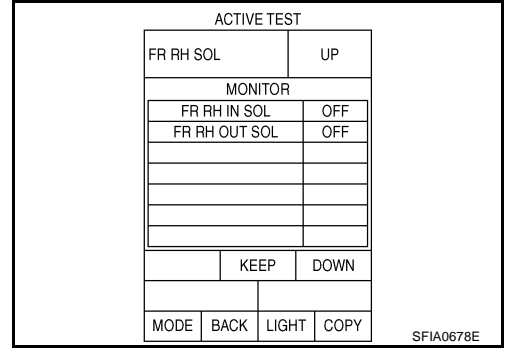
## TEST ITEMS

### Solenoid Valve

**NOTE:**

The example shown is for front right wheel. The procedure for the other wheels is the same as given below.

- When performing an active test of the ABS function, select the "MAIN SIGNALS" for each test item. In addition, when performing an active test of the VDC/TCS function, select the item menu for each test item.
- For ABS solenoid valve, touch "UP", "KEEP", and "DOWN" on the display screen. For ABS solenoid valve (ACT), touch "UP", "ACT UP", "ACT KEEP" and confirm that solenoid valves (IN, OUT, USV, HSV) operate as shown in the table below.



Operation (Note)	ABS solenoid valve			ABS solenoid valve (ACT)		
	UP	KEEP	DOWN	UP	ACT UP	ACT KEEP
FR RH IN SOL	OFF	ON	ON	OFF	OFF	OFF
FR RH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
USV [FR-RL]	OFF	OFF	OFF	OFF	ON	ON
HSV [FR-RL]	OFF	OFF	OFF	OFF	ON*	OFF

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

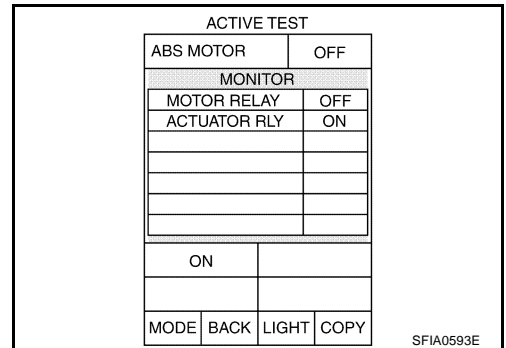
Note: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.

### ABS Motor

Touch "ON" and "OFF" on screen. Make sure motor relay and actuator relay operates as shown in table below.

Operation	ON	OFF
MOTOR RELAY	ON	OFF
ACTUATOR RLY (Note)	ON	ON

Note: A brief moment of ON/OFF condition occurs every 20 seconds after ignition switch turned ON. This is not malfunction because it is an operation for checking.



### For Fast and Accurate Diagnosis

NFS000QJ

#### PRECAUTIONS FOR DIAGNOSIS

- Before performing diagnosis, always read General Information (GI) to confirm general precautions. Refer to [GI-4, "General Precautions"](#) .
- If steering angle sensor, steering system parts, suspension system parts, ABS actuator and electric unit (control unit) or tires have been replaced, or if wheel alignment has been adjusted, be sure to adjust neutral position of steering angle sensor before driving. Refer to [BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"](#) .
- After diagnosis is finished, be sure to erase memory. Refer to [BRC-24, "ERASE MEMORY"](#) .
- When checking continuity and voltage between unit, be sure to check for disconnection, looseness, bend, or collapse of connector terminals. If any malfunction is found, repair or replace connector terminals.
- For intermittent symptoms, possible cause is malfunction in harness, harness connector, or terminals. Move harness, harness connector, and terminals to check for poor connections.
- If a circuit tester is used for the check, be careful not to forcibly extend any connector terminal.
- The following symptoms may be caused by normal operations.

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



## Basic Inspection

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

1. Check fluid level in brake reservoir tank. If fluid level is low, refill brake fluid. Refer to [BR-9, "CHECKING BRAKE FLUID LEVEL"](#) .
2. Check for leakage in brake tubes or hoses and around ABS actuator and electric unit (control unit). If there is leaking or seeping fluid, check the following items.
  - If the brake tube connections at ABS actuator and electric unit (control unit) are loose, tighten flare nuts to the specified torque. Then inspect again and confirm that there is no leakage.
  - If flare nuts or screws of ABS actuator and electric unit (control unit) are damaged and loose, replace damaged parts. Then inspect again and confirm that there is no leakage.
  - If there is leakage at any location other than ABS actuator and electric unit (control unit) connections, wipe away leakage with clean cloth. Then inspect again and confirm that there is no leakage.
  - If there is leakage from ABS actuator and electric unit (control unit), wipe away leakage with clean cloth. Then inspect again. If there is still leakage, replace ABS actuator and electric unit (control unit).

**CAUTION:**

**ABS actuator and electric unit (control unit) cannot be disassembled.**

3. Check brake disc rotor and pads.
  - Front disc rotor: Refer to [BR-27, "DISC ROTOR INSPECTION"](#) .
  - Front brake pad: Refer to [BR-22, "PAD WEAR INSPECTION"](#) .
  - Rear disc rotor: Refer to [BR-33, "DISC ROTOR INSPECTION"](#) .
  - Rear brake pad: Refer to [BR-28, "PAD WEAR INSPECTION"](#) .

### BASIC INSPECTION 2: LOOSENESS OF POWER SYSTEM TERMINALS AND BATTERY

Check battery for looseness on battery positive/negative terminals and ground connection. Also make sure battery voltage does not drop and alternator is normal.

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

#### ON and OFF Timing for Warning Lamp and Indicator Lamp

Condition	×: ON    -: OFF			
	ABS warning lamp	VDC OFF indicator lamp	SLIP indicator lamp	Brake warning lamp (Note1)
Ignition switch OFF	-	-	-	-
For 1 second after turning ON ignition switch	×	×	×	× (Note 2)
1 second later after turning ON ignition switch	-	-	-	× (Note 2)
VDC OFF switch turned ON. (VDC function is OFF.)	-	×	-	-
VDC/TCS function is malfunctioning.	-	×	×	-
ABS function is malfunctioning.	×	×	×	-
EBD function is malfunctioning.	×	×	×	×

Note1: Brake warning lamp will turn on in case of parking brake operation (when switch is ON) or of brake fluid level switch operation (when brake fluid is insufficient).

Note2: After starting engine, brake warning lamp is turned off.

Check the following items when unsuitable for an above condition.

- ABS warning lamp: [BRC-48, "CAN Communication Circuit"](#) .
- Brake warning lamp: [BRC-48, "CAN Communication Circuit"](#) , [BRC-46, "Brake Fluid Level Switch Circuit"](#) , [BRC-50, "Parking Brake Switch Circuit"](#) .
- VDC OFF indicator lamp: [BRC-48, "CAN Communication Circuit"](#) , [BRC-49, "VDC OFF Switch Circuit"](#) .
- SLIP indicator lamp: [BRC-48, "CAN Communication Circuit"](#) .

If malfunction is not found, refer to [BRC-50, "Warning Lamp and Indicator Lamp Circuit"](#) .

**TROUBLE DIAGNOSIS FOR SYSTEM**

PFP:00000

**Wheel Sensor Circuit**

NFS000QL

**CAUTION:**

Do not check between wheel sensor terminals.

**INSPECTION PROCEDURE****1. CHECK SELF-DIAGNOSIS RESULTS**

Check the self-diagnosis results.

Self-diagnosis results
FR RH SENSOR-1, -2
FR LH SENSOR-1, -2
RR RH SENSOR-1, -2
RR LH SENSOR-1, -2
ABS SENSOR [ABNORMAL SIGNAL]

Is above displayed on the self-diagnosis display?

YES &gt;&gt; GO TO 2.

NO &gt;&gt; INSPECTION END

**2. CHECK TIRE**

Check air pressure, wear and size.

Are air pressure, wear and size within standard?

YES &gt;&gt; GO TO 3.

NO &gt;&gt; ● Adjust air pressure, or replace tire.

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

**3. CHECK SENSOR AND SENSOR ROTOR**

- Check sensor rotor for damage.
- Check wheel sensor for damage, disconnection or looseness.

OK or NG

OK &gt;&gt; GO TO 4.

NG &gt;&gt; ● Repair wheel sensor mount or replace sensor rotor. Then perform the self-diagnosis.

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

**4. CHECK CONNECTOR**

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30 and malfunctioning wheel sensor connector E41(FR-RH), E59(FR-LH), B466(RR-RH), B467(RR-LH). Check terminal to see if it is deformed, disconnected, loose, etc., Repair or replace it if any malfunction condition is found.
2. Reconnect connectors and then perform the self-diagnosis. Refer to [BRC-24, "Self-Diagnosis"](#) .

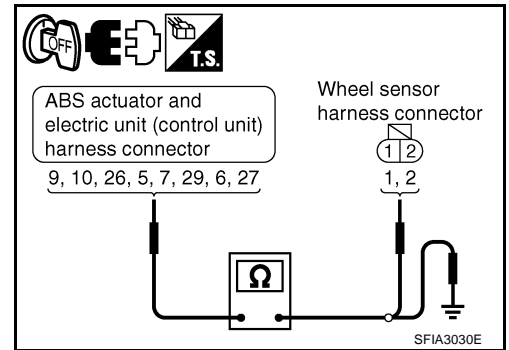
OK or NG

OK &gt;&gt; INSPECTION END

NG &gt;&gt; GO TO 5.

## 5. CHECK WHEEL SENSOR HARNESS

1. Turn ignition switch OFF and disconnect malfunctioning wheel sensor connector E41(FR-RH), E59(FR-LH), B466(RR-RH), B467(RR-LH) and ABS actuator and electric unit (control unit) connector E30.
2. Check continuity between terminals. (Also check continuity when steering wheel is turned right and left and when sensor harness inside the wheel house is moved.)



Wheel	Power supply circuit		Signal circuit		Ground circuit	
	ABS actuator and electric unit (control unit)	Wheel sensor	ABS actuator and electric unit (control unit)	Wheel sensor	ABS actuator and electric unit (control unit) (signal)	Ground
Front RH	9	1	10	2	9, 10	—
Front LH	26	1	5	2	26, 5	
Rear RH	7	1	29	2	7, 29	
Rear LH	6	1	27	2	6, 27	

- Power supply circuit** : Continuity should exist.  
**Signal circuit** : Continuity should exist.  
**Ground circuit** : Continuity should not exist.

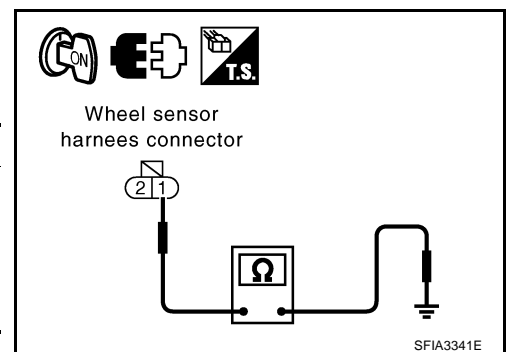
OK or NG

- OK >> GO TO 6.  
 NG >> ● Repair or replace malfunctioning components.  
 ● Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

## 6. CHECK WHEEL SENSOR POWER SUPPLY CIRCUIT

1. Disconnect malfunctioning wheel sensor connector.
2. Turn ignition switch ON and check voltage between wheel sensor harness connector power supply terminal and ground.

Wheel	Wheel sensor	Ground	Voltage
Front RH	1	—	8 V or more
Front LH			
Rear RH			
Rear LH			



OK or NG

- OK >> Replace wheel sensor.  
 NG >> Replace ABS actuator and electric unit (control unit).

## Engine System INSPECTION PROCEDURE

NFS000QM

### 1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

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

Is above displayed on the self-diagnosis display?

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

### 2. CHECK ENGINE SYSTEM

1. Perform ECM self-diagnosis. Repair or replace items indicated, then perform ECM self-diagnosis again. Refer to [EC-90, "TROUBLE DIAGNOSIS"](#) (VQ35DE), [EC-792, "TROUBLE DIAGNOSIS"](#) (VK45DE).
2. Perform ABS actuator and electric unit (control unit) self-diagnosis.

OK or NG

- OK >> INSPECTION END  
NG >> ● Repair or replace malfunctioning components.  
● Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

## ABS Actuator and Electric Unit (Control Unit) INSPECTION PROCEDURE

NFS000QM

### 1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
CONTROLLER FAILURE
EMERGENCY BRAKE
VARIANT CODING

#### CAUTION:

Replace ABS actuator and electric unit (control unit) when self-diagnostic result shows items other than those above.

Is above displayed on the self-diagnosis display?

- YES >> ● Replace ABS actuator and electric unit (control unit).  
● Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".  
NO >> INSPECTION END

**ABS Actuator and Electric Unit (Control Unit) Power Supply and Ground Circuit**

NFS000Q0

**INSPECTION PROCEDURE**

**1. CHECK SELF-DIAGNOSIS RESULTS**

Check self-diagnosis results.

Self-diagnosis results
BATTERY VOLTAGE [ABNORMAL]

Is above displayed on the self-diagnosis display?

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

**2. CHECK CONNECTOR**

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

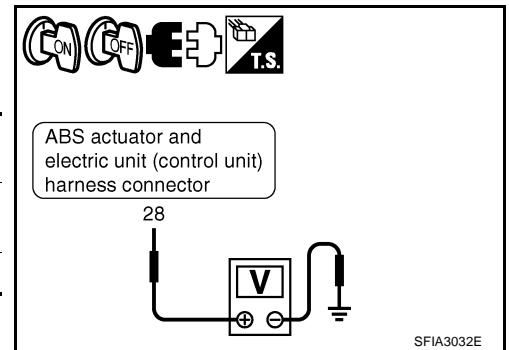
OK or NG

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

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

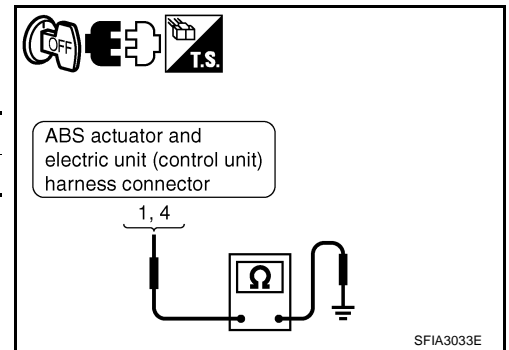
1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30.
2. Turn ignition switch ON or OFF and check voltage between ABS actuator and electric unit (control unit) harness connector E30 terminal 28 and ground.

ABS actuator and electric unit (control unit)	Ground	Condition	Voltage
28	—	Ignition switch ON	Battery voltage (Approx. 12 V)
		Ignition switch OFF	Approx. 0 V



3. Turn ignition switch OFF and check continuity between ABS actuator and electric unit (control unit) harness connector E30 terminals 1, 4 and ground.

ABS actuator and electric unit (control unit)	Ground	Continuity
1, 4	—	Yes



OK or NG

- OK >>
  - Check battery for terminal looseness, low voltage, etc. If any malfunction is found, repair malfunctioning parts.
  - Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.
- NG >>
  - Repair or replace malfunctioning components.
  - Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

## ABS Motor and Motor Relay Circuit INSPECTION PROCEDURE

### 1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
PUMP MOTOR

Is above displayed on the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

### 2. CHECK CONNECTOR

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

OK or NG

OK >> INSPECTION END

NG >> GO TO 3.

### 3. CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30.
2. Check voltage between the ABS actuator and electric unit (control unit) harness connector E30 terminal 2 and ground.

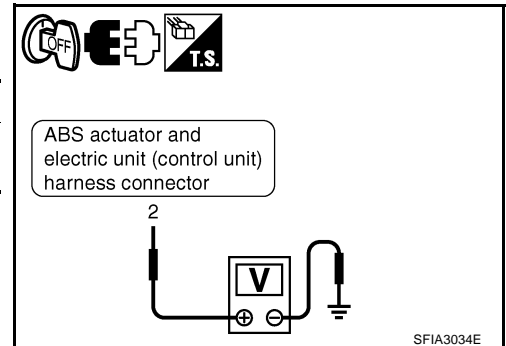
ABS actuator and electric unit (control unit)	Ground	Voltage
2	—	Battery voltage (Approx. 12 V)

OK or NG

OK >> GO TO 4.

NG >> ● Repair or replace malfunctioning components.

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



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

Check continuity between ABS actuator and electric unit (control unit) harness connector E30 terminals 1, 4 and ground.

ABS actuator and electric unit (control unit)	Ground	Continuity
1, 4	—	Yes

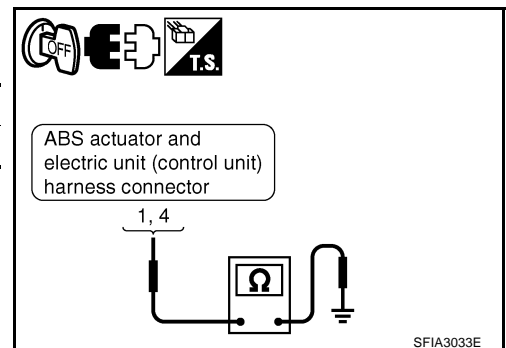
OK or NG

OK >> ● Replace ABS actuator and electric unit (control unit).

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

NG >> ● Repair or replace malfunctioning components.

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



**Solenoid, VDC Change-Over Valve and Actuator Relay Circuit  
INSPECTION PROCEDURE**

**1. CHECK SELF-DIAGNOSIS RESULTS**

Check self-diagnosis results.

Self-diagnosis results
FR RH IN ABS SOL
FR RH OUT ABS SOL
FR LH IN ABS SOL
FR LH OUT ABS SOL
RR RH IN ABS SOL
RR RH OUT ABS SOL
RR LH IN ABS SOL
RR LH OUT ABS SOL
USV LINE [FL-RR]
USV LINE [FR-RL]
HSV LINE [FL-RR]
HSV LINE [FR-RL]
MAIN RELAY

Is above displayed on the self-diagnosis display?

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

**2. CHECK CONNECTOR**

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

OK or NG

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

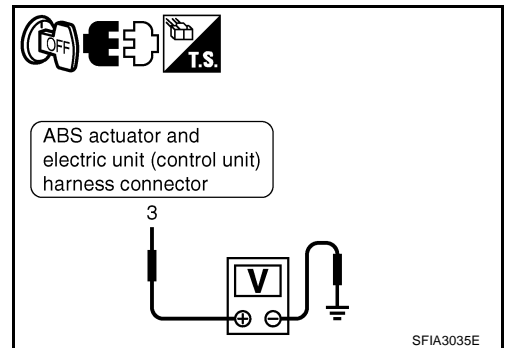
**3. CHECK SOLENOID, VDC CHANGE-OVER VALVE AND ACTUATOR RELAY POWER SUPPLY CIRCUIT**

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30.
2. Check voltage between ABS actuator and electric unit (control unit) harness connector E30 terminal 3 and ground.

ABS actuator and electric unit (control unit)	Ground	Voltage
3	—	Battery Voltage (Approx. 12 V)

OK or NG

- OK >> GO TO 4.
- NG >>
  - Repair or replace malfunctioning components.
  - Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.



SFIA3035E

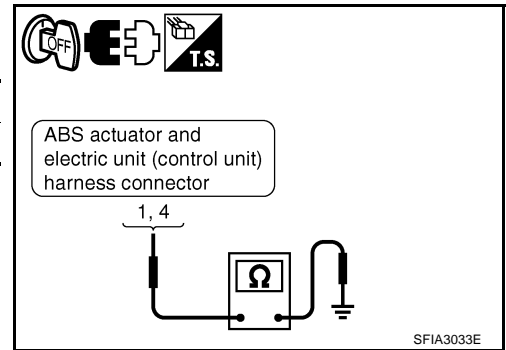
**4. CHECK SOLENOID, VDC CHANGE-OVER VALVE, ACTUATOR RELAY GROUND CIRCUIT**

Check continuity between ABS actuator and electric unit (control unit) harness connector E30 terminals 1, 4 and ground.

ABS actuator and electric unit (control unit)	Ground	Continuity
1, 4	—	Yes

**OK or NG**

- OK >> ● Replace ABS actuator and electric unit (control unit).  
 ● Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".
- NG >> ● Repair or replace malfunctioning components.  
 ● Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".



**Pressure Sensor Circuit INSPECTION PROCEDURE**

NFS000QR

**1. CHECK SELF-DIAGNOSTIC RESULTS**

Check self-diagnosis results.

Self-diagnosis results
PRESS SEN CIRCUIT

Is above displayed on the self-diagnosis display?

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

**2. CHECK STOP LAMP SWITCH CONNECTOR**

1. Disconnect stop lamp switch connector and ABS actuator and electric unit (control unit) connector.
2. Check terminals for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
3. Reconnect connectors securely.
4. Start engine.
5. Repeat pumping brake pedal carefully several times, then perform the self-diagnosis again.

**OK or NG**

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

**3. CHECK STOP LAMP SWITCH**

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch harness connector E124.
3. Operate stop lamp switch and check continuity between stop lamp switch harness connector terminals.

Terminal	Condition	Continuity
3 - 4	Release stop lamp switch (When brake pedal is depressed.)	Yes
	Push stop lamp switch (When brake pedal is released.)	No

**OK or NG**

- OK >> GO TO 4.  
 NG >> Replace stop lamp switch. Refer to [BR-7, "Removal and Installation"](#).



**4. CHECK STOP LAMP SWITCH CIRCUIT**

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector E124 and ABS actuator and electric unit (control unit) connector E30.
3. Check continuity between stop lamp switch harness connector and ABS actuator and electric unit (control unit) harness connector.

ABS actuator and electric unit (control unit)	Stop lamp switch	Continuity
30	4	Yes

**OK or NG**

- OK >> GO TO 5.  
 NG >> Open or short in harness between stop lamp switch and ABS actuator and electric unit (control unit). Repair or replace applied harness.

**5. CHECK PRESSURE SENSOR**

1. Connect ABS actuator and electric unit (control unit) connector.
2. Perform "DATA MONITOR" of the "PRESS SENSOR" to check if the status is normal.

Condition	Data monitor display
When brake pedal is depressed.	-40 to 300 bar
When brake pedal is released.	Approx. 0 bar

**OK or NG**

- OK >> INSPECTION END  
 NG >> If the pressure sensor is damaged or malfunctioning, replace the ABS actuator and electric unit (control unit).

**Steering Angle Sensor Circuit  
 INSPECTION PROCEDURE**

NFS000QS

**1. CHECK SELF-DIAGNOSIS RESULTS**

Check self-diagnosis results.

Self-diagnosis results
ST ANG SEN CIRCUIT

Is above displayed on the self-diagnosis display?

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

**2. CHECK CONNECTOR**

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

**OK or NG**

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

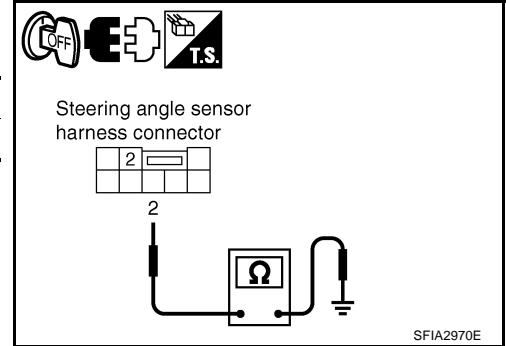
A  
B  
C  
D  
E  
G  
H  
I  
J  
K  
L  
M

**BRC**

### 3. CHECK STEERING ANGLE SENSOR HARNESS

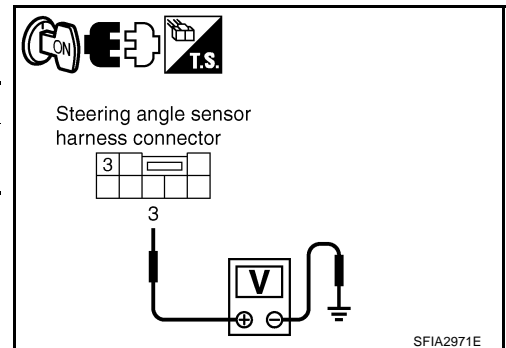
1. Check CAN communication system. Refer to [BRC-48, "CAN Communication Circuit"](#) .
2. Turn ignition switch OFF and disconnect steering angle sensor connector.
3. Check continuity between steering angle sensor harness connector M47 terminal 2 and ground.

Steering angle sensor	Ground	Continuity
2	—	Yes



4. Turn ignition switch ON and check voltage between steering angle sensor harness connector M47 terminal 3 and ground.

Steering angle sensor	Ground	Voltage
3	—	Battery voltage (Approx. 12 V)



**OK or NG**

- OK >> GO TO 4.  
 NG >> ● Repair or replace malfunctioning components.  
 ● Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

### 4. CHECK DATA MONITOR

1. Turn ignition switch OFF and connect the steering angle sensor connector and ABS actuator and electric unit (control unit) connector.
2. Select "STR ANGLE SIG" in "DATA MONITOR" and check steering angle sensor signal.

Steering condition	STR ANGLE SIG (DATA MONITOR)
Driving straight	- 2.5 ° to + 2.5 °
Turn 90° to right	Approx. + 90 °
Turn 90° to left	Approx. - 90 °

**OK or NG**

- OK >> Perform self-diagnosis.  
 NG >> ● Replace spiral cable (steering angle sensor) and adjust neutral position of steering angle sensor. Refer to [BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"](#) .  
 ● Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

## Stop Lamp Switch Circuit INSPECTION PROCEDURE

### 1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

Self-diagnosis results
STOP LAMP SW

Is above displayed on the self-diagnosis display?

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

### 2. CHECK CONNECTOR

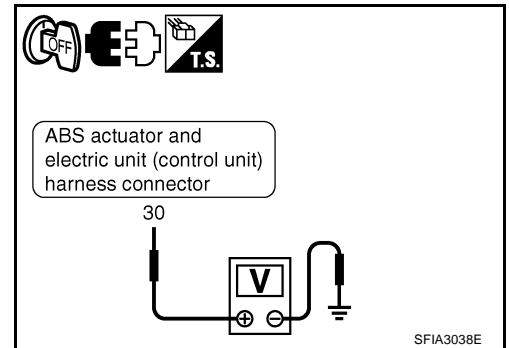
1. Turn ignition switch OFF and disconnect stop lamp switch connector E124 and ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connectors securely.
3. Start engine.
4. Repeat pumping brake pedal carefully several times, and perform self-diagnosis.

OK or NG

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

### 3. CHECK STOP LAMP SWITCH CIRCUIT

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30.
2. Check voltage between ABS actuator and electric unit (control unit) harness connector E30 terminal 30 and ground.



ABS actuator and electric unit (control unit)	Ground	Condition	Voltage
30	—	Brake pedal depressed	Battery voltage (Approx. 12 V)
		Brake pedal not depressed	Approx. 0V

OK or NG

- OK >> Perform self-diagnosis.
- NG >> ● Repair or replace stop lamp switch circuit.
  - Perform the self-diagnosis, and make sure that the result shows “NO DTC IS DETECTED”.

## Yaw Rate/Side G Sensor Circuit

### CAUTION:

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

### INSPECTION PROCEDURE

#### 1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

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

Is above displayed on the self-diagnosis display?

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

#### 2. CHECK CONNECTOR

1. Turn ignition switch OFF and disconnect yaw rate/side G sensor connector M145 and ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

OK or NG

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

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

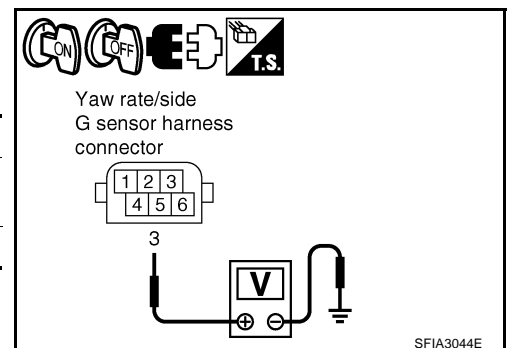
1. Turn ignition switch OFF and disconnect yaw rate/side G sensor connector M145.
2. Turn ignition switch ON or OFF and check voltage between yaw rate/side G sensor harness connector M145 terminal 3 and ground.

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

OK or NG

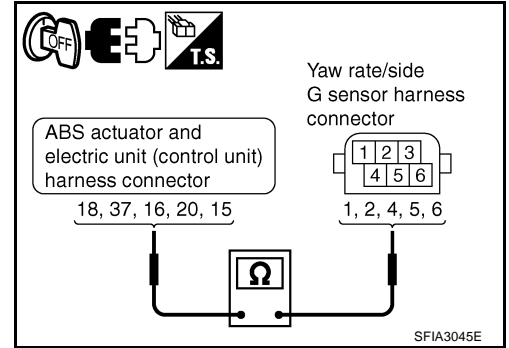
- OK >> GO TO 4.  
NG >> ● Repair or replace malfunctioning components.

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



## 4. CHECK YAW RATE/SIDE G SENSOR HARNESS

1. Turn ignition switch OFF and disconnect Yaw rate/side G sensor connector M145 and ABS actuator and electric unit (control unit) connector E30.
2. Check continuity between Yaw rate/side G sensor harness connector M145 and ABS actuator and electric unit (control unit) harness connector E30.



ABS actuator and electric unit (control unit)	Yaw rate/side G sensor	Continuity
18	1	Yes
37	2	
16	4	
20	5	
15	6	

### OK or NG

- OK >> GO TO 5.
- NG >>
  - Repair or replace malfunctioning components.
  - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

## 5. CHECK DATA MONITOR

1. Connect the Yaw rate/side G sensor connector and ABS actuator and electric unit (control unit) connector.
2. Select "YAW RATE SEN", "SIDE G-SENSOR" in "DATA MONITOR" and check Yaw rate/side G sensor signal.

Vehicle condition	YAW RATE SEN (DATA MONITOR)	SIDE G-SENSOR (DATA MONITOR)
Stopped	Approx. 0 d/s	Approx. 0 m/s <sup>2</sup>
Turning right	Negative value	Negative value
Turning left	Positive value	Positive value

### OK or NG

- OK >>
  - Replace ABS actuator and electric unit (control unit).
  - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".
- NG >>
  - Replace Yaw rate/side G sensor.
  - Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

## Brake Fluid Level Switch Circuit

**CAUTION:**

Check brake fluid level in brake reservoir tank before starting inspection.

### INSPECTION PROCEDURE

#### 1. CHECK SELF-DIAGNOSIS RESULTS

1. Check brake fluid level in brake reservoir tank. If brake fluid level is low, refill brake fluid.
2. Check self-diagnosis results.

Self-diagnosis results
BR FLUID LEVEL LOW

Is above displayed on the self-diagnosis display?

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

#### 2. CHECK CONNECTOR

1. Turn ignition switch OFF and disconnect brake fluid level switch connector E23 and ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

OK or NG

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

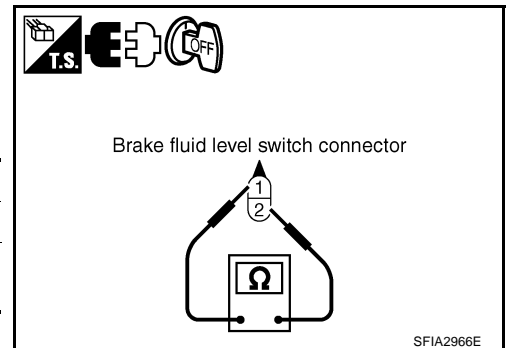
#### 3. CHECK BRAKE FLUID LEVEL SWITCH

1. Turn ignition switch OFF and disconnect brake fluid level switch connector E23.
2. Check continuity between brake fluid level switch connector E23 terminal 1 and 2.

Brake fluid level switch	Condition	Continuity
1, 2	When brake fluid is full in the reservoir tank	No
	When brake fluid is empty in the reservoir tank	Yes

OK or NG

- OK >> GO TO 4.  
 NG >> ● Brake fluid level switch is malfunctioning. Replace reservoir tank. Refer to [BR-14, "BRAKE MASTER CYLINDER"](#) .  
 ● Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".



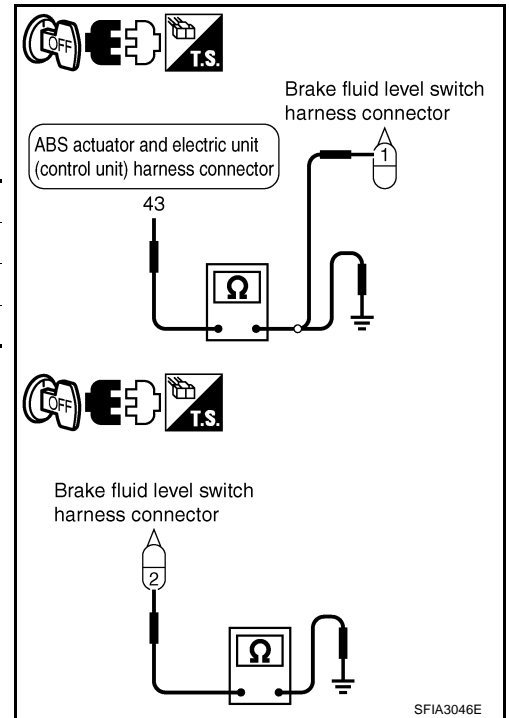
**4. CHECK BRAKE FLUID LEVEL SWITCH HARNESS**

1. Disconnect ABS actuator and electric unit (control unit) connector E30.
2. Check continuity between brake fluid level switch harness connector E23 and ABS actuator and electric unit (control unit) harness connector E30.

ABS actuator and electric unit (control unit)	Brake fluid level switch	Continuity
43	1	Yes
	Ground	No
Ground	2	Yes

**OK or NG**

- OK >> Connect connector securely and perform self-diagnosis.  
 NG >> ● Repair or replace malfunctioning components.  
 ● Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".



**RAS Control Unit Circuit (With RAS) INSPECTION PROCEDURE**

**1. CHECK SELF-DIAGNOSIS RESULTS**

Check self-diagnosis results.

Self-diagnosis results
RAS CIRCUIT

Is above displayed on the self-diagnosis display?

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

**2. CHECK RAS CONTROL UNIT CIRCUIT**

1. Perform RAS control unit self-diagnosis. Repair or replace items indicated, then perform RAS control unit self-diagnosis again. Refer to [STC-31, "SELF-DIAGNOSIS PROCEDURE"](#).
2. Perform ABS actuator and electric unit (control unit) self-diagnosis.

**OK or NG**

- OK >> INSPECTION END  
 NG >> ● Repair or replace malfunctioning components.  
 ● Perform the self-diagnosis, and make sure that the result shows "NO DTC IS DETECTED".

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**BRC**

## ICC Sensor Integrated Unit Circuit (With ICC) INSPECTION PROCEDURE

NFS000QY

### 1. CHECK SELF-DIAGNOSIS RESULTS

Check self-diagnosis results.

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Self-diagnosis results

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ACC CONT

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Is above displayed on the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

### 2. CHECK ICC SENSOR INTEGRATED UNIT CIRCUIT

1. Perform ICC sensor integrated unit self-diagnosis. Repair or replace items indicated, then perform ICC sensor integrated unit self-diagnosis again. Refer to [ACS-29, "TROUBLE DIAGNOSIS - GENERAL DESCRIPTION"](#).
2. Perform ABS actuator and electric unit (control unit) self-diagnosis.

OK or NG

OK >> INSPECTION END

NG >> ● Repair or replace malfunctioning components.

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

## CAN Communication Circuit INSPECTION PROCEDURE

NFS000R0

### 1. CHECK CONNECTOR

1. Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector E30, check terminal for deformation, disconnection, looseness, and so on. If any malfunction is found, repair or replace terminal.
2. Reconnect connector and perform self-diagnosis.

---

Self-diagnosis results

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CAN COMM CIRCUIT

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ST ANG SEN COM CIR

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ACC COMM CIRCUIT (Note)

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Note: Indicated only for vehicles with ICC.

Is above displayed on the self-diagnosis display?

YES >> Print out self-diagnosis results and go to Refer to [LAN-50, "CAN System Specification Chart"](#).

NO >> INSPECTION END



**VDC OFF Switch Circuit  
INSPECTION PROCEDURE**

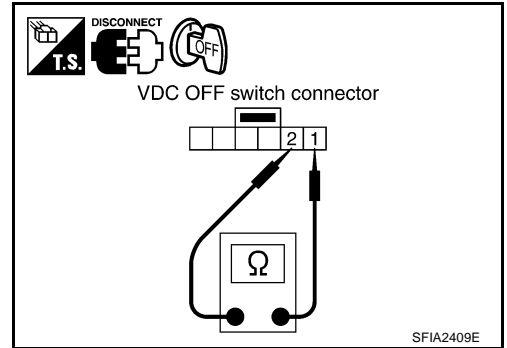
**1. CHECK VDC OFF SWITCH**

1. Turn ignition switch OFF and disconnect VDC OFF switch connector M24.
2. Check continuity between VDC OFF switch connector M24 terminal 1 and 2.

VDC OFF switch	Condition	Continuity
1, 2	VDC OFF switch ON	Yes
	VDC OFF switch OFF	No

**OK or NG**

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



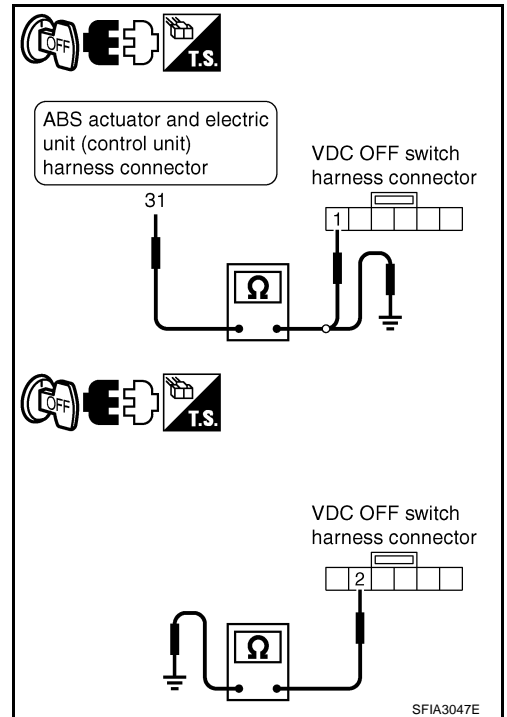
**2. CHECK VDC OFF SWITCH HARNESS**

1. Disconnect ABS actuator and electric unit (control unit) connector E30.
2. Check continuity between VDC OFF switch connector M24 and ABS actuator and electric unit (control unit) connector E30.

ABS actuator and electric unit (control unit)	VDC OFF switch	Continuity
31	1	Yes
	Ground	No
Ground	2	Yes

**OK or NG**

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



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**BRC**

**Parking Brake Switch Circuit  
INSPECTION PROCEDURE**

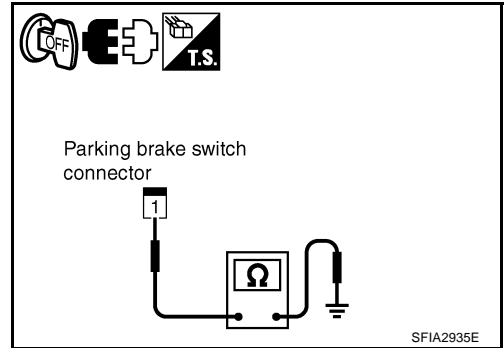
**1. CHECK PARKING BRAKE SWITCH**

1. Turn ignition switch OFF and disconnect parking brake switch connector E110.
2. Check continuity between parking brake switch connector E110 and ground.

Condition	Continuity
When the parking brake pedal is operated	Yes
When the parking brake pedal is not operated	No

**OK or NG**

- OK >> GO TO 2.  
 NG >> Parking brake switch is malfunctioning. Replace parking brake switch.



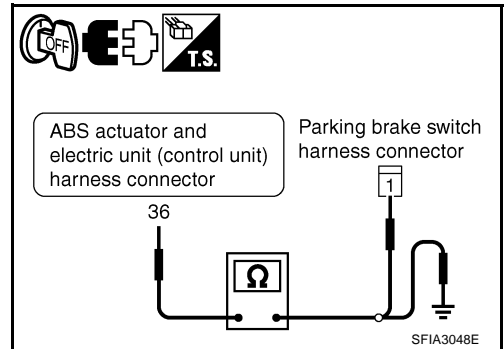
**2. CHECK PARKING BRAKE SWITCH HARNESS**

1. Disconnect ABS actuator and electric unit (control unit) connector E30.
2. Check continuity between parking brake switch connector E110 and ABS actuator and electric unit (control unit) connector E30.

ABS actuator and electric unit (control unit)	Parking brake switch	Continuity
36	1	Yes
	Ground	No

**OK or NG**

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



**Warning Lamp and Indicator Lamp Circuit  
INSPECTION PROCEDURE**

**1. CHECK SELF-DIAGNOSIS RESULTS**

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

**OK or NG**

- OK >> GO TO 2.  
 NG >> Check items displayed by self-diagnosis. Refer to [BRC-24, "Self-Diagnosis"](#) .

**2. CHECK COMBINATION METER**

Check the indication and operation of combination meter are normal. Refer to [DI-17, "Self-Diagnosis Mode of Combination Meter"](#) .

**OK or NG**

- OK >> INSPECTION END  
 NG >> Combination meter is malfunctioning. Repair or replace combination meter. Refer to [DI-5, "COMBINATION METERS"](#) .

**TROUBLE DIAGNOSIS FOR SYMPTOMS**

PFP:00007

**Excessive ABS Function Operation Frequency**

NFS000R4

**1. CHECK START**

Check front and rear brake force distribution using a brake tester. Refer to [BR-34, "SERVICE DATA AND SPECIFICATIONS \(SDS\)"](#).

OK or NG

- OK >> GO TO 2.  
NG >> Check brake system.

**2. CHECK FRONT AND REAR AXLE**

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

OK or NG

- OK >> GO TO 3.  
NG >> Repair or replace malfunctioning components.

**3. CHECK WHEEL SENSOR AND SENSOR ROTOR**

Check the following.

- Wheel sensor installation for damage.
- Sensor rotor installation for damage.
- Wheel sensor connector connection.
- Wheel sensor harness inspection.

OK or NG

- OK >> GO TO 4.  
NG >> ● Replace wheel sensor or sensor rotor.  
● Repair harness.

**4. CHECK ABS WARNING LAMP DISPLAY**

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

OK or NG

- OK >> Normal  
NG >> Perform self-diagnosis. Refer to [BRC-24, "Self-Diagnosis"](#).

**Unexpected Pedal Reaction**

NFS000R5

**1. CHECK BRAKE PEDAL STROKE**

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

Is the stroke too big?

- YES >> ● Bleed air from brake tube and hose. Refer to [BR-10, "Bleeding Brake System"](#).  
● Check brake pedal, brake booster, and master cylinder for mount play, looseness, brake system fluid leakage, etc. Refer to brake pedal: [BR-7, "COMPONENTS"](#), brake booster and master cylinder: [BR-18, "COMPONENTS"](#).
- NO >> GO TO 2.

**2. CHECK FUNCTION**

Disconnect ABS actuator and electric unit (control unit) connector to deactivate ABS. Check if braking force is normal in this condition. Connect connector after inspection.

OK or NG

- OK >> GO TO procedure 3 "CHECK WHEEL SENSOR AND SENSOR ROTOR". Refer to [BRC-51, "Excessive ABS Function Operation Frequency"](#).  
NG >> Check brake system.

## The Braking Distance Is Long

NFS000R6

### CAUTION:

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

### 1. CHECK FUNCTION

Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector to deactivate ABS. In this condition, check stopping distance. After inspection, connect connector.

OK or NG

- OK >> GO TO procedure 3 "CHECK WHEEL SENSOR AND SENSOR ROTOR". Refer to [BRC-51, "Excessive ABS Function Operation Frequency"](#) .
- NG >> Check brake system.

## ABS Function Does Not Operate

NFS000R7

### CAUTION:

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

### 1. CHECK ABS WARNING LAMP DISPLAY

Make sure that the ABS warning lamp turns OFF after ignition switch is turned on or when driving.

OK or NG

- OK >> GO TO procedure 3 "CHECK WHEEL SENSOR AND SENSOR ROTOR". Refer to [BRC-51, "Excessive ABS Function Operation Frequency"](#) .
- NG >> Perform self-diagnosis. Refer to [BRC-24, "Self-Diagnosis"](#) .

## Pedal Vibration or ABS Operation Sound Occurs

NFS000R8

### CAUTION:

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

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

### 1. SYMPTOM CHECK 1

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

Do symptoms occur?

- YES >> GO TO 2.
- NO >> Perform self -diagnosis. Refer to [BRC-24, "Self-Diagnosis"](#) .

### 2. SYMPTOM CHECK 2

Check symptoms when electrical component (headlamps, etc.) switches are operated.

Do symptoms occur?

- YES >> Check if there is a radio, antenna, antenna lead wire, or wiring close to the control unit. If there is, move it farther away.
- NO >> GO TO procedure 3 "CHECK WHEEL SENSOR AND SENSOR ROTOR". Refer to [BRC-51, "Excessive ABS Function Operation Frequency"](#) .

**Vehicle Jerks During VDC/TCS/ABS Control**

NFS000R9

**1. SYMPTOM CHECK**

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

OK or NG

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

**2. CHECK SELF-DIAGNOSIS RESULTS**

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

Are self-diagnosis results indicated?

- YES >> Check corresponding items, make repairs, and perform ABS actuator and electric unit (control unit) self-diagnosis.  
 NO >> GO TO 3.

**3. CHECK CONNECTOR**

- Turn ignition switch OFF and disconnect ABS actuator and electric unit (control unit) connector and check terminal for deformation, disconnection, looseness, etc.
- Securely connect connectors and perform ABS actuator and electric unit (control unit) self-diagnosis.

Are self-diagnosis results indicated?

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

**4. CHECK ECM AND TCM SELF-DIAGNOSIS RESULTS**

Perform ECM and TCM self-diagnosis.

Are self-diagnosis results indicated?

- YES >> Check the corresponding items.
- ECM: Refer to [EC-90, "TROUBLE DIAGNOSIS"](#) (VQ35DE), [EC-792, "TROUBLE DIAGNOSIS"](#) (VK45DE).
  - TCM: Refer to [AT-44, "TROUBLE DIAGNOSIS"](#).
- NO >> Replace ABS actuator and electric unit (control unit).

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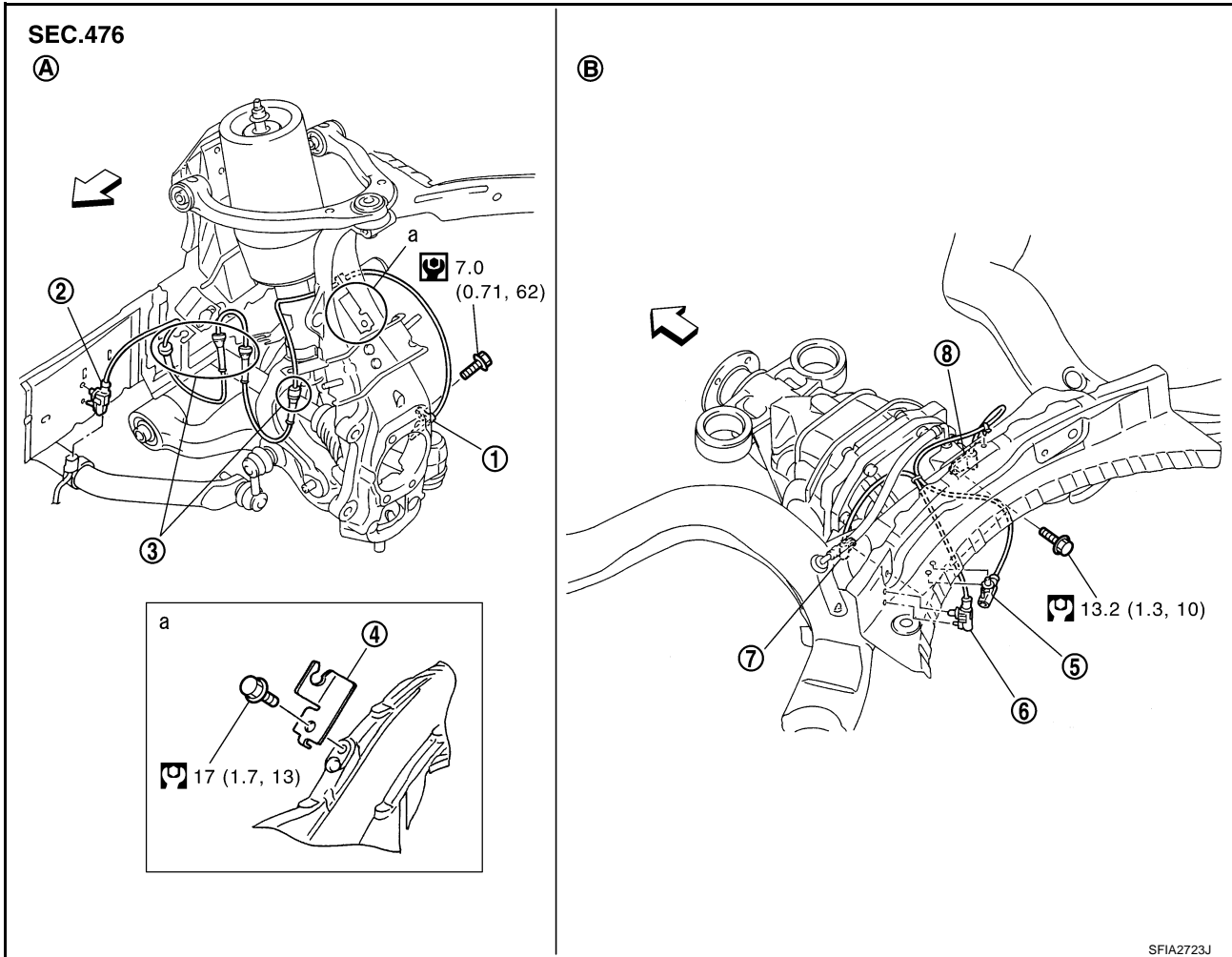
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## WHEEL SENSOR

PFP:47910

### Removal and Installation COMPONENT

NFS000RA



- |                          |                                    |                                   |
|--------------------------|------------------------------------|-----------------------------------|
| 1. Front LH wheel sensor | 2. Front LH wheel sensor connector | 3. Clamp                          |
| 4. Bracket               | 5. Rear RH wheel sensor connector  | 6. Rear LH wheel sensor connector |
| 7. Rear LH wheel sensor  | 8. Rear RH wheel sensor            |                                   |
| A. Front side            | B. Rear side                       | ⇐ : Front                         |

Refer to GI section [GI-11, "Components"](#) for symbol marks in the figure.

**NOTE:**

The above figure (front side) shows left side. Right side is the mirror image.

**REMOVAL**

Pay attention to the following when removing sensor.

**CAUTION:**

- Do not twist sensor harness as much as possible, when removing it. Pull sensors out without pulling on sensor harness.
- Take care to avoid damaging sensor edges or rotor teeth. Remove wheel sensor first before removing front or rear wheel hub. This is to avoid damage to sensor wiring and loss of sensor function.

**INSTALLATION**

Pay attention to the following when installing wheel sensor. Tighten installation bolts to the specified torques. Refer to [BRC-54, "COMPONENT"](#) .

# WHEEL SENSOR

[VDC/TCS/ABS]

- When installing, make sure there is no foreign material such as iron chips on and in the mounting hole of the wheel sensor. Make sure no foreign material has been caught in the sensor rotor. Remove any foreign material and clean the mount.
- When installing wheel sensor, be sure to press rubber grommets in until they lock at locations shown above in the figure. When installed, harness must not be twisted.

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## SENSOR ROTOR

PFP:47970

### Removal and Installation

NFS000RB

#### REMOVAL

#### CAUTION:

Do not reuse sensor rotor.

#### Front

- Sensor rotor cannot be disassembled. Remove the sensor rotor together with hub bearing assembly. Refer to [FAX-5, "REMOVAL"](#).

#### Rear

- Follow the procedure below to remove rear sensor rotor.
  - Remove side flange. Refer to [RFD-14, "SIDE OIL SEAL"](#).
  - Using a bearing replacer (suitable tool) and puller (suitable tool), remove sensor rotor from side flange.

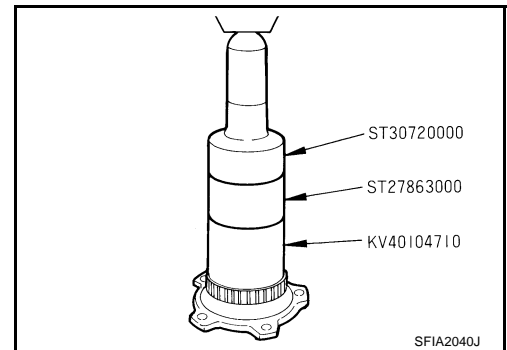
### INSTALLATION

#### Front

- Sensor rotor cannot be disassembled. Remove the sensor rotor together with hub bearing assembly. Refer to [FAX-7, "INSTALLATION"](#).

#### Rear

- Follow the procedure below to install rear sensor rotor.
  - Using a drift (SST), press rear sensor rotor onto side flange.
  - Install side flange. Refer to [RFD-14, "SIDE OIL SEAL"](#).



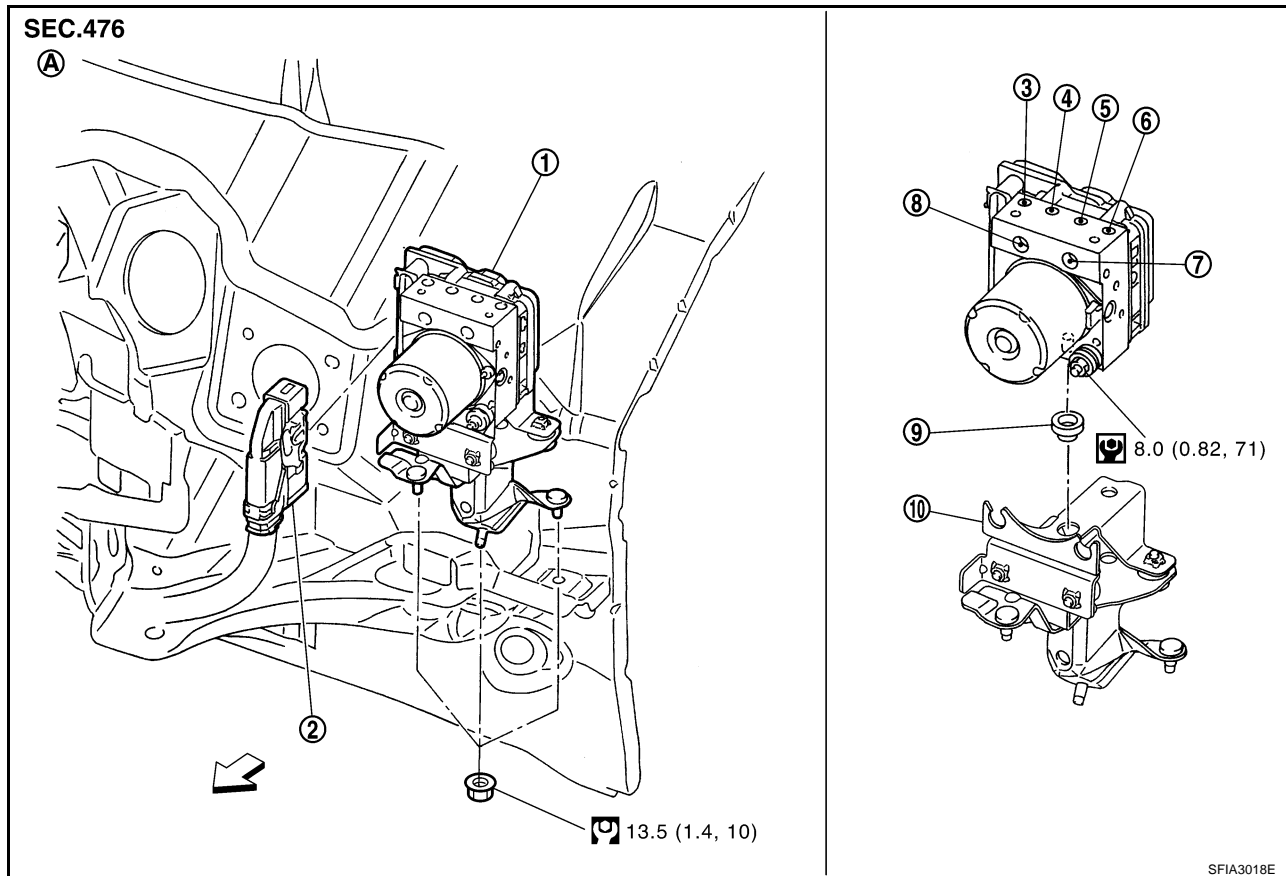


## ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

PFP:47660

### Removal and Installation COMPONENT

NFS000RC



- |  |  |                              |
|--|--|------------------------------|
| 1. ABS actuator and electric unit (control unit) | 2. Connector                           | 3. To front RH brake caliper |
| 4. To rear LH brake caliper                      | 5. To rear RH brake caliper            | 6. To front LH brake caliper |
| 7. From master cylinder primary side             | 8. From master cylinder secondary side | 9. Bushing                   |
| 10. Bracket                                      | A. Left side of dash panel             |                              |

Refer to GI section [GI-11, "Components"](#) for symbol marks in the figure.

### CAUTION:

Be careful of the following.

- Before servicing, disconnect the battery cable from negative terminal.
- To remove brake tube, use a flare nut wrench to prevent flare nuts and brake tube from being damaged. To install, use flare nut torque wrench.
- Do not apply excessive impact to ABS actuator and electric unit (control unit), such as dropping it.
- Do not remove and install actuator by holding harness.
- After work is completed, bleed air from brake tube. Refer to [BR-10, "Bleeding Brake System"](#).
- After installing harness connector in the ABS actuator and electric unit (control unit), make sure connector is securely locked.

### REMOVAL

1. Remove cowl top cover. Refer to [EI-18, "REMOVAL"](#).
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Loosen brake tube flare nuts, then remove brake tubes from ABS actuator and electric unit (control unit).
4. Remove tire.
5. Remove fender protector (rear): (front LH side). Refer to [EI-20, "REMOVAL"](#).
6. Remove ABS actuator and electric unit (control unit) bracket mounting nut.

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7. Remove ABS actuator and electric unit (control unit) from vehicle.

## INSTALLATION

Installation is the reverse order of removal.

### **CAUTION:**

When replacing ABS actuator and electric unit (control unit), make sure to adjust neutral position of steering angle sensor. Refer to [BRC-6, "Adjustment of Steering Angle Sensor Neutral Position"](#)

**G-SENSOR**

PFP:47930

**Removal and Installation**

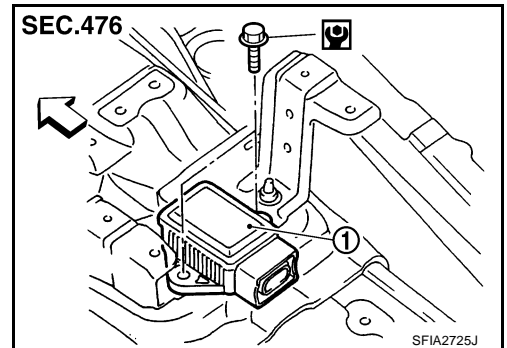
NFS000RD

**CAUTION:**

- Do not drop or strike yaw rate/side G sensor, because it has little endurance to impact.
- Do not use power tool etc., because yaw rate/side G sensor is sensitive for the impact.

**REMOVAL**

1. Remove center console. Refer to [IP-10, "Component Parts Drawing"](#).
2. Disconnect yaw rate/side G sensor harness connector.
3. Remove mounting bolts. Remove yaw rate/side G sensor (1).

**INSTALLATION**

Installation is the reverse order of removal.

**Yaw rate/side G sensor mounting bolt** : 6.5 N·m (0.66 kg·m, 58 in·lb)

A

B

C

D

E

BRC

G

H

I

J

K

L

M

## STEERING ANGLE SENSOR

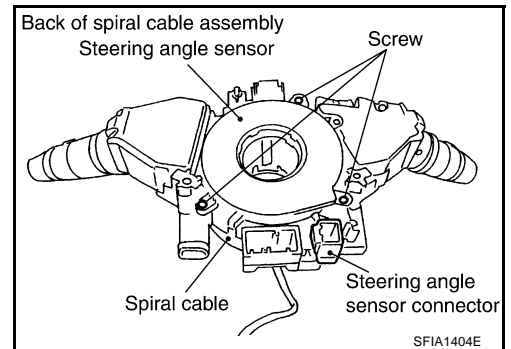
PFP:25554

### Removal and Installation

NFS000RE

#### REMOVAL

1. Remove spiral cable assembly. Refer to [SRS-44, "SPIRAL CABLE"](#) .
2. Remove steering angle sensor from spiral cable assembly.



#### INSTALLATION

Installation is the reverse order of removal.

#### **CAUTION:**

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