

SECTION **BRC**

BRAKE CONTROL SYSTEM

A
B
C
D
E

CONTENTS

ABS	
PRECAUTIONS	4
Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	4
Precautions for Brake System	4
Precautions for Brake Control	4
PREPARATION	6
Commercial Service Tools	6
SYSTEM DESCRIPTION	7
System Diagram	7
COMPONENTS FUNCTION DESCRIPTION	7
Function	7
ABS	7
EBD	8
Hydraulic Circuit Diagram	8
HYDRAULIC COMPONENTS FUNCTION DESCRIPTION	8
CAN Communication	9
SYSTEM DESCRIPTION	9
TROUBLE DIAGNOSIS	10
Fail-Safe Function	10
ABS, EBD SYSTEM	10
How to Perform Trouble Diagnosis for Quick and Accurate Repair	10
INTRODUCTION	10
DIAGNOSIS FLOW CHART	11
ASKING COMPLAINTS	12
EXAMPLE OF DIAGNOSIS SHEET	12
Component Installation Location	13
Schematic	14
Wiring Diagram — ABS —	15
Control Unit Input/Output Signal Standard	19
REFERENCE VALUE FROM CONSULT-II	19
CONSULT- II Functions (ABS)	20
CONSULT-II MAIN FUNCTION	20
CONSULT-II SETTING PROCEDURE	20
SELF-DIAG RESULT MODE	22
DATA MONITOR MODE	24
ACTIVE TEST	26
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) PART NUMBER	27
Trouble Diagnosis Chart for Symptoms	27
For Fast and Accurate Diagnosis	28
PRECAUTIONS FOR DIAGNOSIS	28
Basic Inspection	29
BRAKE FLUID LEVEL, LEAKS, AND BRAKE PAD	29
POWER SYSTEM TERMINAL LOOSENESS AND BATTERY	29
ABS WARNING LAMP AND BRAKE WARNING LAMP	29
TROUBLE DIAGNOSIS FOR SYSTEM	30
Wheel Sensor	30
INSPECTION PROCEDURE	30
ABS Actuator and Electric Unit (Control Unit)	33
INSPECTION PROCEDURE	33
Solenoid Valve Circuit	33
INSPECTION PROCEDURE	33
CAN Communication Circuit	34
INSPECTION PROCEDURE	34
Actuator Motor, Motor Relay, and Circuit	35
INSPECTION PROCEDURE	35
ABS Actuator and Electric Unit (Control Unit) Power Supply and Ground Circuit	36
INSPECTION PROCEDURE	36
G Sensor System	37
INSPECTION PROCEDURE	37
Stop Lamp Switch	38
INSPECTION PROCEDURE	38
TROUBLE DIAGNOSIS FOR SYMPTOMS	39
Excessive ABS Function Operation Frequency	39
Unexpected Pedal Reaction	39
The Braking Distance is Long	40
ABS Function Dose Not Operate	40
Pedal Vibration or ABS Operation Sound Occurs... ..	40
ABS Warning Lamp Indication is Not Normal	41

BRC

G
H
I
J
K
L
M

WHEEL SENSORS	43
Removal and Installation	43
REMOVAL	43
INSTALLATION	43
SENSOR ROTOR	44
Removal and Installation	44
REMOVAL	44
INSTALLATION	44
ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)...	45
Removal and Installation	45

VDC/TCS/ABS

PRECAUTIONS	46
Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	46
Precautions for Brake System	46
Precautions for Brake Control	46
PREPARATION	48
Commercial Service Tools	48
ON-VEHICLE SERVICE	49
Adjustment of Steering Angle Sensor Neutral Position	49
Calibration of Decel G Sensor	50
SYSTEM DESCRIPTION	51
System Diagram	51
COMPONENTS FUNCTION DESCRIPTION	51
Function	51
VDC	51
TCS	52
ABS	52
EBD	52
Hydraulic Circuit Diagram	53
HYDRAULIC COMPONENTS FUNCTION DESCRIPTION	53
CAN Communication	53
SYSTEM DESCRIPTION	53
TROUBLE DIAGNOSIS	54
Fail-Safe Function	54
VDC/TCS SYSTEM	54
ABS, EBD SYSTEM	54
How to Perform Trouble Diagnosis for Quick and Accurate Repair	54
INTRODUCTION	54
DIAGNOSIS FLOW CHART	55
ASKING COMPLAINTS	56
EXAMPLE OF DIAGNOSIS SHEET	56
Component Installation Location	57
Schematic	58
Wiring Diagram — VDC —	59
Control Unit Input/Output Signal Standard	65
REFERENCE VALUE FROM CONSULT-II	65
CONSULT-II Functions (ABS)	67
CONSULT-II MAIN FUNCTION	67
CONSULT-II SETTING PROCEDURE	68
SELF-DIAG RESULT MODE	70
DATA MONITOR MODE	72
ACTIVE TEST	75

ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) PART NUMBER	76
Trouble Diagnosis Chart for Symptoms	77
For Fast and Accurate Diagnosis	78
PRECAUTIONS FOR DIAGNOSIS	78
Basic Inspection	79
BRAKE FLUID LEVEL, LEAKS, AND BRAKE PADS	79
POWER SYSTEM TERMINAL LOOSENESS AND BATTERY	79
ABS WARNING LAMP, VDC OFF INDICATOR LAMP, BRAKE WARNING LAMP AND SLIP INDICATOR LAMP	79
TROUBLE DIAGNOSIS FOR SYSTEM	81
Wheel Sensor	81
INSPECTION PROCEDURE	81
Engine System Control Signal	83
INSPECTION PROCEDURE	83
ABS Actuator and Electric Unit (Control Unit)	84
INSPECTION PROCEDURE	84
Pressure Sensor	84
INSPECTION PROCEDURE	84
Steering Angle Sensor	85
INSPECTION PROCEDURE	85
Yaw Rate/Side/Decel G Sensor	87
INSPECTION PROCEDURE	87
Solenoid and VDC Change-Over Valve	89
INSPECTION PROCEDURE	89
Actuator Motor and Motor Relay	90
INSPECTION PROCEDURE	90
ABS Actuator and Electric Unit (Control Unit) Power Supply and Ground Circuit	91
INSPECTION PROCEDURE	91
Stop Lamp Switch	93
INSPECTION PROCEDURE	93
Brake Fluid Level Switch	93
INSPECTION PROCEDURE	93
VDC OFF Switch	95
INSPECTION PROCEDURE	95
CAN Communication Circuit	96
INSPECTION PROCEDURE	96
Component Inspection	96
VDC OFF SWITCH	96
BRAKE FLUID LEVEL SWITCH	97
TROUBLE DIAGNOSIS FOR SYMPTOMS	98
Excessive ABS Function Operation Frequency	98
Unexpected Pedal Reaction	98
The Braking Distance is Long	99
ABS Function Does Not Operate	99
Pedal Vibration or ABS Operation Sound Occurs... ..	99
Vehicle Jerks During VDC/TCS/ABS Control	100
ABS Warning Lamp Indication is Not Normal	100
Slip Indicator Lamp Indication is Not Normal	101
VDC OFF Indicator Lamp Indication is Not Normal ..	102
WHEEL SENSORS	103
Removal and Installation	103
REMOVAL	103
INSTALLATION	103

SENSOR ROTOR	104	G SENSOR	107
Removal and Installation	104	Removal and Installation	107
REMOVAL	104	REMOVAL	107
INSTALLATION	104	INSTALLATION	107
ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)	105	STEERING ANGLE SENSOR	108
Removal and Installation	105	Removal and Installation	108

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

BRC

PRECAUTIONS

PFP:00001

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

NFS000F0

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

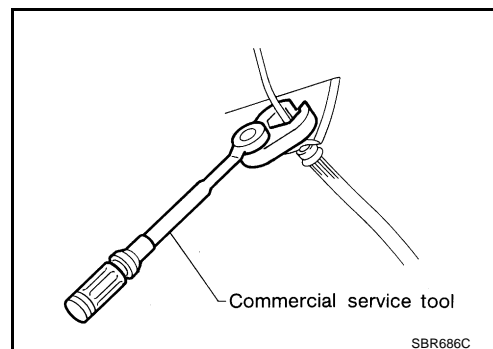
WARNING:

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

Precautions for Brake System

NFS000F1

- Recommended fluid is brake fluid “DOT 3”. Refer to [MA-10, "RECOMMENDED FLUIDS AND LUBRICANTS"](#).
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas.
- To clean or wash all parts of master cylinder, disc brake caliper and wheel cylinder, use clean brake fluid.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use flare nut wrench when removing and installing brake tube.
- Always torque brake lines when installing.
- Before working, turn ignition switch OFF and disconnect electrical connectors of ABS actuator and electric control unit or battery cables.
- Burnish the brake contact surfaces after refinishing or replacing drums or rotors, after replacing pads or linings, or if a soft pedal occurs at very low mileage.
Refer to [BR-30, "BRAKE BURNISHING PROCEDURE"](#).



WARNING:

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

Precautions for Brake Control

NFS000F2

- During ABS operation, brake pedal lightly vibrates and a mechanical noise may be heard. This is normal.
- Just after starting vehicle after ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.
- When an error is indicated by ABS or another warning lamp, collect all necessary information from customer (what symptoms are present under what conditions) and check for simple causes before starting diagnostic servicing. Besides electrical system inspection, check brake booster operation, brake fluid level, and fluid leaks.
- If tire size and type are used in an improper combination, or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- If there is a radio, antenna, or antenna lead-in wire (including wiring) near control module, ABS function may have a malfunction or error.

PRECAUTIONS

[ABS]

- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits, and improper wiring.

A

B

C

D

E

BRC

G

H

I

J

K

L

M

PREPARATION

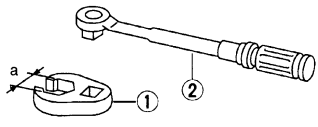
[ABS]

PREPARATION

PFP:00002

Commercial Service Tools

NFS000F3

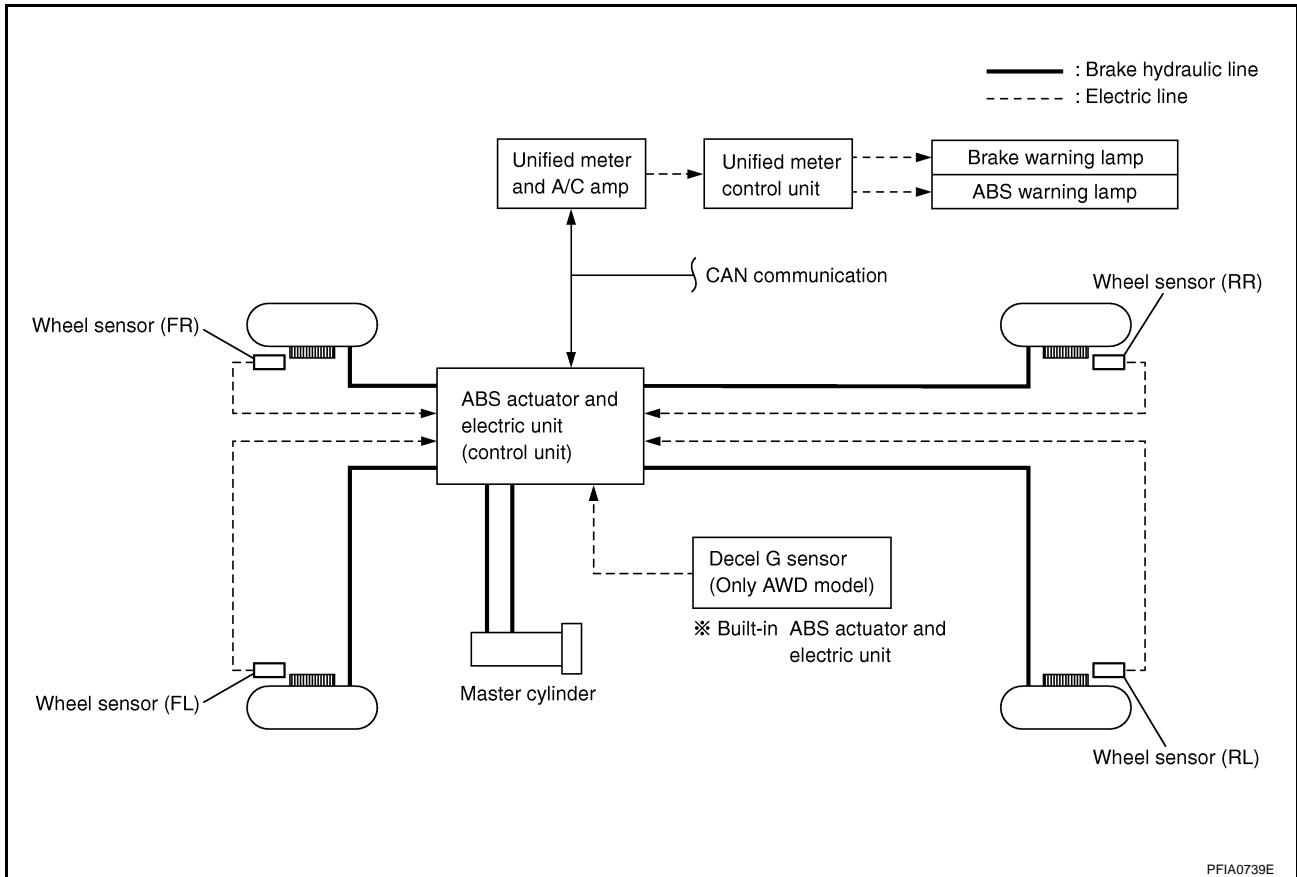
Tool name	Description
<p>1.Flare nut crowfoot a:10 mm (0.39 in)/12 mm (0.47 in) 2.Torque wrench</p>  <p>S-NT360</p>	<p>Removing and installing each brake piping</p>

SYSTEM DESCRIPTION

PFP:00000

System Diagram

NFS000F4



COMPONENTS FUNCTION DESCRIPTION

Components	Description
ABS actuator and electric unit (control unit)	<ul style="list-style-type: none"> ● Receives the information of various sensor signals and then determines the vehicle driving status. Performs the calculations of target brake fluid pressure, of brake actuator drive signal output for the ABS control. ● Receives the actuator drive signal from ABS actuator and electric unit (control unit), and then performs the brake fluid adjustment of each wheel caliper.
Decel G sensor (Only AWD models)	Detects the G of the vehicle.
Wheel sensor	Detects the rotation speed of each wheel.

Function ABS

NFS000F6

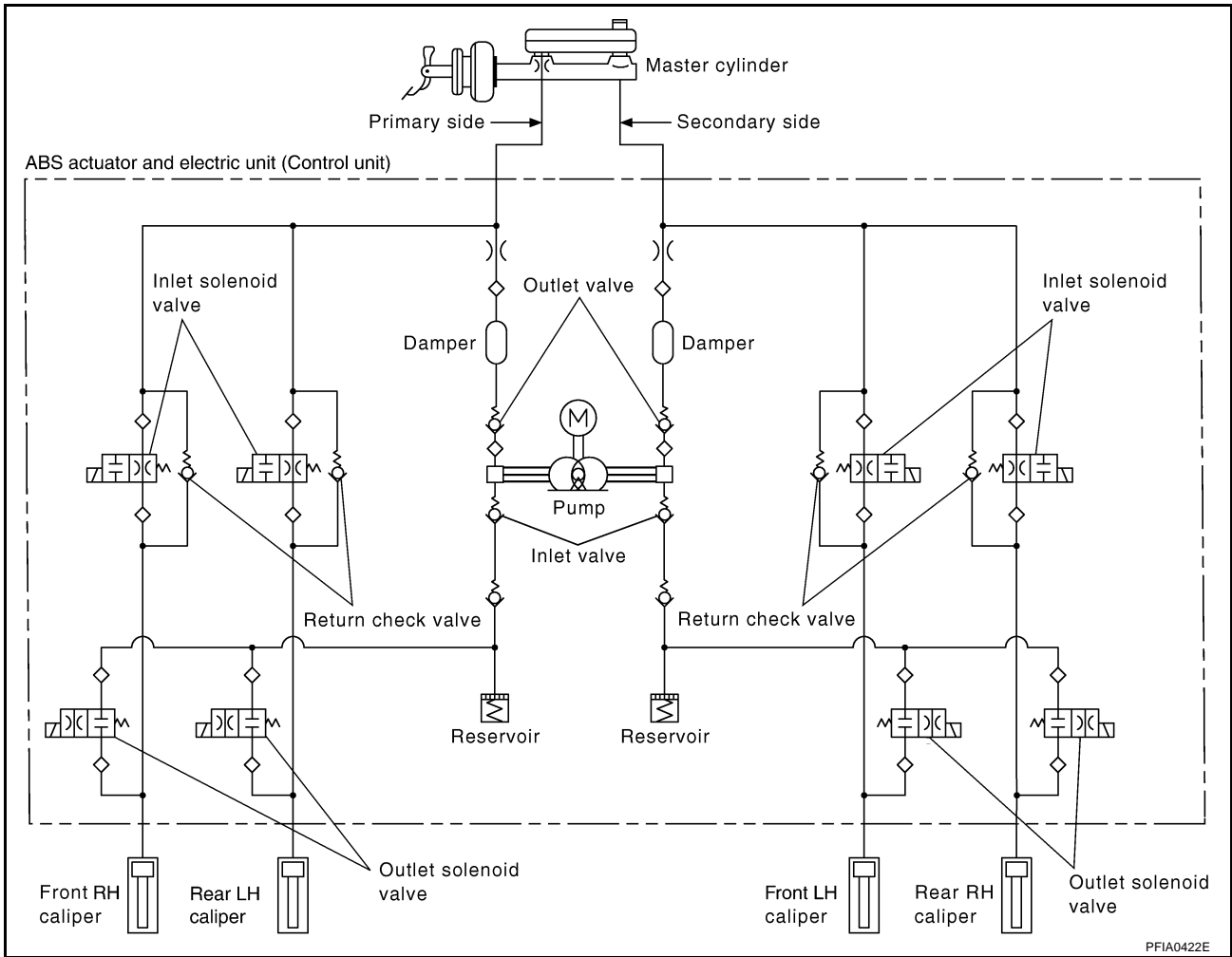
- The Anti-Lock Brake System is a function that detects wheel revolution while braking, and it improves handling stability during sudden braking by electrically preventing 4 wheel lock. Maneuverability is also improved for avoiding obstacles.
- If the electrical system malfunctions, then fail-safe function is activated, ABS becomes inoperative, and ABS warning lamp turns on.
- Electrical system diagnosis by CONSULT-II is available.
- During ABS operation, brake pedal lightly vibrates and a mechanical noise may be heard. This is normal.
- Just after starting vehicle after ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.

EBD

- Electronic Brake Distribution is a function that detects subtle slippages between front and rear wheels during braking, and it improves handling stability by electronically controlling Brake Fluid Pressure which results in reduced rear wheel slippage.
- In case of electrical system malfunction, fail-safe function is activated, EBD and ABS becomes inoperative, and ABS warning lamp and brake warning lamp are turned on.
- Electrical system diagnosis by CONSULT-II is available.
- During EBD operation, brake pedal lightly vibrates and a mechanical noise may be heard. This is normal.
- Just after starting vehicle after ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without EBD when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.

Hydraulic Circuit Diagram

NFS000F9



HYDRAULIC COMPONENTS FUNCTION DESCRIPTION

Components	Description
Solenoid valve (ABS control valve)	Increases, maintains and decreases the fluid pressure of each caliper according to the signal from ABS actuator and electric unit (control unit).
Reservoir	When decreasing the caliper pressure, temporarily saves the brake fluid drained from the caliper in order to perform the work efficiently.
Pump	Refills the brake fluid saved in the reservoir via the damper to the caliper.
Motor	Operates the pump according to the signal from ABS actuator and electric unit (control unit).
Inlet valve	Leaves the brake fluid drained from the reservoir to the pump so as not to return it to the reservoir.

SYSTEM DESCRIPTION

[ABS]

Components	Description
Outlet valve	Leaves the brake fluid drained from the pump so as not to return it to the pump.
Return check valve	When releasing the brake, bypasses with the orifice of solenoid valve, and then refills the brake fluid of caliper to the master cylinder.
Damper	Controls the pulsation of brake fluid drained from the pump, and then weakens the pedal vibration during ABS operation.

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

CAN Communication SYSTEM DESCRIPTION

NFS000FA

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-32, "CAN Communication Unit"](#).

BRC

TROUBLE DIAGNOSIS

PFP:00004

Fail-Safe Function
ABS, EBD SYSTEM

NFS000LL

In case of electrical malfunctions with ABS, ABS warning lamp will turn on. In case of electrical malfunctions with EBD, brake warning lamp and ABS warning lamp will turn on. Simultaneously, ABS become one of following conditions of Fail-Safe function.

1. For ABS malfunction, only EBD is activated and condition of vehicle is same condition of vehicles without ABS system.
2. For EBD malfunction, EBD and ABS become inoperative, and condition of vehicle is same as condition of vehicles without ABS, EBD system.

NOTE:

In step 1 shown above, self-diagnosis when ignition switch is turned ON and when vehicle starts at initial time is performed. ABS self-diagnosis noise may be hard as usual.

How to Perform Trouble Diagnosis for Quick and Accurate Repair
INTRODUCTION

NFS000FB

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

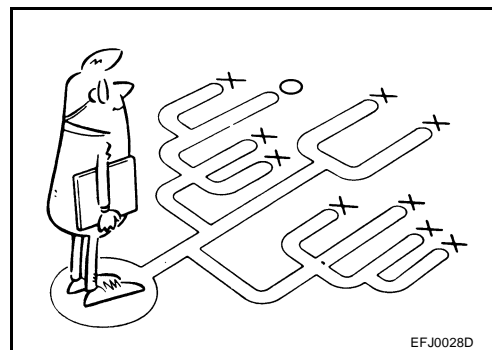
- It is also important to clarify customer complaints before inspection.

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

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

NOTE:

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

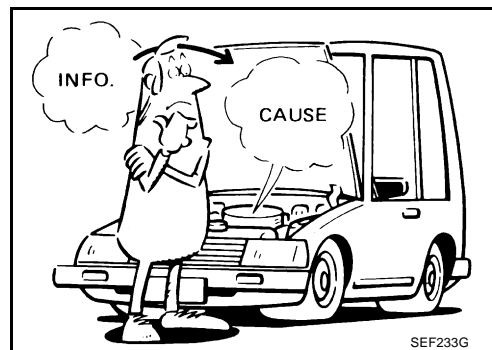


EFJ0028D

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

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

- After diagnosis, make sure to perform "erase memory". Refer to [BRC-23, "How to Erase Self-Diagnostic Results"](#).
- For an intermittent malfunction, move harness or harness connector by hand to check poor contact or false open circuit.
- Always read "GI General Information" to confirm general precautions. Refer to [GI-4, "General Precautions"](#).



SEF233G

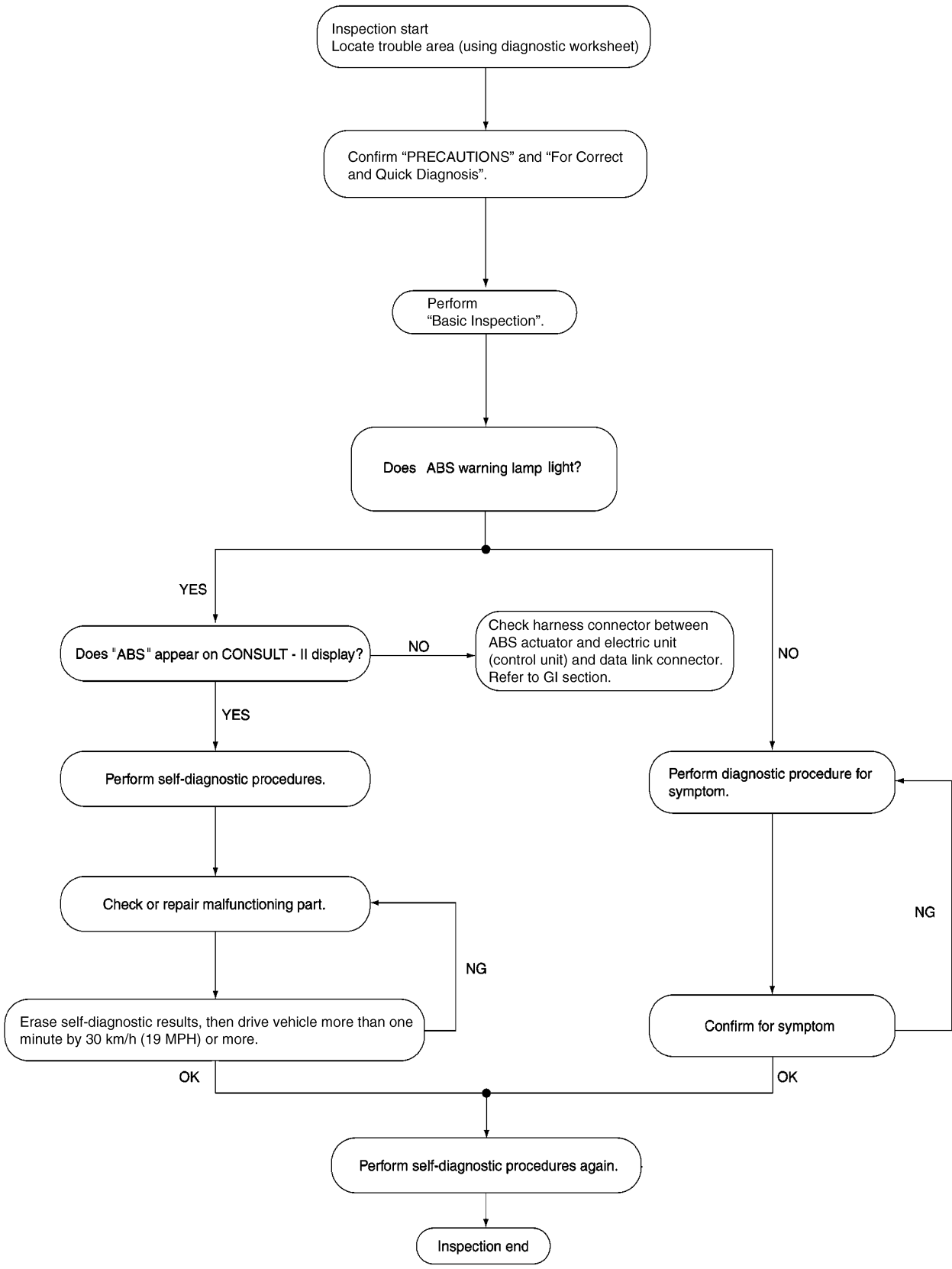
TROUBLE DIAGNOSIS

[ABS]

DIAGNOSIS FLOW CHART

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

BRC



SFIA3270E

TROUBLE DIAGNOSIS

[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 the diagnosis sheet so as not to miss information.

KEY POINTS

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

SBR339B

EXAMPLE OF DIAGNOSIS SHEET

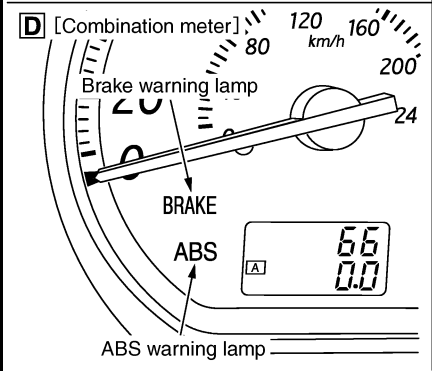
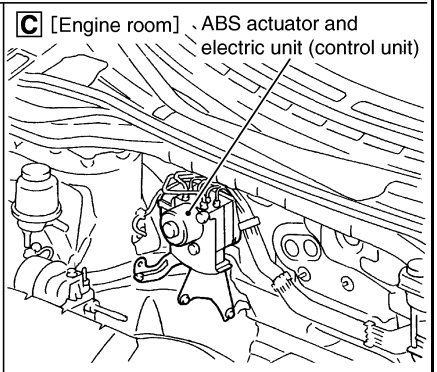
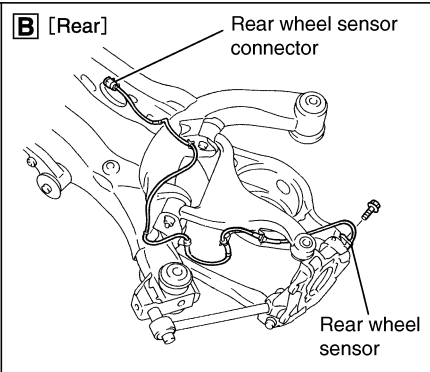
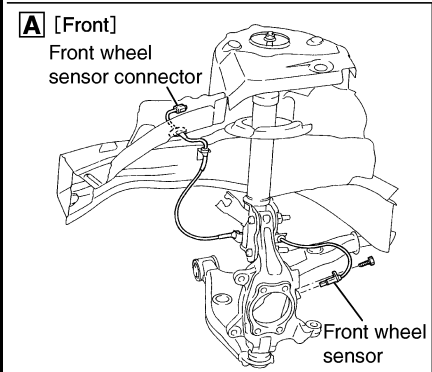
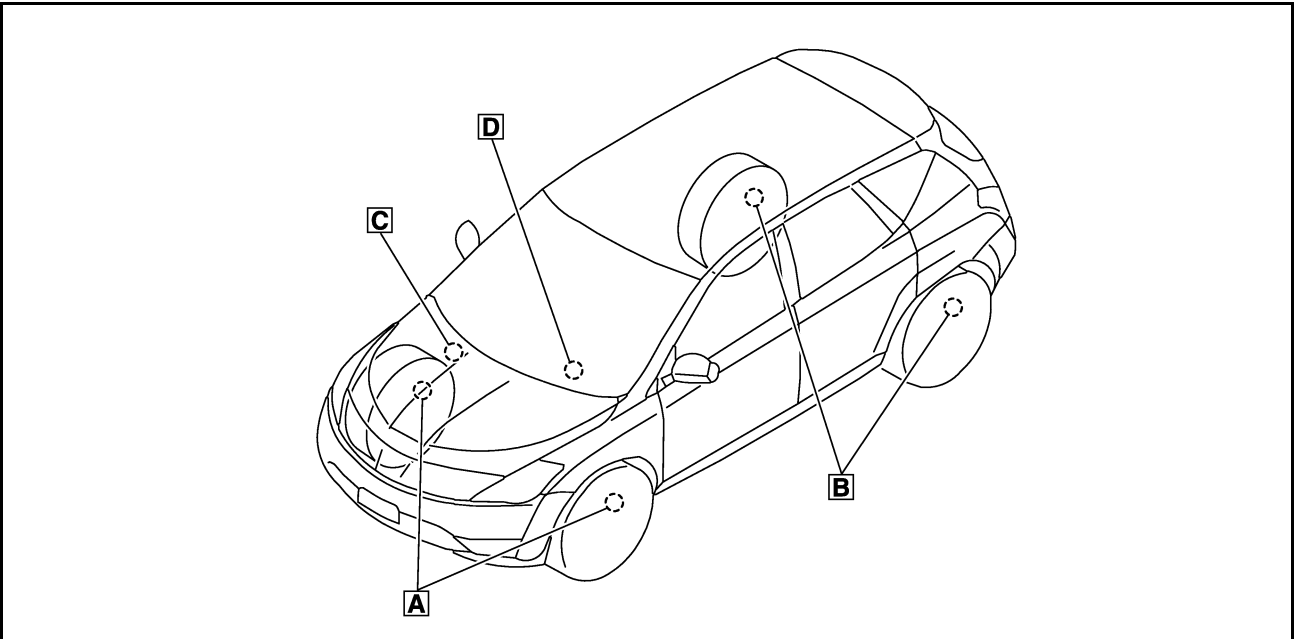
Customer name MR/MS	Model & Year	VIN	
Engine #	Trans.	Mileage	
Incident Date	Manuf. Date	In Service Date	
Symptoms	<input type="checkbox"/> Noise and vibration (from engine compartment) <input type="checkbox"/> Noise and vibration (from axle)	<input type="checkbox"/> Warning / Indicator activate	<input type="checkbox"/> Firm pedal operation <input type="checkbox"/> Large stroke pedal operation
	<input type="checkbox"/> 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		

SFIA3264E

Component Installation Location

NFS000FC

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



PFA0741E

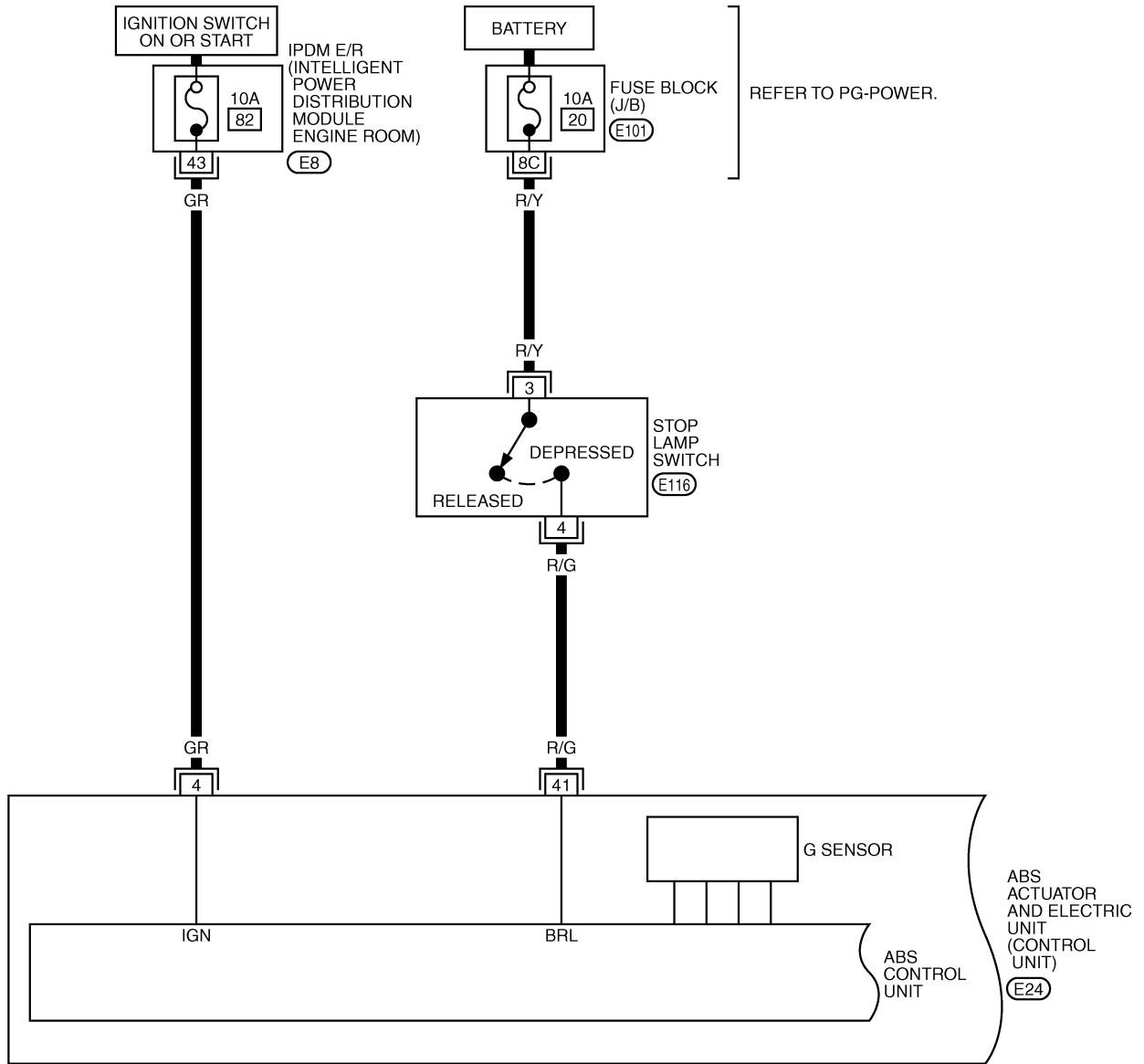
TROUBLE DIAGNOSIS

[ABS]

Wiring Diagram — ABS —

NFS000FE

BRC-ABS-01



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

37	36	35	34	33
44	43	42	41	40
39	38			

E8
W



32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
1	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

E24
B

4	3
2	1

E116
W

REFER TO THE FOLLOWING.

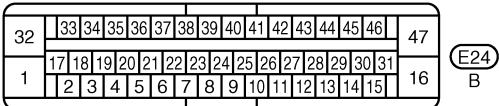
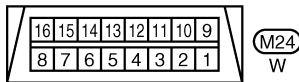
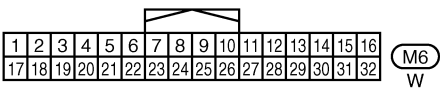
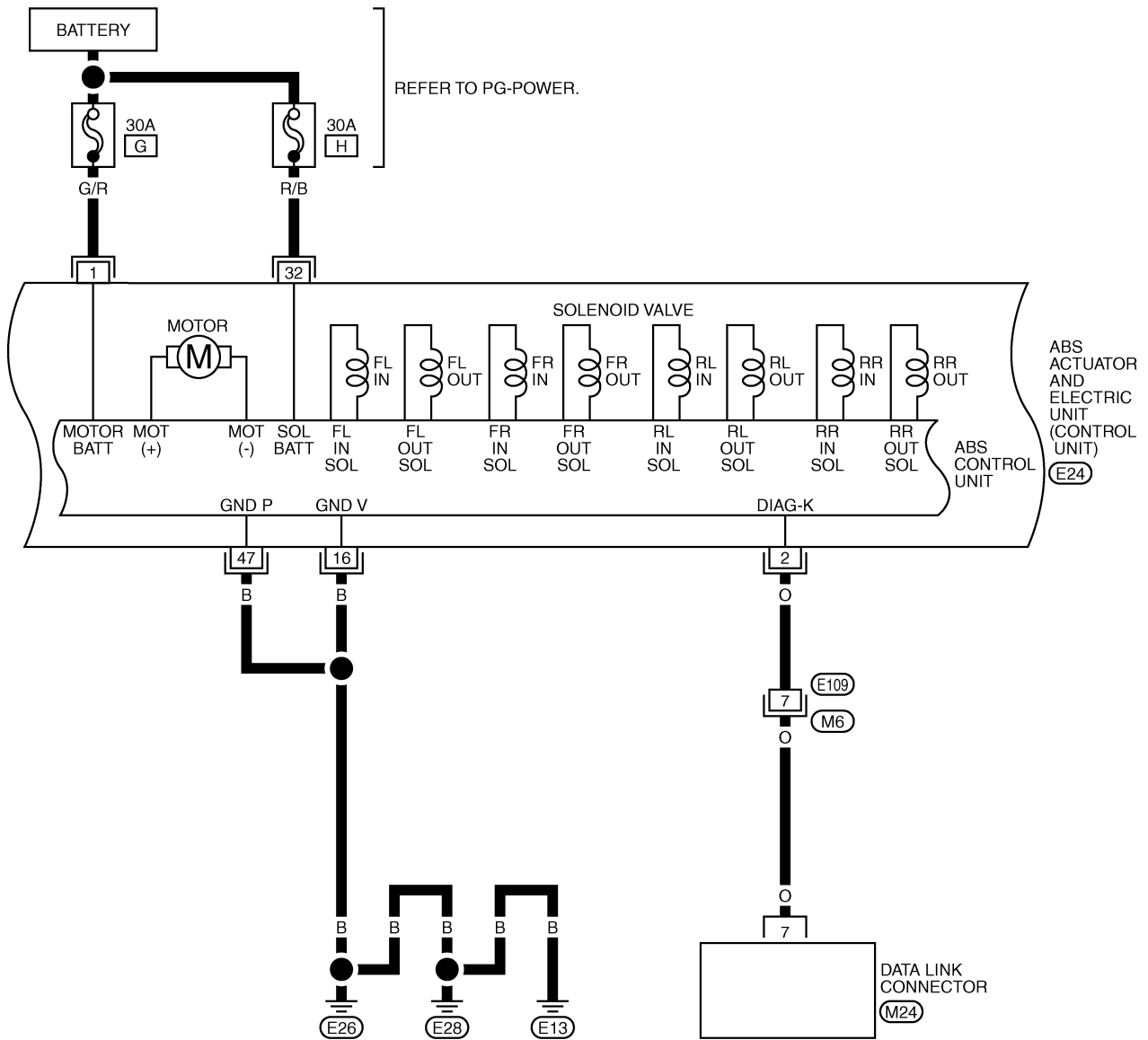
E101 - FUSE BLOCK-JUNCTION BOX (J/B)

TFWB0117E

TROUBLE DIAGNOSIS

[ABS]

BRC-ABS-02

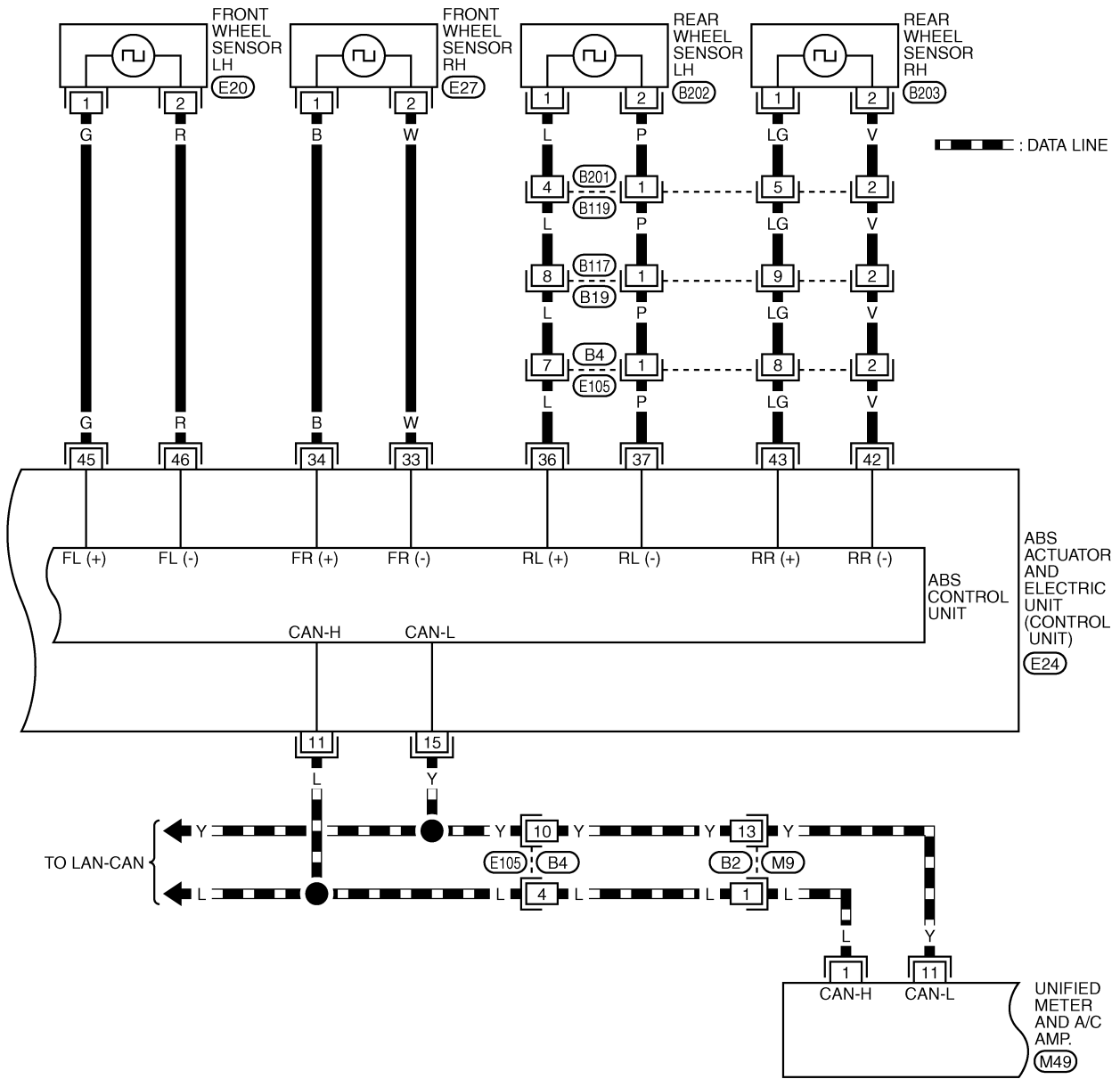


TFWB0035E

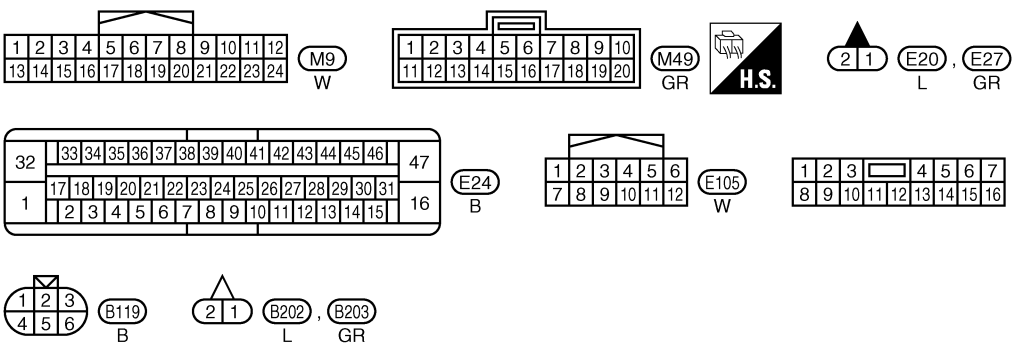
TROUBLE DIAGNOSIS

[ABS]

BRC-ABS-03



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

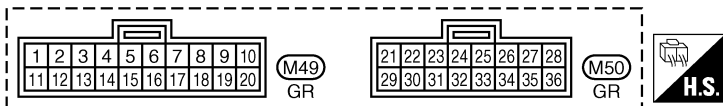
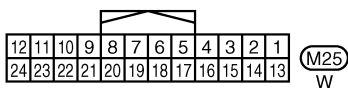
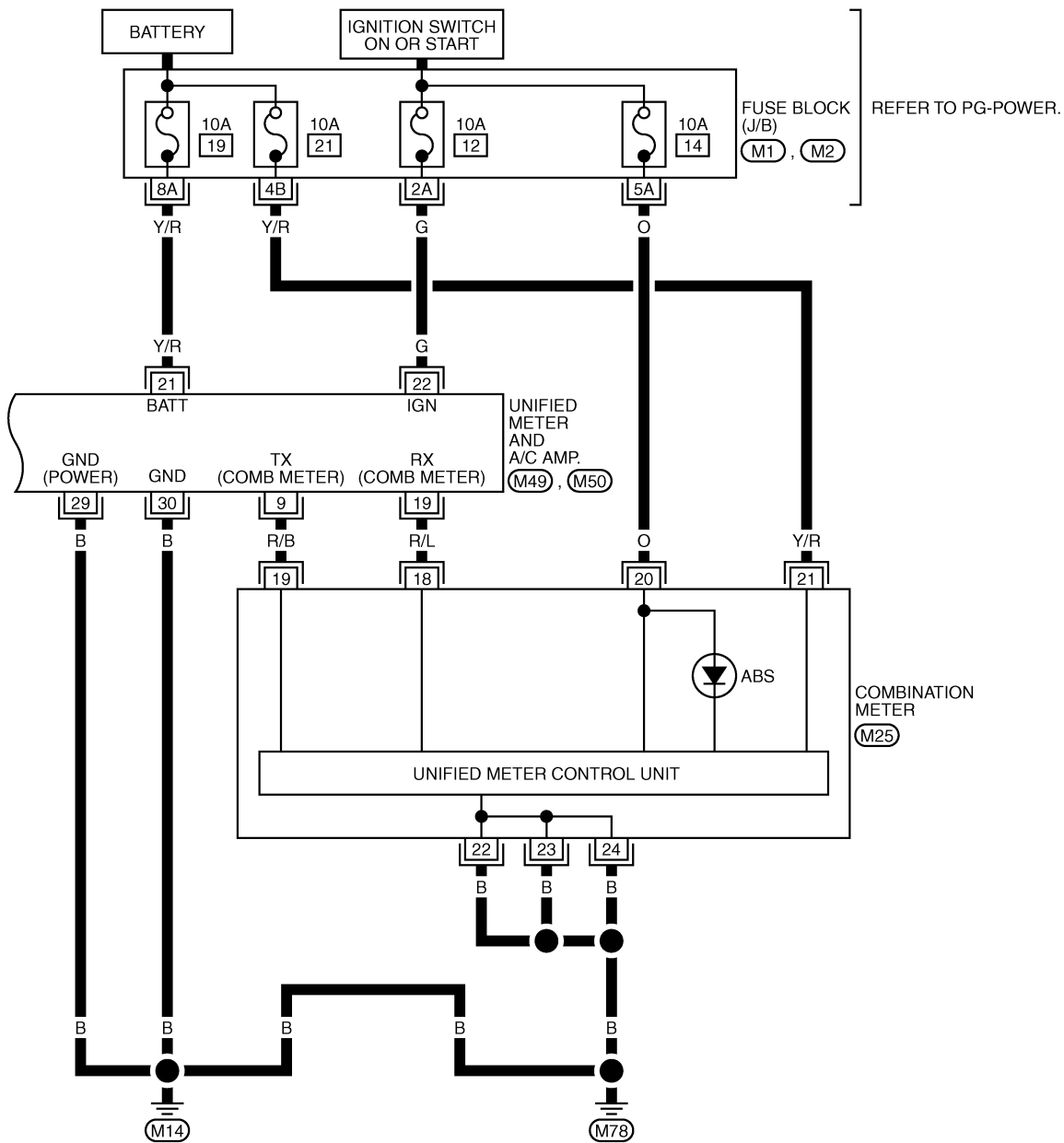


TFWB0036E

TROUBLE DIAGNOSIS

[ABS]

BRC-ABS-04



REFER TO THE FOLLOWING.
 (M1), (M2) - FUSE BLOCK-
 JUNCTION BOX (J/B)

TFWA0064E

TROUBLE DIAGNOSIS

[ABS]

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

NFS000FF

CAUTION:

The display shows 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		Check item
		Condition	Reference value in normal operation	
FR RH SENSOR FR LH SENSOR RR RH SENSOR RR LH SENSOR	Wheel speed	Vehicle stopped	0 [km/h]	BRC-30, "Wheel Sensor"
		Vehicle running (Note 1)	Almost in accordance with speedometer display (within ±10 %)	
BATTERY VOLT	Battery voltage supplied to ABS actuator and electric unit (control unit)	Ignition switch ON	10 - 16 V	BRC-36, "ABS Actuator and Electric Unit (Control Unit) Power Supply and Ground Circuit"
STOP LAMP SW	Brake pedal operation	Brake pedal depressed	ON	-
		Brake pedal not depressed	OFF	
ABS WARN LAMP	ABS warning lamp ON condition (Note 2)	ABS warning lamp ON	ON	-
		ABS warning lamp OFF	OFF	
MOTOR RELAY	Operation status of motor and motor relay	Ignition switch ON or engine running (ABS not operated)	OFF	BRC-35, "Actuator Motor, Motor Relay, and Circuit"
		Ignition switch ON or engine running (ABS operated)	ON	
ACTUATOR RLY	Actuator relay operation status	Vehicle stopped (Ignition switch ON)	OFF	BRC-35, "Actuator Motor, Motor Relay, and Circuit"
		Vehicle stopped (Engine running)	ON	
FR LH IN SOL FR LH OUT SOL FR RH IN SOL FR RH OUT SOL RR RH IN SOL RR RH OUT SOL RR LH IN SOL RR LH OUT SOL	Solenoid valve operation	Actuator (solenoid) is active ("ACTIVE TEST" with CONSULT-II) or actuator relay is inactive (in fail-safe mode).	ON	BRC-33, "Solenoid Valve Circuit"
		When actuator (solenoid) is not active and actuator relay is active (ignition switch ON).	OFF	
ABS FAIL SIG EBD FAIL SIG	Fail signal status	ABS fail EBD fail	ON	ABS system EBD system
		EBD normal ABS normal	OFF	
DECEL G-SEN	Longitudinal acceleration detected by Decel G-Sensor	Vehicle stopped	Approx. 0 G	BRC-37, "G Sensor System"
		Vehicle running	-1.7 - +1.7 G	
EBD WARN LAMP	Brake warning lamp on condition (Note 3)	Brake warning lamp ON	ON	-
		Brake warning lamp OFF	OFF	
EBD SIGNAL	EBD operation	EBD active	ON	-
		EBD not active	OFF	
ABS SIGNAL	ABS operation	ABS active	ON	-
		ABS not active	OFF	

Note 1: Confirm tire pressure is normal.

Note 2: ON/OFF timing of ABS warning lamp

ON: For approximately 2 seconds after ignition switch is turned ON, or when a malfunction is detected.

OFF: Approximately 2 seconds after ignition switch is turned ON (when system is in normal operation).

Note3: Serves as EBD warning lamp.

CONSULT- II Functions (ABS)

CONSULT-II MAIN FUNCTION

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

Diagnostic test mode	Function	Reference
SELF-DIAG RESULTS	Self-diagnostic results can be read and erased quickly.	BRC-22
DATA MONITOR	Input/Output data in the ABS actuator and electric unit (control unit) can be read.	BRC-24
CAN DIAG SUPPORT MNTR	The results of transmit/receive diagnosis of communication can be read.	LAN-17
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.	BRC-26
FUNCTION TEST	This mode is used to inform customers when their vehicle condition requires periodic maintenance.	—
ECU PART NUMBER	ABS actuator and electric unit (control unit) part number can be read.	BRC-27

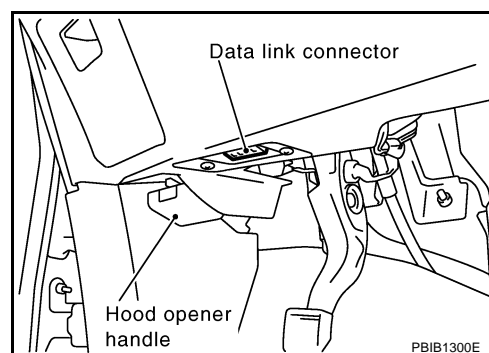
CONSULT-II SETTING PROCEDURE

CAUTION:

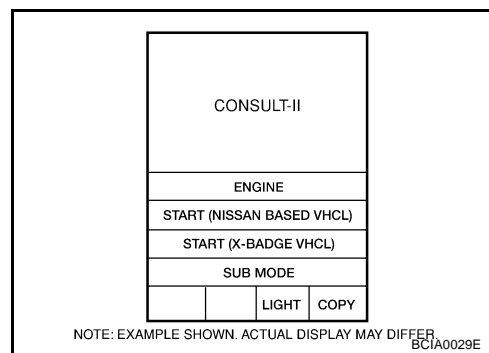
If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which performs CAN communication.

- For further information, see the CONSULT-II Operation Manual.

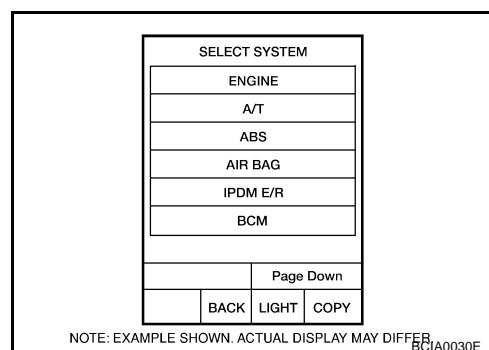
- Turn ignition switch "OFF".
- Connect CONSULT-II and CONSULT-II CONVERTER to data link connector on vehicle.
- Turn ignition switch "ON".



- Touch "START (NISSAN BASED VHCL)".



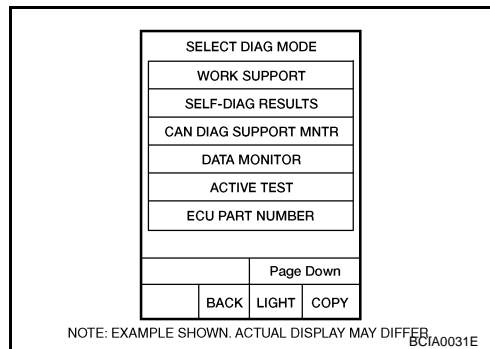
- Touch "ABS".
If "ABS" is not indicated, go to [GI-39. "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).



TROUBLE DIAGNOSIS

[ABS]

6. Select the required diagnostic location from the "SELECT DIAG MODE" screen.



A

B

C

D

E

BRC

G

H

I

J

K

L

M

SELF-DIAG RESULT MODE

Description

If an error is detected in system, ABS warning lamp and brake warning lamp on combination meter turns on. In this case, perform self-diagnosis as follows.

Operation Procedure

1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [BRC-20, "CONSULT-II SETTING PROCEDURE"](#).
2. Start engine and drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute.
3. Stop vehicle. With engine at idle, touch "SELF-DIAG RESULTS". Display shows malfunction experienced since the last erasing operation.

CAUTION:

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

4. Self-diagnosis results are displayed. (If necessary, touch "PRINT" to print self-diagnosis result.)
 - When "NO FAILURE" is shown, check ABS warning lamp. Refer to [BRC-28, "For Fast and Accurate Diagnosis"](#).
 - CONSULT-II self-diagnosis results are displayed without regard to occurrence timing. In some cases later ones (timing value is small) appear on next screen.
5. Go to appropriate "Inspection" chart according to "Display Item List", and repair or replace as necessary.
6. Start engine and drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute.

CAUTION:

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

Display Item List

Items (CONSULT-II screen terms)	Malfunction detecting condition	Check item
FR LH SENSOR-1 [C1104]	Circuit of front LH wheel sensor is open, or shorted or sensor power voltage is unusual.	BRC-30, "Wheel Sensor" (Note 1)
RR RH SENSOR-1 [C1101]	Circuit of rear RH wheel sensor is open, or shorted or sensor power voltage is unusual.	
FR RH SENSOR-1 [C1103]	Circuit of front RH wheel sensor is open, or shorted or sensor power voltage is unusual.	
RR LH SENSOR-1 [C1102]	Circuit of rear LH wheel sensor is open, or shorted or sensor power voltage is unusual.	
FR LH SENSOR-2 [C1108]	ABS actuator and electric unit (control unit) can not identify sensor pulses, because of large gap between wheel sensor and sensor rotor.	
RR RH SENSOR-2 [C1105]	ABS actuator and electric unit (control unit) can not identify sensor pulses, because of large gap between wheel sensor and sensor rotor.	
FR RH SENSOR-2 [C1107]	ABS actuator and electric unit (control unit) can not identify sensor pulses, because of large gap between wheel sensor and sensor rotor.	
RR LH SENSOR-2 [C1106]	ABS actuator and electric unit (control unit) can not identify sensor pulses, because of large gap between wheel sensor and sensor rotor.	

TROUBLE DIAGNOSIS

[ABS]

Items (CONSULT-II screen terms)	Malfunction detecting condition	Check item
FR LH IN ABS SOL [C1120]	Circuit of front LH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	BRC-33, "Solenoid Valve Circuit"
FR LH OUT ABS SOL [C1121]	Circuit of front LH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
RR RH IN ABS SOL [C1126]	Circuit of rear RH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
RR RH OUT ABS SOL [C1127]	Circuit of rear RH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
FR RH IN ABS SOL [C1122]	Circuit of front RH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
FR RH OUT ABS SOL [C1123]	Circuit of front RH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
RR LH IN ABS SOL [C1124]	Circuit of rear LH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
RR LH OUT ABS SOL [C1125]	Circuit of rear LH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	BRC-35, "Actuator Motor, Motor Relay, and Circuit"
PUMP MOTOR (Note 2) [C1111]	During actuator motor operation with ON, when actuator motor turns OFF or when control line for actuator motor relay is open. During actuator motor operation with OFF, when actuator motor turns ON or when control line for relay is shorted to ground.	
ABS SENSOR [ABNORMAL] [C1115]	Wheel sensor input is malfunction.	BRC-30, "Wheel Sensor" (Note 1)
BATTERY VOLTAGE [ABNORMAL] [C1109]	ABS actuator and electric unit (control unit) power voltage is too low.	BRC-36, "ABS Actuator and Electric Unit (Control Unit) Power Supply and Ground Circuit"
CONTROLLER FAILURE [C1110]	Internal malfunction of ABS actuator and electric unit (control unit)	BRC-33, "ABS Actuator and Electric Unit (Control Unit)"
G - SENSOR [C1113] (Only AWD models)	Decel G sensor is malfunctioning, or signal line of Decel G- sensor is open or shorted.	BRC-37, "G Sensor System"
CAN COMM CIRCUIT [U1000]	<ul style="list-style-type: none"> CAN communication line is open or shorted. ABS actuator and electric unit (control unit) internal malfunction Battery voltage for EMC is suddenly interrupted for approximately 0.5 seconds or more. 	BRC-34, "CAN Communication Circuit" (Note 2)
ACTUATOR RLY [C1140]	<ul style="list-style-type: none"> Actuator solenoid valve relay is ON, even if control unit sends off signal. Actuator solenoid valve relay is OFF, even if control unit sends on signal. 	-

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 approximately 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 errors are detected in several systems, including CAN communication system [U1000], troubleshoot CAN communication system.

How to Erase Self-Diagnostic Results

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

TROUBLE DIAGNOSIS

[ABS]

CAUTION:

If memory cannot be erased, perform applicably diagnosis.

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

DATA MONITOR MODE

Operation Procedure

1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [BRC-20, "CONSULT-II SETTING PROCEDURE"](#).
2. Touch "DATA MONITOR".
3. Select from "SELECT MONITOR ITEM", screen of data monitor mode is displayed.

NOTE:

When malfunction is detected, CONSULT-II performs REAL-TIME DIAGNOSIS.

Also, any malfunction detected while in this mode will be displayed at real time.

Display Item List

×: Applicable –: Not applicable

Data monitor item (Unit)	SELECT MONITOR ITEM			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
FR RH SENSOR (km/h)	×	×	×	Wheel speed calculated by front RH wheel sensor signal is displayed.
FR LH SENSOR (km/h)	×	×	×	Wheel speed calculated by front LH wheel sensor signal is displayed.
RR RH SENSOR (km/h)	×	×	×	Wheel speed calculated by rear RH wheel sensor signal is displayed.
RR LH SENSOR (km/h)	×	×	×	Wheel speed calculated by real LH sensor signal is displayed.
BATTERY VOLT (V)	×	×	×	Voltage supplied to ABS actuator and electric unit (control unit) is displayed.
STOP LAMP SW (ON/OFF)	×	×	×	Stop lamp switch (ON/OFF) status is displayed.
ABS WARN LAMP (ON/OFF)	–	×	×	ABS warning lamp (ON/OFF) status is displayed.
FR LH IN SOL (ON/OFF)	–	×	×	Front LH IN ABS solenoid (ON/OFF) status is displayed.
FR LH OUT SOL (ON/OFF)	–	×	×	Front LH OUT ABS solenoid (ON/OFF) status is displayed.
RR RH IN SOL (ON/OFF)	–	×	×	Rear RH IN ABS solenoid (ON/OFF) status is displayed.
RR RH OUT SOL (ON/OFF)	–	×	×	Rear RH OUT ABS solenoid (ON/OFF) status is displayed.
FR RH IN SOL (ON/OFF)	–	×	×	Front RH IN ABS solenoid (ON/OFF) status is displayed.
FR RH OUT SOL (ON/OFF)	–	×	×	Front RH OUT ABS solenoid (ON/OFF) status is displayed.
RR LH IN SOL (ON/OFF)	–	×	×	Rear LH IN ABS solenoid (ON/OFF) status is displayed.
RR LH OUT SOL (ON/OFF)	–	×	×	Rear LH OUT ABS solenoid (ON/OFF) status is displayed.
MOTOR RELAY (ON/OFF)	–	×	×	ABS motor relay signal (ON/OFF) status is displayed.
ACTUATOR RLY (ON/OFF)	–	×	×	ABS actuator relay signal (ON/OFF) status is displayed.

TROUBLE DIAGNOSIS

[ABS]

Data monitor item (Unit)	SELECT MONITOR ITEM			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
ABS FAIL SIG (ON/OFF)	-	-	×	ABS fail signal (ON/OFF) status is displayed.
EBD FAIL SIG (ON/OFF)	-	-	×	EBD fail signal (ON/OFF) status is displayed.
EBD SIGNAL (ON/OFF)	-	-	×	EBD operation (ON/OFF) status is displayed.
ABS SIGNAL (ON/OFF)	-	-	×	ABS operation (ON/OFF) status is displayed.
DECEL G SEN (G) (Only AWD models)	×	×	×	Decel acceleration detected by Decel G-sensor is displayed.
EBD WARN LAMP (ON/OFF)	-	-	×	Brake warning lamp (ON/OFF) status is displayed. (Note)

NOTE:

Serves as EBD warning lamp.

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

BRC

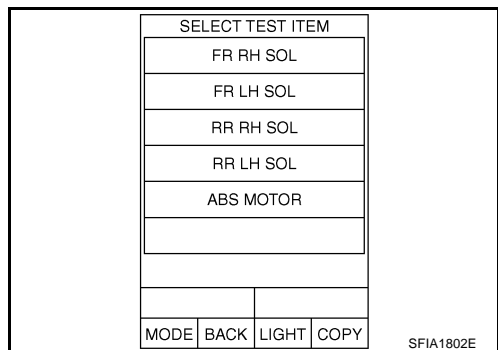
ACTIVE TEST

CAUTION:

- Do not perform active test while driving vehicle.
- Make sure to completely bleed air from brake system.
- Active test can not be performed when ABS warning lamp is on.
- ABS warning lamp and Brake warning lamp turn on during active test.

Operation Procedure

1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [BRC-20, "CONSULT-II SETTING PROCEDURE"](#).
2. Touch "ACTIVE TEST".
3. Test item selection screen is displayed.
4. Touch necessary test item.
5. With "SELECT TEST SIGNALS" display shown in reverse, touch "START".
6. "ACTIVE TEST" screen will be displayed, so conduct following test.

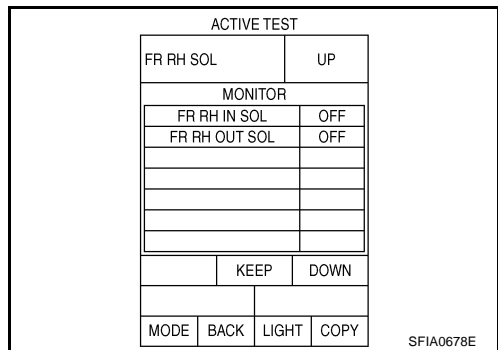


Solenoid Valve

CAUTION:

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

1. For ABS solenoid valve, touch "UP", "KEEP", and "DOWN". Then use screen monitor to check that solenoid valve operates as shown in Solenoid Valve Operation Chart. Refer to "Solenoid Valve Operation Chart".



Solenoid Valve Operation Chart

Operation	ABS solenoid valve		
	UP	KEEP	DOWN
FR RH IN SOL	OFF	ON	ON
FR RH OUT SOL	OFF	OFF	ON*
FR LH IN SOL	OFF	ON	ON
FR LH OUT SOL	OFF	OFF	ON*
RR RH IN SOL	OFF	ON	ON
RR RH OUT SOL	OFF	OFF	ON*
RR LH IN SOL	OFF	ON	ON
RR LH OUT SOL	OFF	OFF	ON*

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

NOTE:

- When active test is performed while depressing pedal, pedal depression amount will change, but this is normal.

TROUBLE DIAGNOSIS

[ABS]

- Approximately 10 seconds after operation is begun, "TEST STOP" will be displayed.
- To perform retest after "TEST STOP" is displayed, touch "BACK" and conduct the test from Step 6.

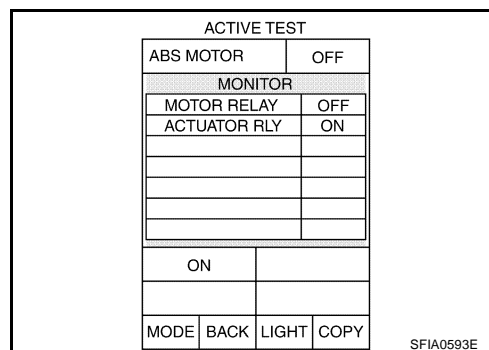
ABS Motor

Touch "ON", "OFF" on display screen and make sure ABS motor relay is operating as shown in table below.

Operation	ON	OFF
ABS motor relay	ON	OFF
ABS actuator relay	ON	ON

NOTE:

- When active test is performed while depressing pedal, pedal depression amount will change, but this is normal.
- Approximately 10 seconds after operation has begun, "TEST STOP" will be displayed.
- To perform a retest after "TEST STOP" is displayed, touch "BACK" and perform test from step 6.



ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) PART NUMBER

Ignore the ABS actuator and electric unit (control unit) part number displayed in the "ECU PART NUMBER". Refer to parts catalog to order the ABS actuator and electric unit (control unit).

Trouble Diagnosis Chart for Symptoms

NFS000KM

If ABS warning lamp, turn ON, perform self-diagnosis. Refer to [BRC-22. "SELF-DIAG RESULT MODE"](#).

Symptom	Check item	Reference Page
Excessive ABS function operation frequency	Brake force distribution	BRC-39
	Looseness of front and rear axle	
	Wheel sensor and rotor system	
Unexpected pedal reaction	Brake pedal stroke	BRC-39
	Make sure the braking force is sufficient when the ABS is not operating.	
The braking distance is long	Check stopping distance when the ABS is not operating.	BRC-40
ABS function does not operate	Wheel sensor	BRC-40
	The ABS does not operate when the speed is 10 km/h (6 MPH) or less.	
Pedal vibration or ABS operation sound occurs	Wheel sensor	BRC-40
	When brake pedal is lightly depressed (just place a foot on it), ABS is activated and vibration is felt. However this is normal,	
ABS warning lamp indication is not normal	CAN communication line	BRC-41
	ABS actuator and electric unit (control unit)	
	Combination meter	

For Fast and Accurate Diagnosis

PRECAUTIONS FOR DIAGNOSIS

- Before performing trouble diagnosis, always read general information (GI) to confirm general precautions. Refer to [GI-4, "General Precautions"](#).
- After completing service, always erase self-diagnosis results. Refer to [BRC-20, "CONSULT- II Functions \(ABS\)"](#).
- When inspection of continuity or voltage between units is performed, check connector terminals for disconnection, looseness, bends, or collapses. If any non-standard condition is detected, repair or replace applicable part.
- Intermittent errors may be caused by a poor connection in harness, connector, or terminal. Move harnesses, harness connectors, or terminals by hand to make sure all connections are solid and undamaged.
- If a circuit tester is used for check, be careful not to forcibly extend any connector terminal.
- ABS is a system that uses electronic control to perform brake control. Therefore, phenomena like those shown in the following table may occur, but this is because system is working normally.
- To use CONSULT-II to perform self-diagnosis of ABS actuator and electric unit (control unit), active tests, or work support, first stop work, then connect CONSULT-II and select "ABS".
- When CONSULT-II is used, ABS warning lamp may be ON/OFF.

Symptom	Symptom description	Result
Motor operation noise	This is the noise of motor operating inside ABS actuator and electric unit (control unit). Slight noise may occur during ABS operation.	Normal
	Just after the engine starts, the motor operating noise may be heard. This is a normal status of the system operation check.	
System operation check noise	When the engine is started, you may barely be able to hear a slight thudding sound from the engine room, but this sound is made by the system operation check and is normal.	Normal
ABS operation (longer stopping distance)	Stopping distance may be longer for vehicles with ABS when the vehicle drives on rough or snow-covered roads. Use lower speeds when driving on these kinds of roads.	Normal

Basic Inspection

BRAKE FLUID LEVEL, LEAKS, AND BRAKE PAD

1. Check fluid level in the brake reservoir tank. If fluid level is low, refill brake fluid.
2. Check brake piping and around ABS actuator and electric unit (control unit) for leaks. If leakage or seepage is found, check the following items.
 - If ABS actuator and electric unit (control unit) connection is loose, tighten piping to the specified torque and re-conduct the leak inspection to make sure there are no leakage.
 - If there is damage to the connection flare nut or ABS actuator and electric unit (control unit) screw, replace the damaged part and re-conduct the leak inspection to make sure there are no leakage.
 - If there is leakage or seepage at any location other than ABS actuator and electric unit (control unit) connection, wipe away leakage or seepage 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 or seepage with clean cloth. Then inspect again. If there is leakage or seepage, replace ABS actuator and electric unit (control unit).

CAUTION:

ABS actuator and electric unit (control unit) body can not be disassembled.

3. Check the brake disc rotor and pads. Refer to [BR-26, "Removal and Installation of Brake Pad"](#) in "Front Disc Brake" and [BR-32, "Removal and Installation of Brake Pad"](#) in "Rear Disc Brake".

POWER SYSTEM TERMINAL LOOSENESS AND BATTERY

Make sure battery positive cable, negative cable and ground connection are not loose. If looseness is detected, tighten the piping to the specified torque. In addition, check the battery voltage to make sure it has not dropped and alternator is normal.

ABS WARNING LAMP AND BRAKE WARNING LAMP

×: ON -: OFF

Condition	ABS warning lamp	Brake warning lamp [Note 1]	Remarks
Ignition SW OFF.	-	-	
Approx. 2 seconds after ignition switch is turned ON.	×	× [Note 2]	
Approx. 2 seconds later after ignition switch ON.	-	× [Note 2]	Go out 2 seconds after ignition switch is turned ON.
ABS error.	×	-	There is an ABS actuator and electric unit (control unit) error. (Power, ground or system malfunction)
EBD error.	×	×	

Note 1: Brake warning lamp will turn on in case of operating parking brake (switch turned on) or of actuating brake fluid level switch (brake fluid is insufficient).

Note 2: After starting engine, turn OFF.

Check the following items when unsuitable for an above condition.

- ABS warning lamp: [BRC-34, "CAN Communication Circuit"](#) .
 - Brake warning lamp: [BRC-34, "CAN Communication Circuit"](#) ,
- If malfunction is not found, refer to [DI-4, "COMBINATION METERS"](#) .

TROUBLE DIAGNOSIS FOR SYSTEM

PFP:00000

Wheel Sensor

NFS000FJ

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

CAUTION:

- Do not measure resistance value and also voltage between sensor terminal with tester etc., because sensor is an active sensor.
- Do not expand terminal of connector with a tester terminal stick, when it does inspection with tester.

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

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

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

Is above displayed in the self-diagnosis display?

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

2. CHECK TIRE

Check air pressure, wear, and size.

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

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

3. CHECK SENSOR AND SENSOR ROTOR

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

OK or NG

- OK >> GO TO 4.
NG >> Repair sensor mount or replace sensor rotor. Refer to [BRC-44, "SENSOR ROTOR"](#).

4. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24 and malfunctioning wheel sensor connector E20 (FR - LH) or E27 (FR - RH) or B202 (RR - LH), B203 (RR - RH). Check terminal to see if it is deformed, disconnected, loose, etc., and repair or replace it if any malfunction condition is found.
3. Reconnect connectors and check that interference with other parts has not cut wheel sensor cables, drive vehicle at a speed of 30 km/h (19 MPH) or above for at least 1 minute, and perform self-diagnosis.

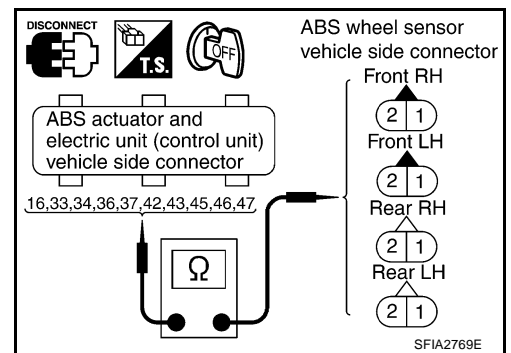
OK or NG

OK >> GO TO 5.

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

5. CHECK WHEEL SENSOR HARNESS

1. Turn ignition switch OFF and disconnect wheel sensor connector E20 (FR - LH), E27 (FR - RH), B202 (RR - LH), B203 (RR - RH) and ABS actuator and electric unit (control unit) connector E24.
2. Check continuity between terminals. (Also check continuity when steering wheel is turned right and left and when sensor harness inside wheel well 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)	ABS actuator and electric unit (control unit) (Ground)
Front RH	34	1	33	2	33, 34	16, 47
Front LH	45	1	46	2	45, 46	
Rear RH	43	1	42	2	43, 42	
Rear LH	36	1	37	2	36, 37	

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 harness and connector between ABS actuator and electric unit (control unit) and wheel sensor.

6. CHECK WHEEL SENSOR

1. Replace wheel sensor that resulted in malfunction by self-diagnosis.
2. Reconnect connectors, drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute, and then perform self-diagnosis.

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

Is above displayed on self-diagnosis display?

YES >> Wheel sensor has malfunction.

NO >> ● Replace ABS actuator and electric unit (control unit).

- Perform to self-diagnosis again, and make sure that the result shows "NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED".

ABS Actuator and Electric Unit (Control Unit) INSPECTION PROCEDURE

NFS000FK

1. CHECK SELF-DIAGNOSIS RESULTS

Ⓟ With CONSULT-II

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

Self-diagnosis results
CONTROLLER FAILURE

Is above displayed in 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

Solenoid Valve Circuit INSPECTION PROCEDURE

NFS000FL

1. CHECK SELF-DIAGNOSIS RESULT

Ⓟ With CONSULT-II

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

Self-diagnosis results
FR LH IN ABS SOL
FR LH OUT ABS SOL
RR RH IN ABS SOL
RR RH OUT ABS SOL
FR RH IN ABS SOL
FR RH OUT ABS SOL
RR LH IN ABS SOL
RR LH OUT ABS SOL

Is above displayed in the self-diagnosis display?

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

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24, check terminal for is deformation, disconnection, looseness, etc., and if there is any malfunction, repair or replace terminal.
3. Reconnect connectors and then perform the self-diagnosis.

OK or NG

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

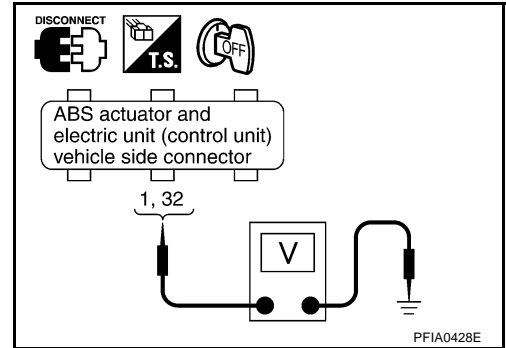
3. CHECK ABS ACTUATOR RELAY OR ABS MOTOR RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24.
3. Check voltage between ABS actuator and electric unit (control unit) harness connector E24 and ground.

1 - Ground : Battery voltage.
32 - Ground : Battery voltage.

OK or NG

- OK >> GO TO 4
 NG >> Circuit malfunction between battery and ABS actuator and electric unit (control unit). Repair the circuit.



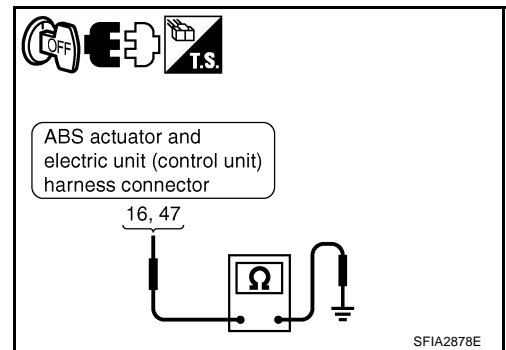
4. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUIT

1. Turn ignition switch "OFF".
2. Check ABS actuator and electric unit (control unit) ground circuit.

16 - Ground : Continuity should exist.
47 - Ground : Continuity should exist.

OK or NG

- OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit).
 NG >> Open or short in harness. Repair or replace harness.



CAN Communication Circuit INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect the ABS actuator and electric unit (control unit) connector, and check the terminal for deformation, disconnection, looseness, and so on. If there is a malfunction, repair or replace the terminal.
3. Reconnect connector to perform self-diagnosis.

Self-diagnostic results

CAN COMM CIRCUIT

Is "CAN COMM CIRCUIT" displayed in the self-diagnosis display?

- YES >> Print out the self-diagnostic results, and refer to [LAN-3, "Precautions When Using CONSULT-II"](#) .
 NO >> Connector terminal connector is loose, damaged, open, or shorted.

Actuator Motor, Motor Relay, and Circuit INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

Ⓟ With CONSULT-II

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

Self-diagnosis results
PUMP MOTOR
ACTUATOR RLY

Is above displayed in self-diagnosis display?

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

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24. Then reconnect it securely.
3. Perform self-diagnosis again.

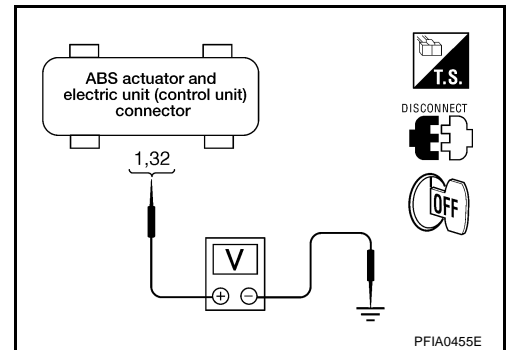
DO any self-diagnosis items appear?

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

3. CHECKING ABS MOTOR AND MOTOR RELAY POWER SYSTEM

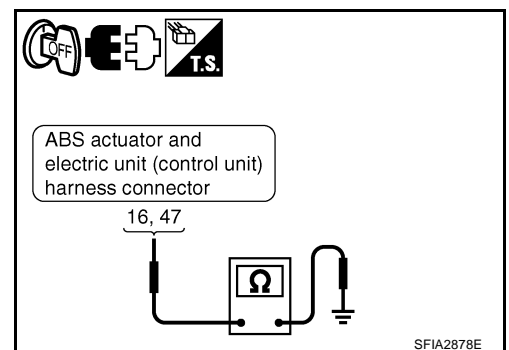
1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric (control unit) unit connector E24 and ground.

- 1 - Ground : Battery voltage.**
32 - Ground : Battery voltage.



4. Check resistance between ABS actuator and electric unit (control unit) connector E24 and ground.

- 16 - Ground : Continuity should exist.**
47 - Ground : Continuity should exist.



OK or NG

- OK >> Perform self-diagnosis again. If the same result appears, replace ABS actuator and electric unit (control unit). Refer to [BRC-45, "ACTUATOR AND ELECTRIC UNIT \(ASSEMBLY\)"](#).
- NG >> Repair harness or connectors.

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

NFS000FO

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULTS

④ With CONSULT-II

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

Self-diagnosis results

BATTERY VOLTAGE

Does "BATTERY VOLTAGE" appear in self-diagnosis results display?

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

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24. Then reconnect it securely.
3. Perform self-diagnosis again.

Do any self-diagnosis items appear?

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

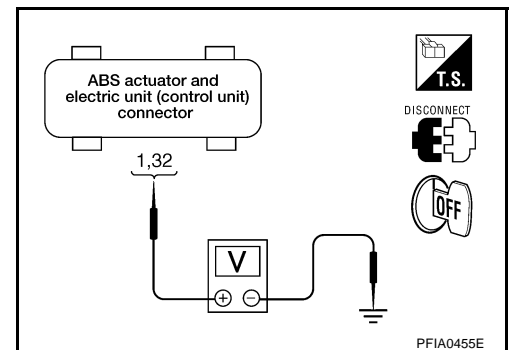
3. CHECK ABS MOTOR AND MOTOR RELAY POWER SYSTEM

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector.
3. Check voltage between ABS actuator and electric unit (control unit) connector E24 and ground.

- | | |
|--------------------|---------------------------|
| 1 - Ground | : Battery voltage. |
| 32 - Ground | : Battery voltage. |

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 5.



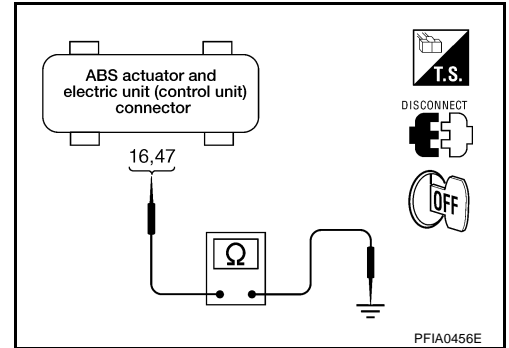
4. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUITS

1. Turn ignition switch "OFF".
2. Check resistance between ABS actuator and electric unit (control unit) connector E24 and ground.

16 - Ground : Continuity should exist.
47 - Ground : Continuity should exist.

OK or NG

- OK >> Perform ABS actuator and electric unit (control unit) self-diagnosis again.
- NG >> Repair harness or connectors.



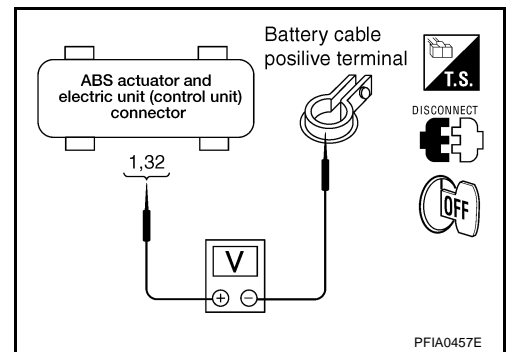
5. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SYSTEM

1. Check fuse.
2. Check continuity between battery positive terminal and ABS actuator and electric unit (control unit) connector E24.

ABS actuator and electric unit (control unit)	Battery positive terminal	Continuity
1, 32	-	Yes

OK or NG

- OK >> Check for non-standard condition in battery (terminal looseness, low voltage, etc.) and alternator.
- NG >> ● Replace fuse.
● Open or short in harness.



G Sensor System INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS RESULT

🔧 **With CONSULT-II**

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

Self-diagnosis results
G-SENSOR

Is above displayed in the self-diagnosis display?

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

2. CHECK G SENSOR

Use "Data Monitor" to check if the G sensor are normal.

Vehicle status	G sensor (Data monitor standard)
When stopped	-0.11 G to +0.11 G
Speed up	Negative value

OK or NG

OK >> INSPECTION END

NG >> Replace ABS actuator and electric unit (control unit) and then perform ABS actuator and electric unit (control unit) self-diagnosis again.

Stop Lamp Switch INSPECTION PROCEDURE

NFS000LJ

1. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect the stop lamp switch connector E116 and ABS actuator and electric unit (control unit) connector E24 and 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.

Do any self-diagnosis items appear?

OK >> GO TO 2.

NG >> Poor connection. Repair or replace applicable connector.

2. CHECK STOP LAMP SWITCH CIRCUIT

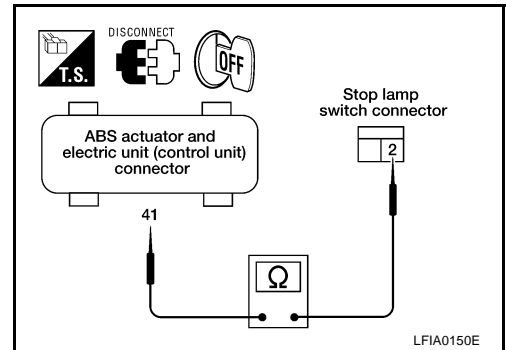
1. Turn ignition switch "OFF".
2. Disconnect stop lamp switch connector E116 and ABS actuator and electric unit (control unit) connector E24.
3. Check continuity between stop lamp switch harness connector E116 and ABS actuator and electric unit (control unit) harness connector E24.

41 - 2 : Continuity should exist.

OK or NG

OK >> Connect connectors and perform an ABS actuator and electric unit (control unit) self-diagnosis.

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



TROUBLE DIAGNOSIS FOR SYMPTOMS**Excessive ABS Function Operation Frequency****1. CHECK ABS WARNING LAMP DISPLAY**

Make sure the ABS warning lamp turns off approximately 2 seconds after the ignition switch is turned on or when driving.

OK or NG

OK >> GO TO 2.

NG >> Perform self-diagnosis. Refer to [BRC-22, "SELF-DIAG RESULT MODE"](#).

2. CHECK BRAKE FORCE DISTRIBUTION

Check front and rear brake force distribution using a brake tester. Refer to [BR-37, "SERVICE DATA AND SPECIFICATIONS \(SDS\)"](#).

OK or NG

OK >> GO TO 3.

NG >> Check brake system.

3. CHECK FRONT AND REAR AXLE

Make sure there is no excessive play in the front and rear axles. Refer to front axle [FAX-5, "FRONT WHEEL HUB AND KNUCKLE"](#), rear axle [RAX-5, "WHEEL HUB"](#).

OK or NG

OK >> GO TO 4.

NG >> Axle inspection and repair.

4. CHECK WHEEL SENSOR AND SENSOR ROTOR

Check the following.

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

OK or NG

OK >> INSPECTION END.

NG >> Repair wheel sensor and rotor system.

Unexpected Pedal Reaction**1. CHECK BRAKE PEDAL STROKE**

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

Is the stroke too big?

YES >> ● Bleed air from the brake piping. Refer to [BR-11, "Bleeding Brake System"](#).

- Check brake pedal, brake booster, and master cylinder mount for play, looseness, and brake system for fluid leaks, etc. If any malfunctions are found, make repairs. Brake pedal: [BR-9, "Removal and Installation"](#). Brake master cylinder and Brake booster: [BR-21, "Removal and Installation"](#).

NO >> GO TO 2.

2. CHECK FUNCTION

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector, and make sure the braking force is sufficient when the ABS is not operating. After the inspection, reconnect connector.

OK or NG

- OK >> GO TO 4. "CHECK WHEEL SENSOR AND SENSOR ROTOR" in [BRC-39, "Excessive ABS Function Operation Frequency"](#)
- NG >> Check brake system.

The Braking Distance is Long

NFS000FS

CAUTION:

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

1. CHECK FUNCTION

1. Turn ignition switch "OFF".
2. Disconnect VDC/TCS/ABS control unit connector to deactivate ABS. In this condition, check stopping distance. After inspection, connect connector.

OK or NG

- OK >> GO TO 4. "CHECK WHEEL SENSOR AND SENSOR ROTOR" in [BRC-39, "Excessive ABS Function Operation Frequency"](#).
- NG >> ● Bleed air from brake piping. [BR-11, "Bleeding Brake System"](#).
● Check brake system.

ABS Function Dose Not Operate

NFS000FT

CAUTION:

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

1. CHECK ABS WARNING LAMP DISPLAY

Make sure the ABS warning lamp turns off approximately 2 seconds after the ignition switch is turned on or when driving.

OK or NG

- OK >> OK or NG
- NG >> Perform self-diagnosis. Refer to [BRC-22, "SELF-DIAG RESULT MODE"](#).

Pedal Vibration or ABS Operation Sound Occurs

NFS000FU

CAUTION:

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

- When shifting gears
- When driving on slippery road
- During cornering at high speed
- When passing over bumps or grooves.
- When driving just after starting engine (at approximately 10 km/h (6 MPH) or higher)

1. SYMPTOM CHECK

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

OK or NG

- OK >> GO TO 2.
- NG >> Perform self-diagnosis. Refer to [BRC-22, "SELF-DIAG RESULT MODE"](#).

2. INSPECTION CHECK 1

Does vibration occur during normal parking?

CAUTION:

In addition to activation for sudden braking, ABS may activate in conditions such as those listed below.

- Roads with low surface.
- Turning at high speed.
- Passing through gusts of wind.

OK or NG

OK >> GO TO 3.
NG >> Normal

3. INSPECTION CHECK 2

Check for vibration when engine speed is increased while vehicle is stopped.

OK or NG

OK >> GO TO 4
NG >> ● Normal

CAUTION:

Vibration may occur when vehicle is stopped.

4. INSPECTION CHECK 3

Check for vibration when switches of electrical components are operated.

OK or NG

OK >> Check for any wireless devices, or antenna lead near control unit (including wiring).
NG >> GO TO 5.

5. CHECK ABS WARNING LAMP INDICATION

Confirm ABS warning lamp turns on.

OK or NG

OK >> Perform self-diagnosis. Refer to [BRC-22, "SELF-DIAG RESULT MODE"](#) .
NG >> GO TO 4. "CHECK WHEEL SENSOR AND SENSOR ROTOR" in [BRC-39, "Excessive ABS Function Operation Frequency"](#) .

ABS Warning Lamp Indication is Not Normal

NFS000LM

NOTE:

For lighting condition of ABS warning lamp. refer to [BRC-29, "ABS WARNING LAMP AND BRAKE WARNING LAMP"](#) .

1. CHECK SYSTEM FOR CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [BRC-22, "SELF-DIAG RESULT MODE"](#) .

Is the "CAN COMM CIRCUIT [U1000]" displayed?

YES >> Perform trouble diagnosis for CAN communication line. Refer to [BRC-34, "CAN Communication Circuit"](#) .
NO >> GO TO 2.

2. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

1. Turn ignition switch "OFF".
2. Check ABS actuator electric unit (control unit) input/output signal. Refer to [BRC-19, "Control Unit Input/Output Signal Standard"](#) .

OK or NG

OK >> GO TO 3.

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

3. CHECK COMBINATION METER INDICATION

Check the combination meter indication and operation. Refer to [DI-15, "Self-Diagnosis Mode of Combination Meter"](#) .

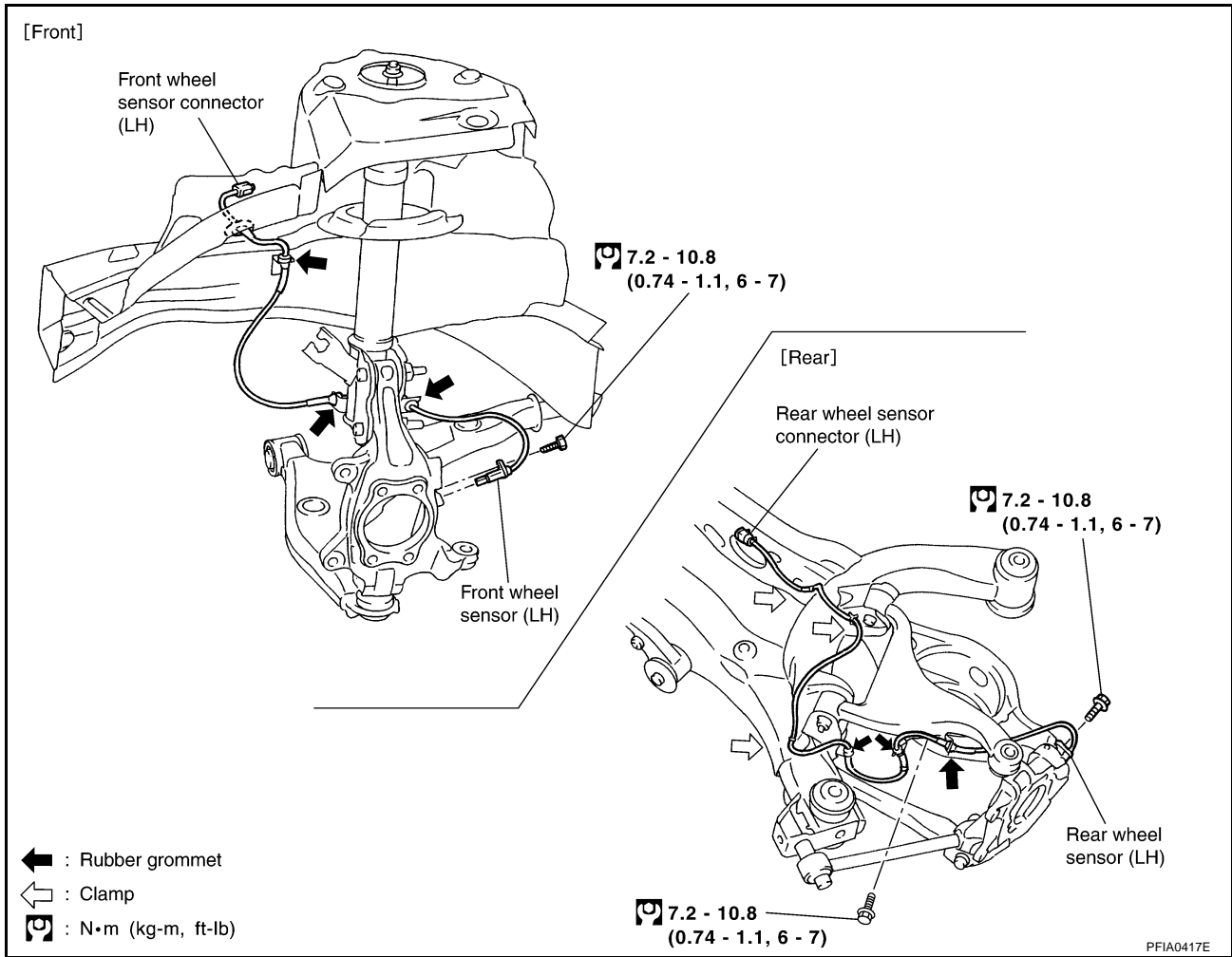
OK or NG

OK >> INSPECTION END.

NG >> Combination meter is malfunctioning. Check combination meter. Refer to [DI-4, "COMBINATION METERS"](#) .

WHEEL SENSORS

Removal and Installation



REMOVAL

Be careful of the following.

CAUTION:

- As much as possible, avoid rotating wheel sensor when removing it. Pull wheel sensors out without pulling on sensor harness.
- Take care to avoid damaging wheel sensor edges or rotor teeth. Remove wheel sensor first before removing front or rear wheel hub. This is to avoid damage to wheel sensor wiring and loss of sensor function.

INSTALLATION

Be careful of the following. Tighten the mounting bolts and nuts to the specified torque. Refer to [BRC-43, "Removal and Installation"](#).

- 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 figure. When installed, harness must not be twisted.

SENSOR ROTOR

PFP:47970

Removal and Installation

NFS000FW

REMOVAL

Front

Sensor rotor cannot be disassembled. To replace sensor rotor, replace hub bearing assembly. Refer to [FAX-5](#), "[FRONT WHEEL HUB AND KNUCKLE](#)" in "FAX" section.

Rear

Sensor rotor cannot be disassembled. To replace sensor rotor, replace hub bearing assembly. Refer to [RAX-5](#), "[WHEEL HUB](#)" in "RAX" section.

INSTALLATION

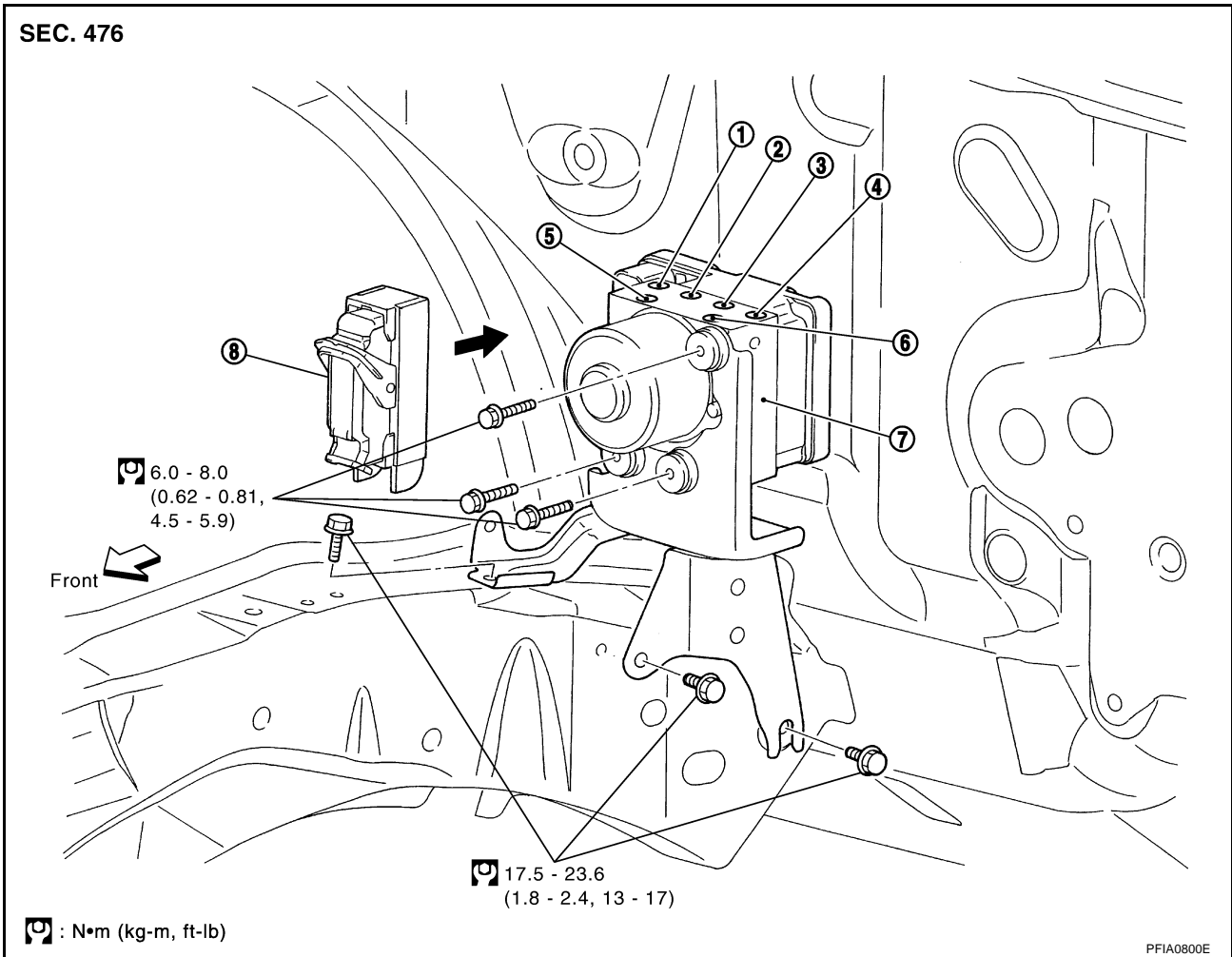
Installation is the reverse order of removal.

ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

PFP:47660

Removal and Installation

NFS000FX



- | | | |
|--|--|--------------------------------------|
| 1. To front left | 2. To rear right | 3. To rear left |
| 4. To front right | 5. From master cylinder secondary side | 6. From master cylinder primary side |
| 7. ABS actuator and electric unit (control unit) | 8. Harness connector | |

Pay attention to the following when removing actuator.

CAUTION:

- Before servicing, disconnect battery cables.
- To remove brake tube, use flare nut wrench to prevent flare nuts and brake tube from being damaged. To install, use flare nut torque wrench (commercial service tool).
- Do not remove and install actuator by holding harness.
- After work is completed, bleed air from brake piping. Refer to [BR-11. "Bleeding Brake System"](#).

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

PRECAUTIONS

PFP:00001

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

NFS000FY

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

WARNING:

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

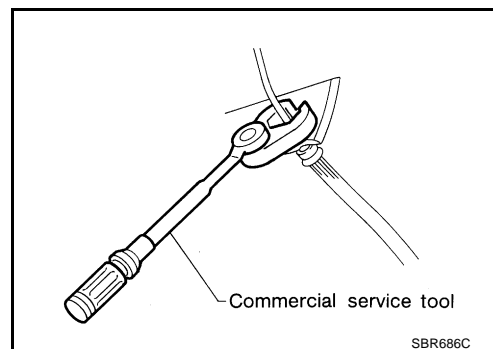
Precautions for Brake System

NFS000FZ

- Recommended fluid is brake fluid “DOT 3”. Refer to [MA-10, "RECOMMENDED FLUIDS AND LUBRICANTS"](#).
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas.
- To clean or wash all parts of master cylinder, disc brake caliper and wheel cylinder, use clean brake fluid.
- Never use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use flare nut wrench when removing and installing brake tube.
- When installing brake piping, be sure to torque.
- Before working, turn ignition switch OFF and disconnect connectors of ABS actuator and control unit or battery cables.
- Burnish the brake contact surfaces after refinishing or replacing drums or rotors, after replacing pads or linings, or if a soft pedal occurs at very low mileage. Refer to [BR-30, "BRAKE BURNISHING PROCEDURE"](#).

WARNING:

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



Precautions for Brake Control

NFS000G0

- During ABS operation, brake pedal lightly vibrates and a mechanical noise may be heard. This is normal.
- Just after starting vehicle after turning ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.
- When an error is indicated by ABS or another warning lamp, collect all necessary information from customer (what symptoms are present under what conditions) and check for simple causes before starting diagnostic servicing. Besides electrical system inspection, check brake booster operation, brake fluid level, and fluid leaks.
- If tire size and type are used in an improper combination, or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- If there is a radio, antenna, or antenna lead-in wire (including wiring) near control module, ABS function may have a malfunction or error.

PRECAUTIONS

[VDC/TCS/ABS]

- If aftermarket parts (car stereo, CD player, etc.) have been installed, check for incidents such as harness pinches, open circuits, and improper wiring. A
- If the following components are replaced with non-genuine components or converted, the VDC OFF indicator lamp and SLIP indicator lamp may turn on or the VDC system may not operate properly. Components related to suspension (Shock Absorber, Strut, Spring, Bushing, etc.), Tires, wheels (exclude specified size), components related to brake (Pad, Rotor, Caliper, etc.), Components related to engine (Muffler, ECM, etc.), Components related to body reinforcement (Roll bar, Tower bar, etc.). B
- Driving in the condition of breakage or excessive wear of the suspension, tires or components related to the brakes may cause the VDC OFF indicator lamp and the SLIP indicator lamp to turn on, and the VDC system may not operate properly. C
- When the TCS or VDC is activated by sudden acceleration or sudden turn, some noise may occur. The noise is a result of the normal operation of the TCS and VDC. D
- When driving on roads which have extreme slopes (such as mountainous roads) or high banks (such as sharp curves on a freeway), the VDC may not operate normally, or the VDC warning lamp and the SLIP indicator lamp may turn on. However, this is not a malfunction if normal operation can be resumed after restarting the engine. E
- Sudden turns (such as spin turns, acceleration turns), drifting, etc. When VDC function is OFF (VDC SW ON) may cause the yaw rate/side G sensor system indicate a malfunction. However, this is not a malfunction if normal operation can be resumed after restarting the engine. BRC

A

B

C

D

E

BRC

G

H

I

J

K

L

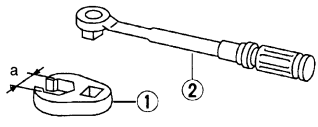
M

PREPARATION

PFP:00002

Commercial Service Tools

NFS000G1

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

ON-VEHICLE SERVICE

PFP:00000

Adjustment of Steering Angle Sensor Neutral Position

NFS000G2

After removing/installing or replacing ABS actuator and electric unit (control unit), steering angle sensor, steering components, suspension components, or after adjusting wheel alignment, make sure to adjust neutral position of steering angle sensor before running vehicle.

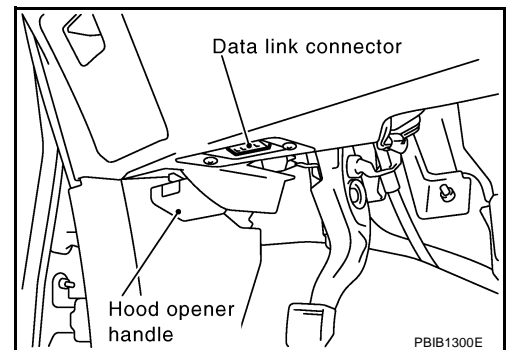
×: Required –: Not required

Situation	Adjustment of Steering Angle Sensor Neutral Position
Removing/Installing 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	–
Adjustment wheel alignment	×

CAUTION:

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

1. Stop vehicle with front wheels in straight-ahead position.
2. Perform "CONSULT-II SETTING PROCEDURE". Refer to [BRC-68. "CONSULT-II SETTING PROCEDURE"](#).
3. Touch "WORK SUPPORT".



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

CAUTION:

Do not touch steering wheel while adjusting steering angle sensor.

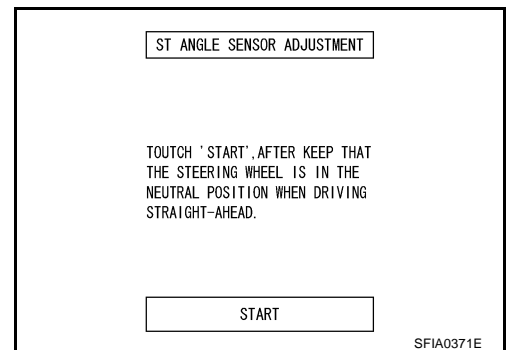
5. After approximately 10 seconds, touch "END". (After approximately 60 seconds, it ends automatically.)
6. Turn ignition switch OFF, then turn it ON again.

CAUTION:

Be sure to perform above operation.

7. Run vehicle with front wheels in straight-ahead position, then stop.
8. Select "DATA MONITOR", "SELECTION FROM MENU", and "STR ANGLE SIG" on CONSULT-II screen. Then make sure "STR ANGLE SIG" is within 0±2.5 deg. If value is more than specification, repeat steps 1 to 7.

9. Erase memory of ABS actuator and electric unit (control unit) and ECM.
10. Turn ignition switch OFF.



Calibration of Decel G Sensor

NFS000G3

After removing/installing or replacing yaw rate/side/decel G sensor, ABS actuator and electric unit (control unit) make sure to Calibration of Decel G Sensor before running vehicle.

×: Required -: Not required

Situation	Calibration of Decel G Sensor
Removing/Installing ABS actuator and electric unit (control unit)	×
Removing/Installing steering components	-
Removing/Installing suspension components	-
Change tires to new ones	-
Tire rotation	-
Adjusting wheel alignment	-
Removing/Installing Yaw rate/side/decel G sensor	×

CAUTION:

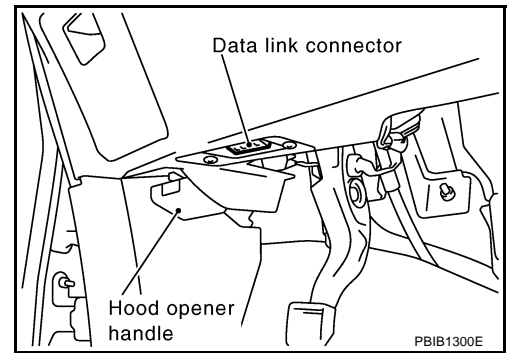
To adjust neutral position of steering angle sensor, make sure to use CONSULT-II. (Adjustment can not be done without CONSULT-II.)

1. Stop vehicle with front wheels in straight-ahead position.

CAUTION:

- Keep all tires inflated to correct pressures. Adjust the tire pressure to the specified pressure value.
- See that there is on-load in vehicle other than the driver (or equivalent weight placed in driver's position).

2. Perform "CONSULT-II SETTING PROCEDURE". Refer to [BRC-68](#). "[CONSULT-II SETTING PROCEDURE](#)".
3. Touch "WORK SUPPORT".

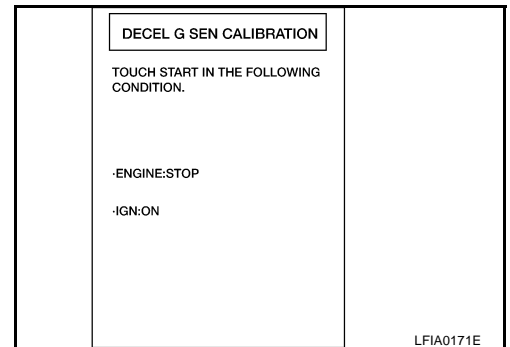


4. Touch "START" on "DECEL G SEN CALIBRATION" on CONSULT- II screen.
5. After approximately 10 seconds, touch "END". (After approximately 60 seconds, it ends automatically.)
6. Turn ignition switch OFF, then turn it ON again.

CAUTION:

Be sure to carry out above operation.

7. Run vehicle with front wheels in straight-ahead position, then stop.
8. Select "DATA MONITOR", "SELECTION FROM MENU", and "DECEL G SEN" on CONSULT- II screen. Then check that "DECEL G SEN" is within ± 0.08 G. If value is more than specification, repeat steps 1 to 5.
9. Erase memory of ABS actuator and electric unit (control unit) and ECM.
10. Turn ignition switch OFF.

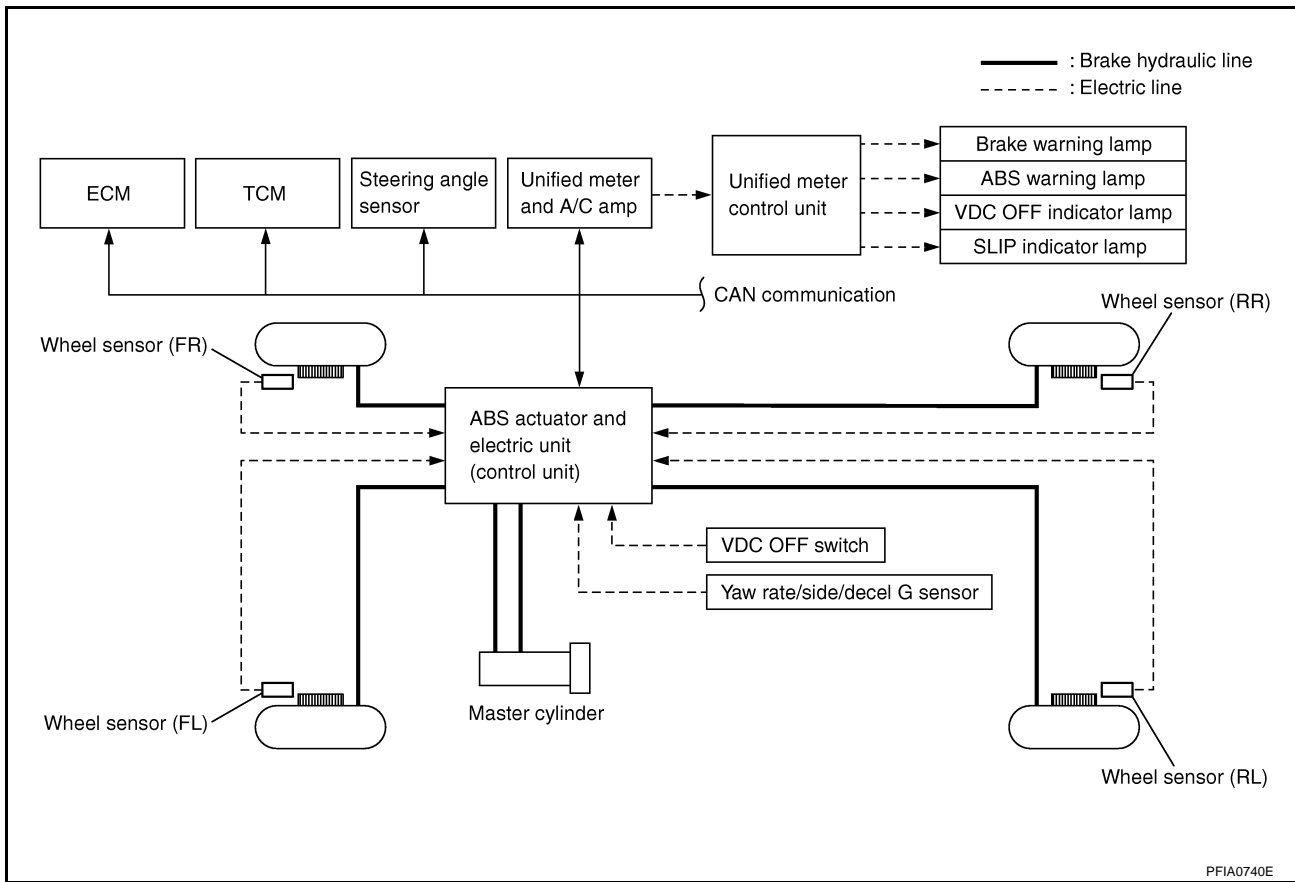


SYSTEM DESCRIPTION

PFP:00000

System Diagram

NFS000G4



COMPONENTS FUNCTION DESCRIPTION

Components	Description
ABS actuator and electric unit (control unit)	<ul style="list-style-type: none"> ● Receives the information of various sensor signals, engine and AT, and then determines the vehicle driving status. Performs the calculations of target brake fluid pressure, of brake actuator drive signal output and of engine torque required for the VDC/TCS/ABS control. ● Receives the actuator drive signal from ABS actuator and electric unit (control unit), and then performs the brake fluid adjustment of each wheel caliper.
Yaw rate side/decel G sensor	Detects the yaw rate and side G of the vehicle.
Steering angle sensor	Detects the operating angle and direction of driver steering wheel.
Wheel sensor	Detects the rotation speed of each wheel.
VDC OFF switch	Cancels the VDC function.
ECM	Receives the command from ABS actuator and electric unit (control unit), and then performs the controls of throttle motor and injector.

Function VDC

NFS000G6

- In addition to the TCS/ABS function, the driver steering amount and brake operation amount are detected from the steering angle sensor and pressure sensor, and the vehicle's driving status (amount of under steering / over steering) is determined from information from the yaw rate side/decel G sensor, wheel sensor, etc., and this information is used to improve vehicle stability by controlling the braking and engine power to all four wheels.
- The SLIP indicator lamp flashes to inform the driver of VDC operation.
- During VDC operation, the body and brake pedal lightly vibrate and mechanical noises may be heard. This is normal.

SYSTEM DESCRIPTION

[VDC/TCS/ABS]

- The ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp might turn on when the vehicle is subject to strong shaking or large vibration, such as when the vehicle is on a turn table or a ship while the engine is running or steep slope such as bank. In this case, restart the engine on a normal road, and if the ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp turn off, there is no malfunction.

TCS

- The wheel spin of the drive wheels is detected by the ABS actuator and electric unit (control unit) from the wheel speed signals from the four wheels, so if wheel spin occurs, the drive wheel right and left brake fluid pressure control and engine fuel cut are conducted while the throttle value is restricted to reduce the engine torque and decrease the amount of wheel spin. In addition, the degree the throttle is opened is controlled to achieve the optimum engine torque.
- Depending on road circumstances, the driver may have a sluggish feel. This is normal, because the optimum traction has the highest priority under TCS operation.
- TCS may be activated any time the vehicle suddenly accelerates, depressing accelerator pedal fully, suddenly downshifts, upshifts, or is driven on a road with a varying surface friction coefficient.
- During TCS operation, it informs a driver of system operation by flashing SLIP indicator lamp.

ABS

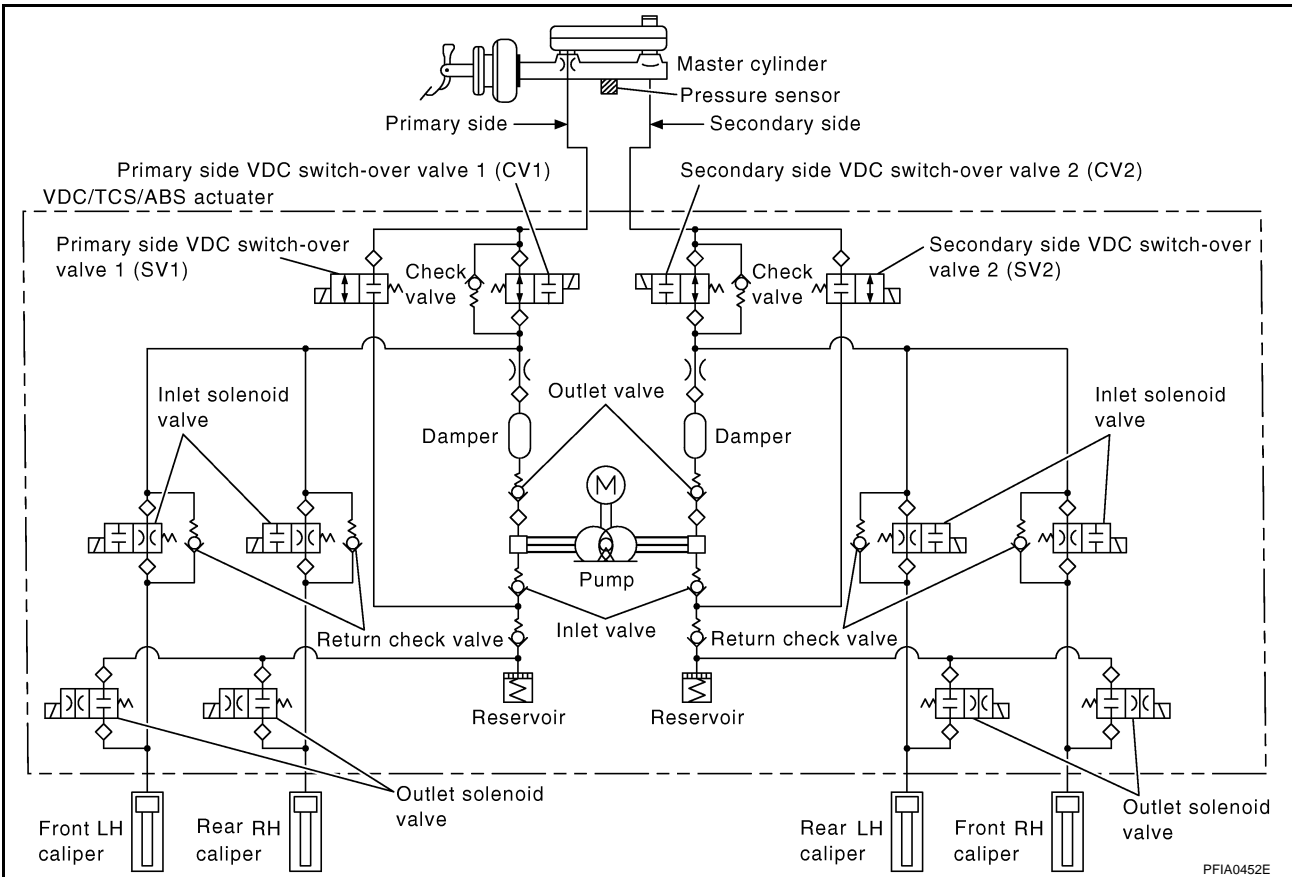
- The Anti-Lock Brake System is a function that detects wheel revolution while braking, and it improves handling stability during sudden braking by electrically preventing 4 wheel lock. Maneuverability is also improved for avoiding obstacles.
- If the electrical system malfunction, then Fail-Safe function is activated, ABS becomes inoperative, and ABS warning lamp turns on.
- Electrical system diagnosis by CONSULT-II is available.
- During ABS operation, brake pedal lightly vibrates and a mechanical noise may be heard. This is normal.
- Just after starting vehicle after ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without ABS when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.

EBD

- Electronic Brake Distribution is a function that detects subtle slippages between front and rear wheels during braking, and it improves handling stability by electronically controlling Brake Fluid Pressure which results in reduced rear wheel slippage.
- In case of electrical system malfunction, Fail-Safe function is activated, EBD and ABS becomes inoperative, and ABS warning lamp and brake warning lamp are turned on.
- Electrical system diagnosis by CONSULT-II is available.
- During EBD operation, brake pedal lightly vibrates and a mechanical noise may be heard. This is normal.
- Just after starting vehicle after ignition switch ON, brake pedal may vibrate or motor operating noise may be heard from engine compartment. This is a normal status of operation check.
- Stopping distance may be longer than that of vehicles without EBD when vehicle drives on rough, gravel, or snow-covered (fresh, deep snow) roads.

Hydraulic Circuit Diagram

NFS000GB



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

BRC

HYDRAULIC COMPONENTS FUNCTION DESCRIPTION

Components	Description
Solenoid valve (ABS control valve)	Increases, maintains and decreases the fluid pressure of each caliper according to the signal from VDC/TCS/ABS control unit.
Reservoir	When decreasing the caliper pressure, temporarily saves the brake fluid drained from the caliper in order to perform the work efficiently.
Pump	Refills the brake fluid saved in the reservoir via the damper to the caliper.
Motor	Operates the pump according to the signal from VDC/TCS/ABS control unit.
Inlet valve	Leaves the brake fluid drained from the reservoir to the pump so as not to return it to the reservoir.
Outlet valve	Leaves the brake fluid drained from the pump so as not to return it to the pump.
Return check valve	When releasing the brake, bypasses with the orifice of solenoid valve, and then refills the brake-fluid of caliper to the master cylinder.
Damper	Controls the pulsation of brake fluid drained from the pump, and then weakens the pedal vibration during VDC/TCS/ABS operation.
VDC switch-over valve (CV)	Shuts out the normal brake passage from master cylinder during VDC/TCS operation.
VDC switch-over valve (SV)	Supplies the brake fluid from master cylinder to the pump during VDC/TCS operation.

CAN Communication SYSTEM DESCRIPTION

NFS000GC

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-32, "CAN Communication Unit"](#).

TROUBLE DIAGNOSIS

PFP:00004

Fail-Safe Function
VDC/TCS SYSTEM

NFS000LE

In case of malfunction with TCS, the VDC OFF indicator lamp and SLIP indicator lamp are turned on, and the condition of the vehicle is the same as the condition of vehicles without VDC/TCS system. In case of malfunction with TCS, the ABS control continues to operate normally without VDC/TCS control.

CAUTION:

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

ABS, EBD SYSTEM

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

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

NOTE:

In condition 1 described above, an ABS Self Diagnosis sound may be heard. That is a normal condition because a self diagnosis for "Key switch ON" and "The first starting" are being performed.

How to Perform Trouble Diagnosis for Quick and Accurate Repair

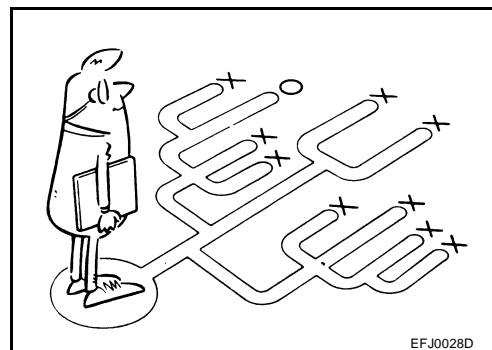
NFS000GD

INTRODUCTION

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

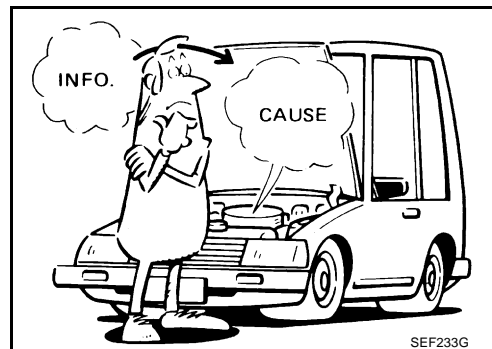
NOTE:

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



EFJ0028D

- It is essential to check symptoms right from beginning in order to repair a malfunction completely.
For an intermittent malfunction, it is important to reproduce symptom based on interview with customer and past examples. Do not perform inspection on ad hoc basis. Most intermittent malfunctions are caused by poor contacts. In this case, it will be effective to shake suspected harness or connector by hand. When repairs are performed without any symptom check, no one can judge if malfunction has actually been eliminated.
- After diagnosis, make sure to perform "erase memory". Refer to [BRC-72, "How to Erase Self-Diagnostic Results"](#).
- For an intermittent malfunction, move harness or harness connector by hand to check poor contact or false open circuit.
- Always read "GI General Information" to confirm general precautions. Refer to [GI-4, "General Precautions"](#).

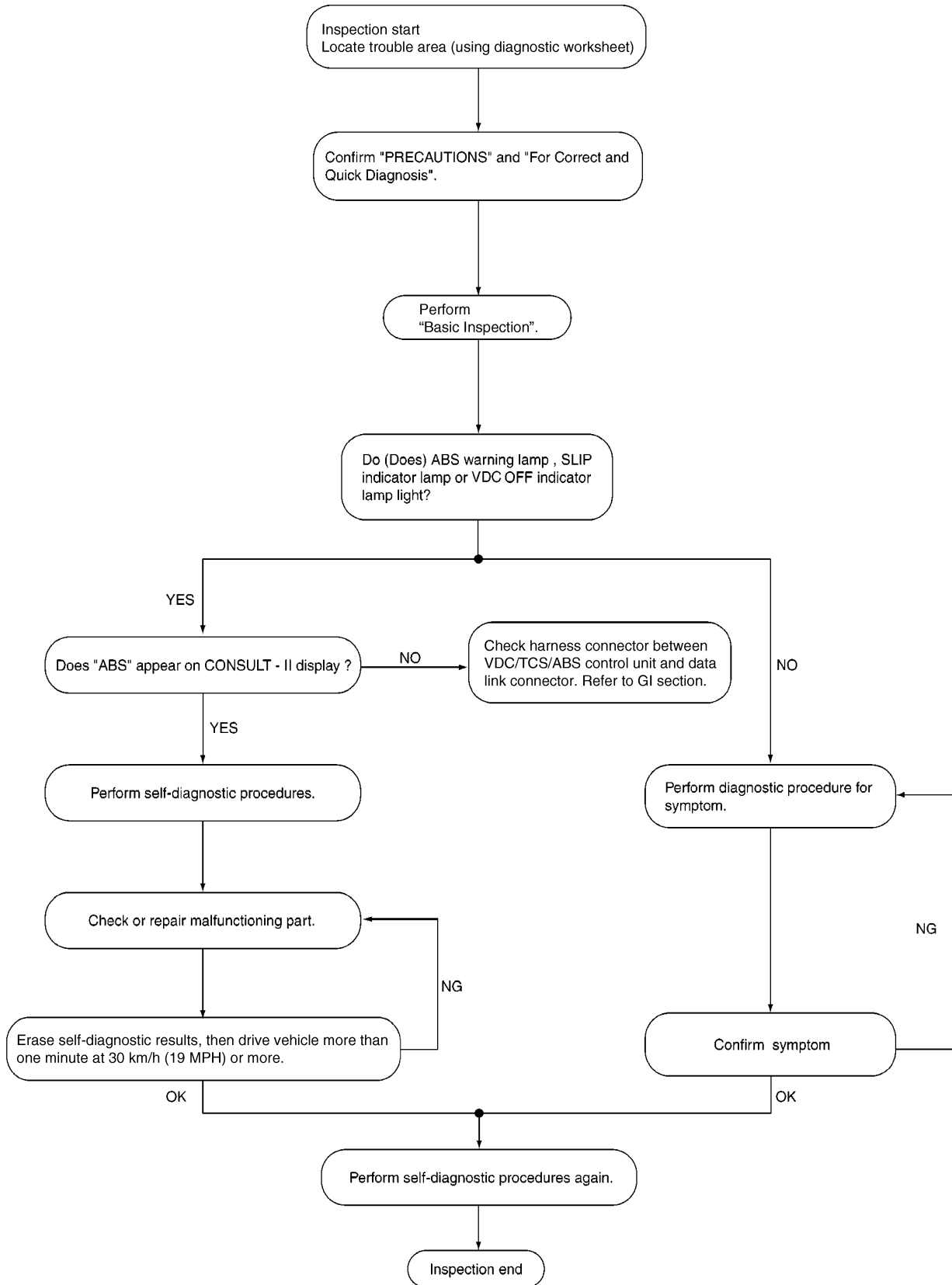


SEF233G

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

DIAGNOSIS FLOW CHART



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

SFIA3272E

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 the diagnosis sheet so as not to miss information.

KEY POINTS

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

SBR339B

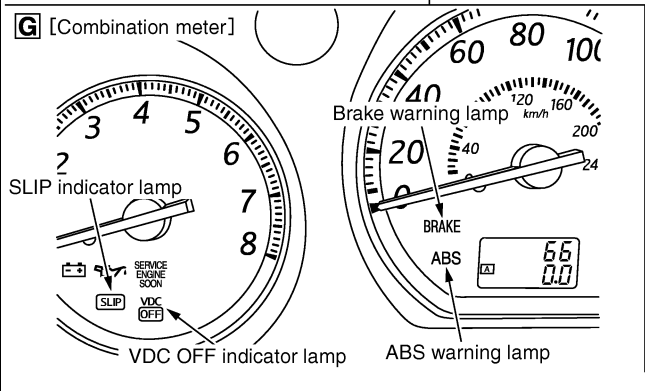
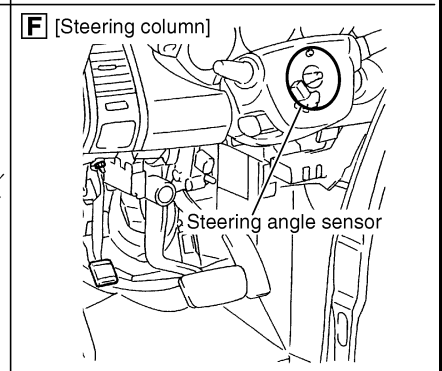
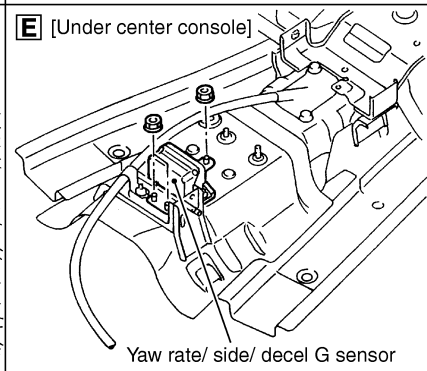
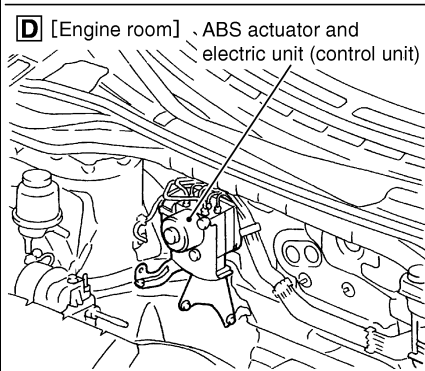
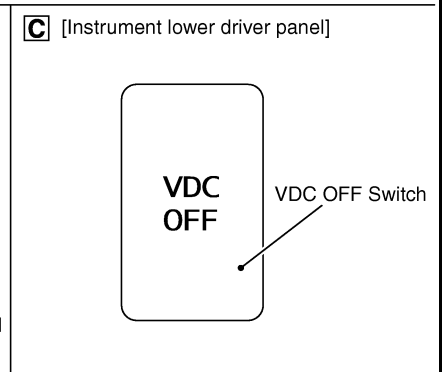
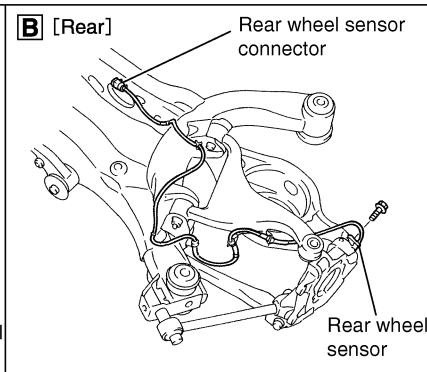
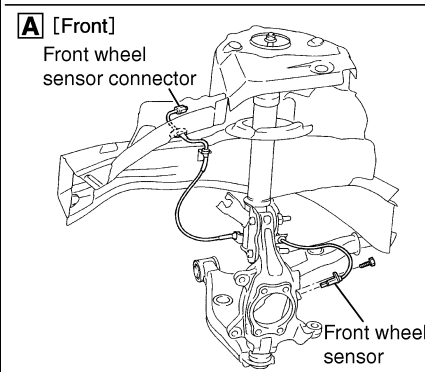
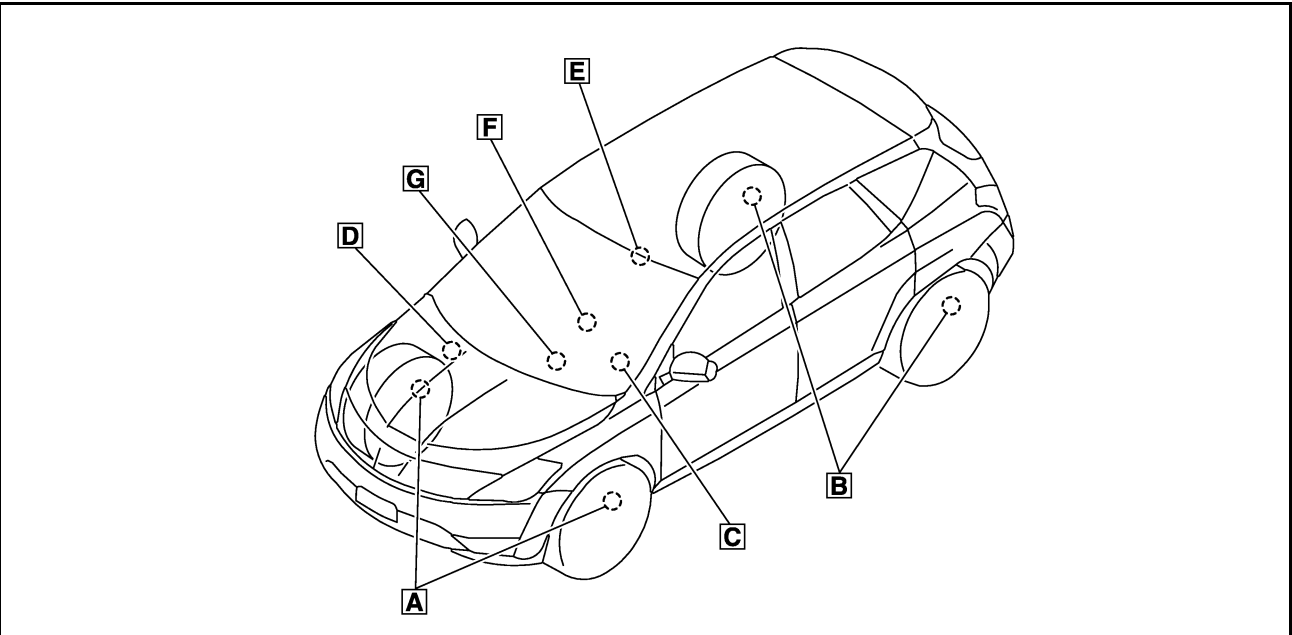
EXAMPLE OF DIAGNOSIS SHEET

Customer name MR/MS	Model & Year	VIN	
Engine #	Trans.	Mileage	
Incident Date	Manuf. Date	In Service Date	
Symptoms	<input type="checkbox"/> Noise and vibration (from engine compartment) <input type="checkbox"/> Noise and vibration (from axle)	<input type="checkbox"/> Warning / Indicator activate	<input type="checkbox"/> Firm pedal operation <input type="checkbox"/> Large stroke pedal operation
	<input type="checkbox"/> 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		

SFIA3264E

Component Installation Location

NFS000GE

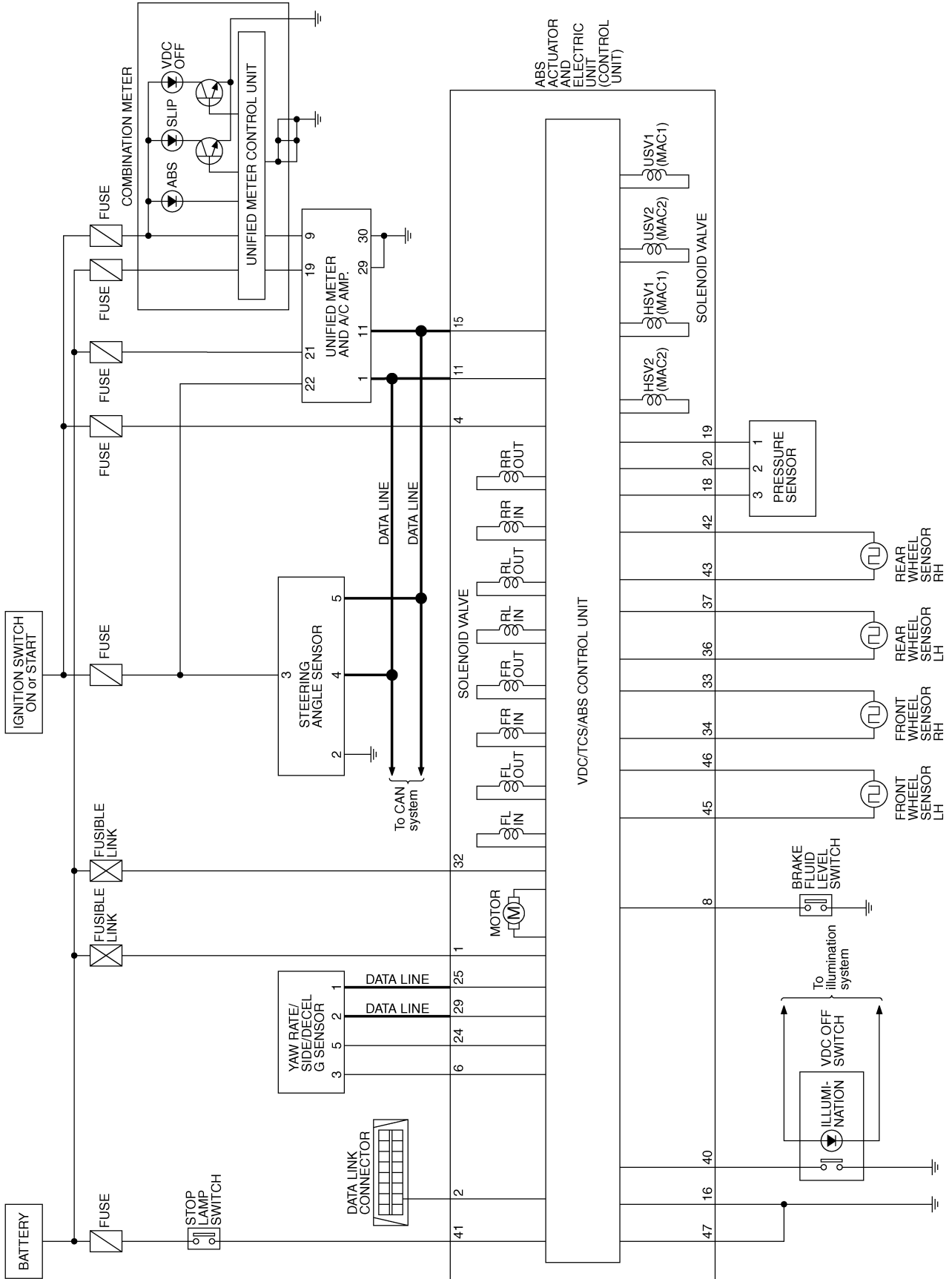


PFA0744E

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

BRC

Schematic



TROUBLE DIAGNOSIS

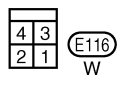
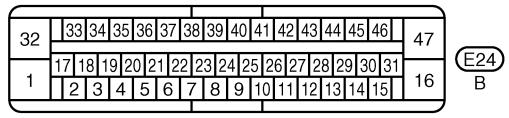
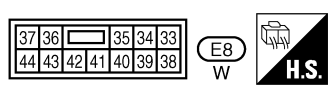
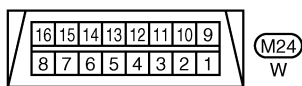
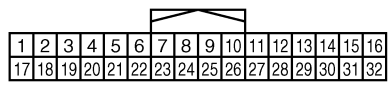
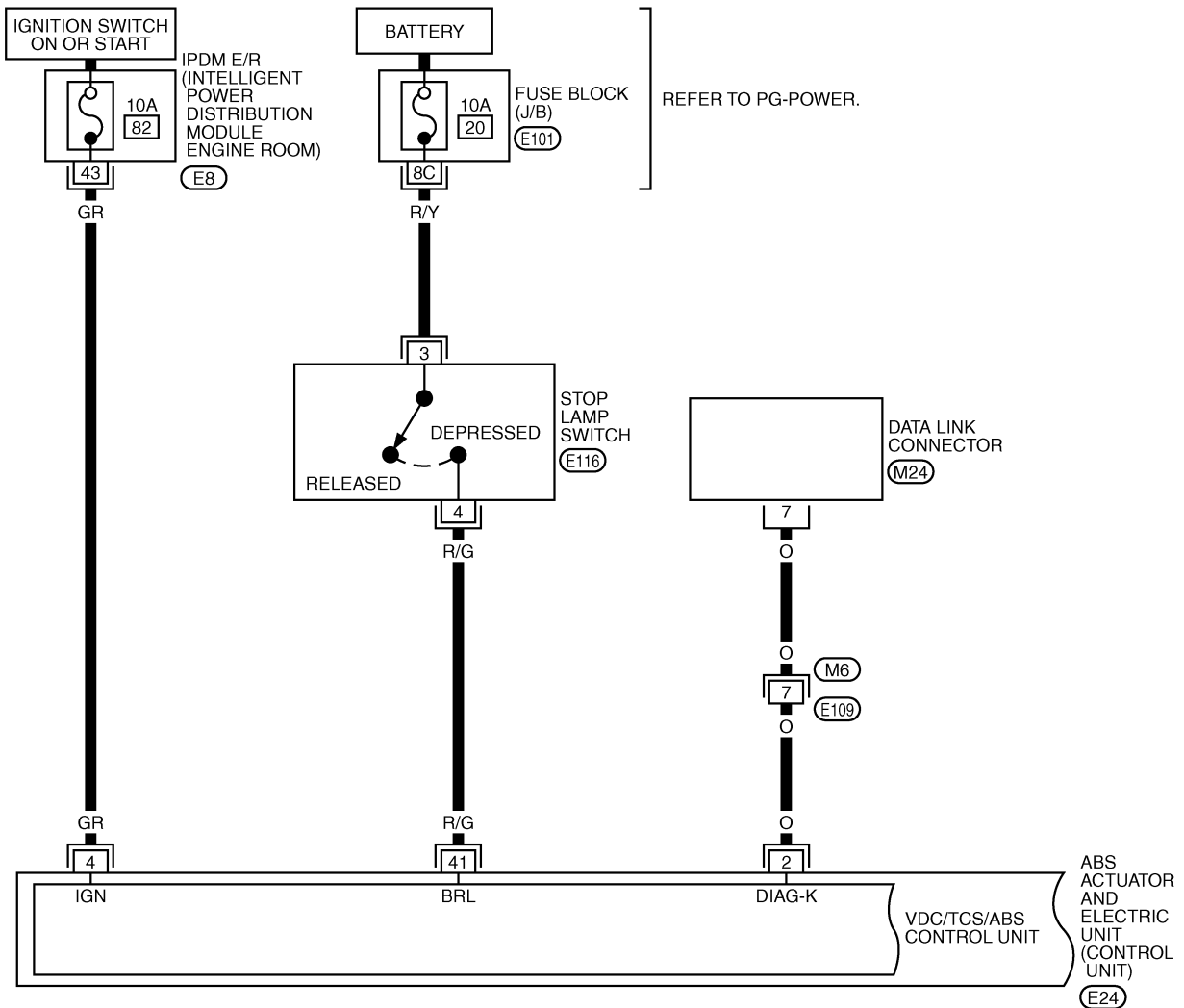
[VDC/TCS/ABS]

Wiring Diagram — VDC —

NFS000GG

BRC-VDC-01

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

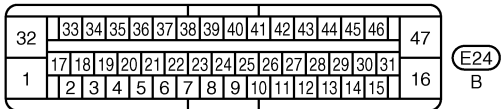
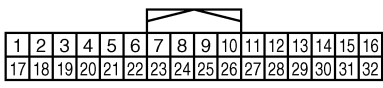
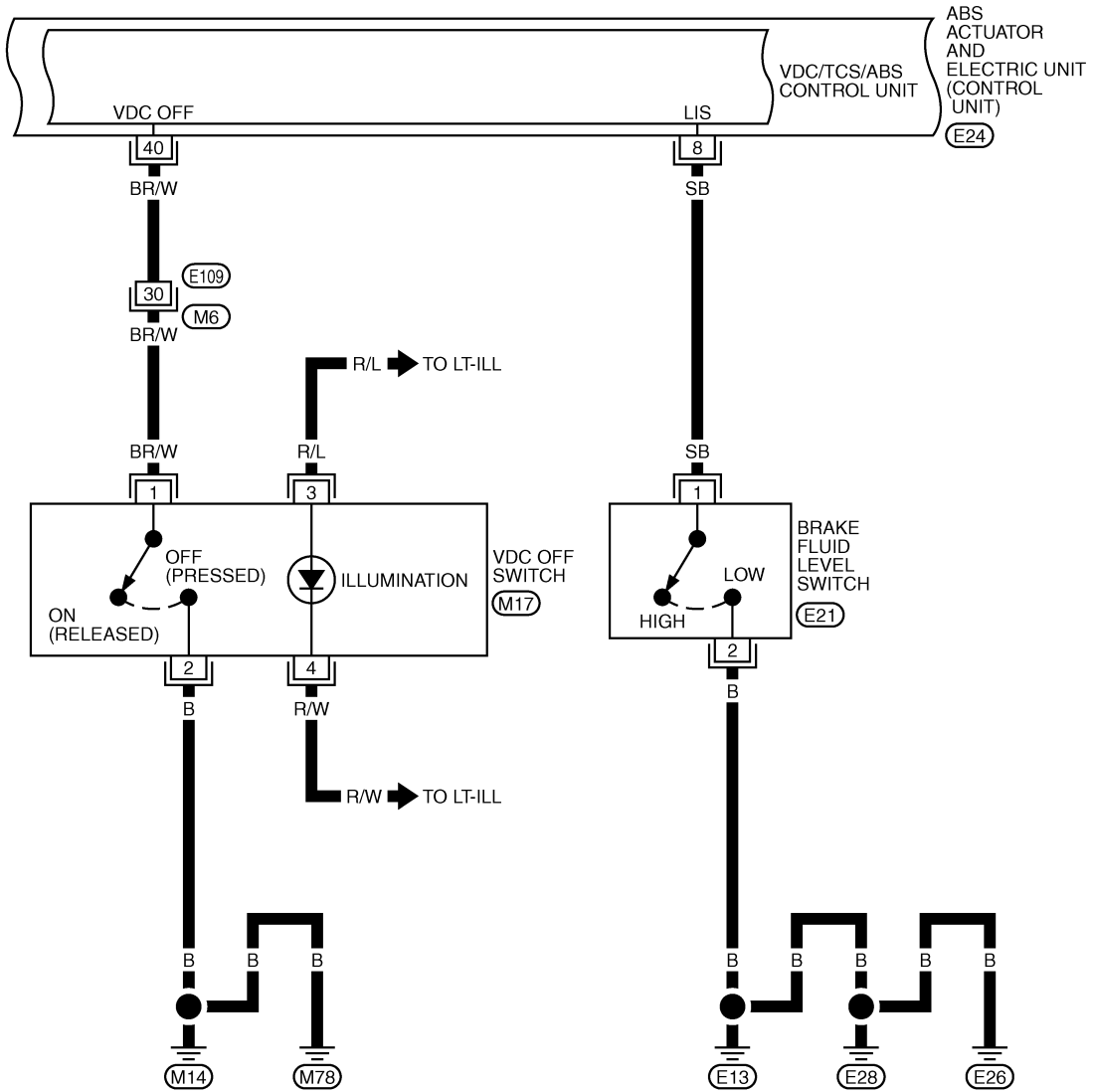


REFER TO THE FOLLOWING.
 (E101) - FUSE BLOCK-JUNCTION BOX (J/B)

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-02



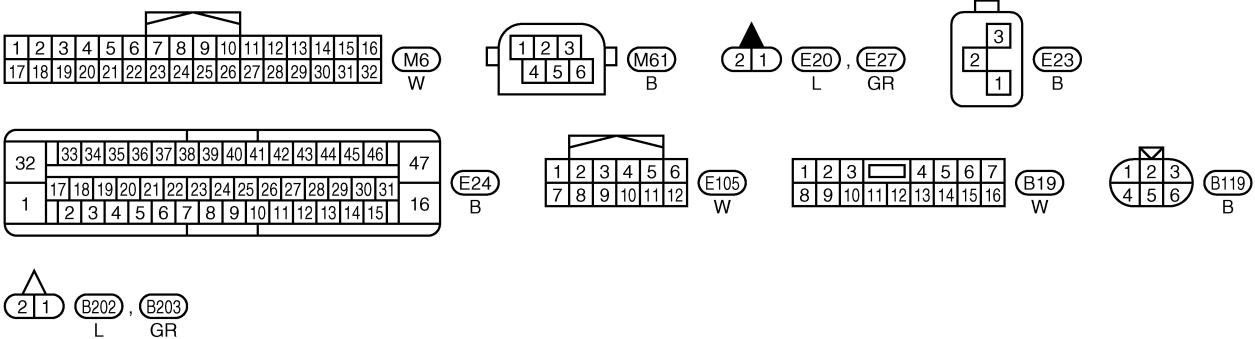
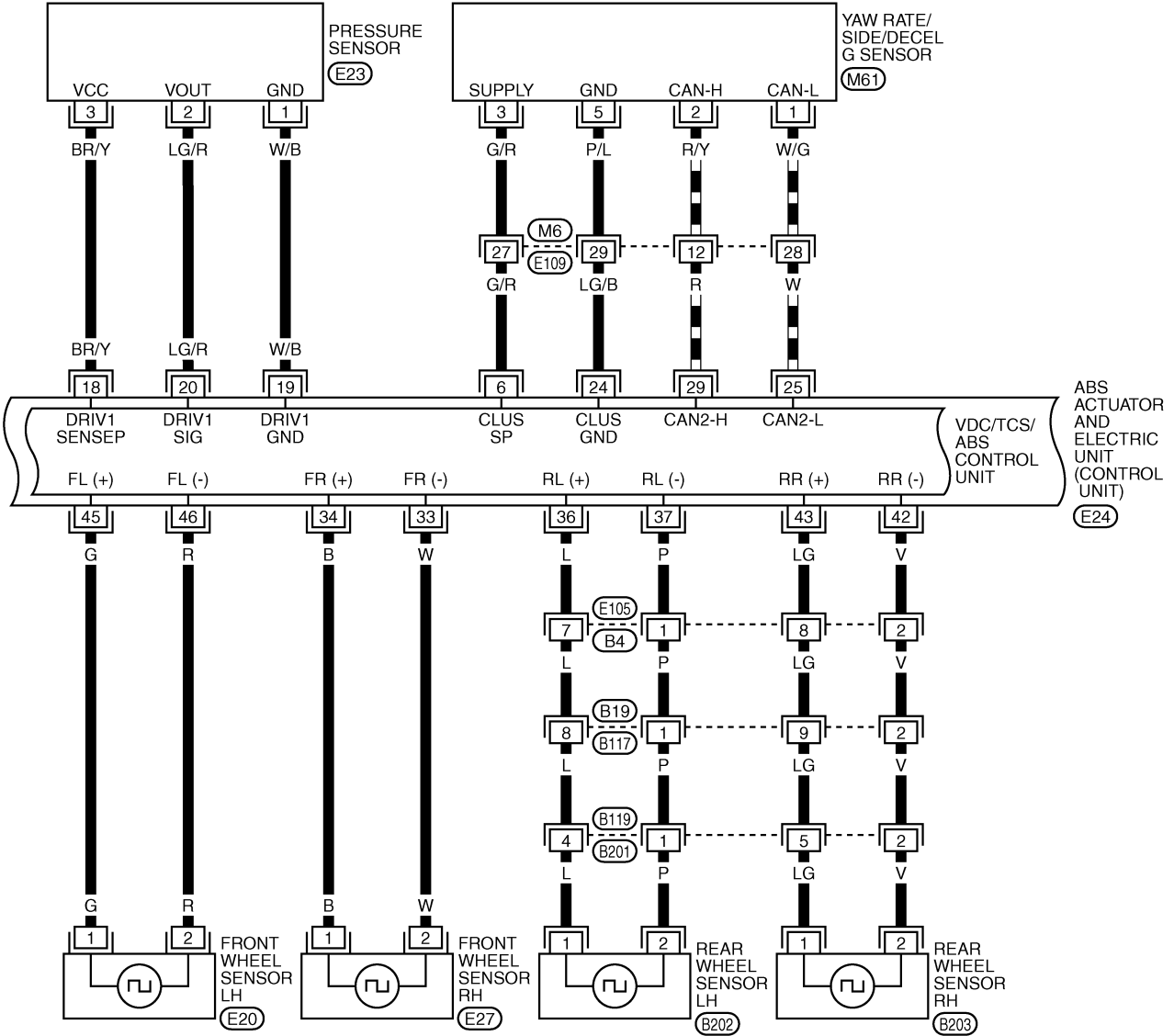
TFWB0038E

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-03

▬ : DATA LINE

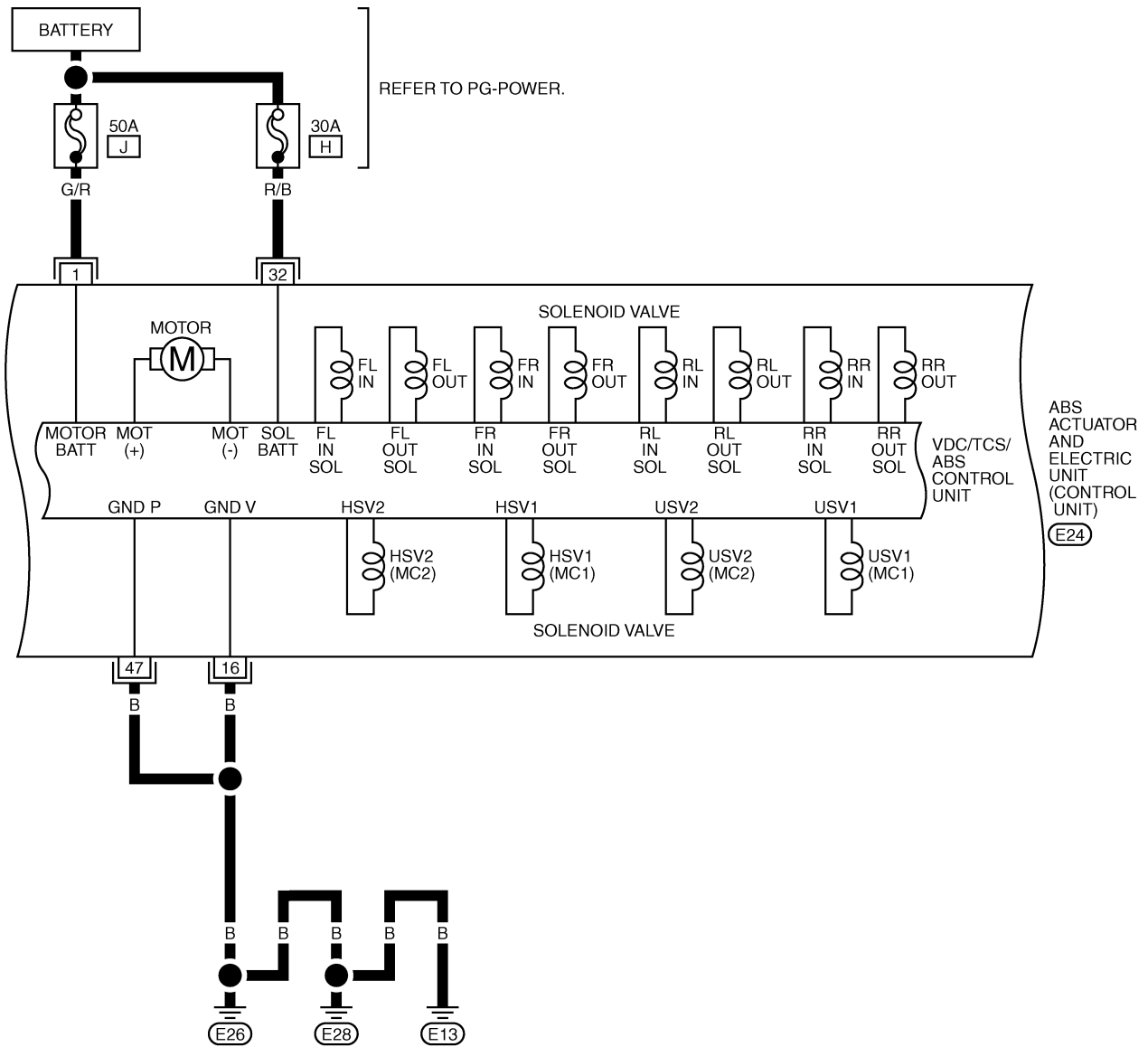


TFWB0039E

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-04



32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
1	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

(E24)
B

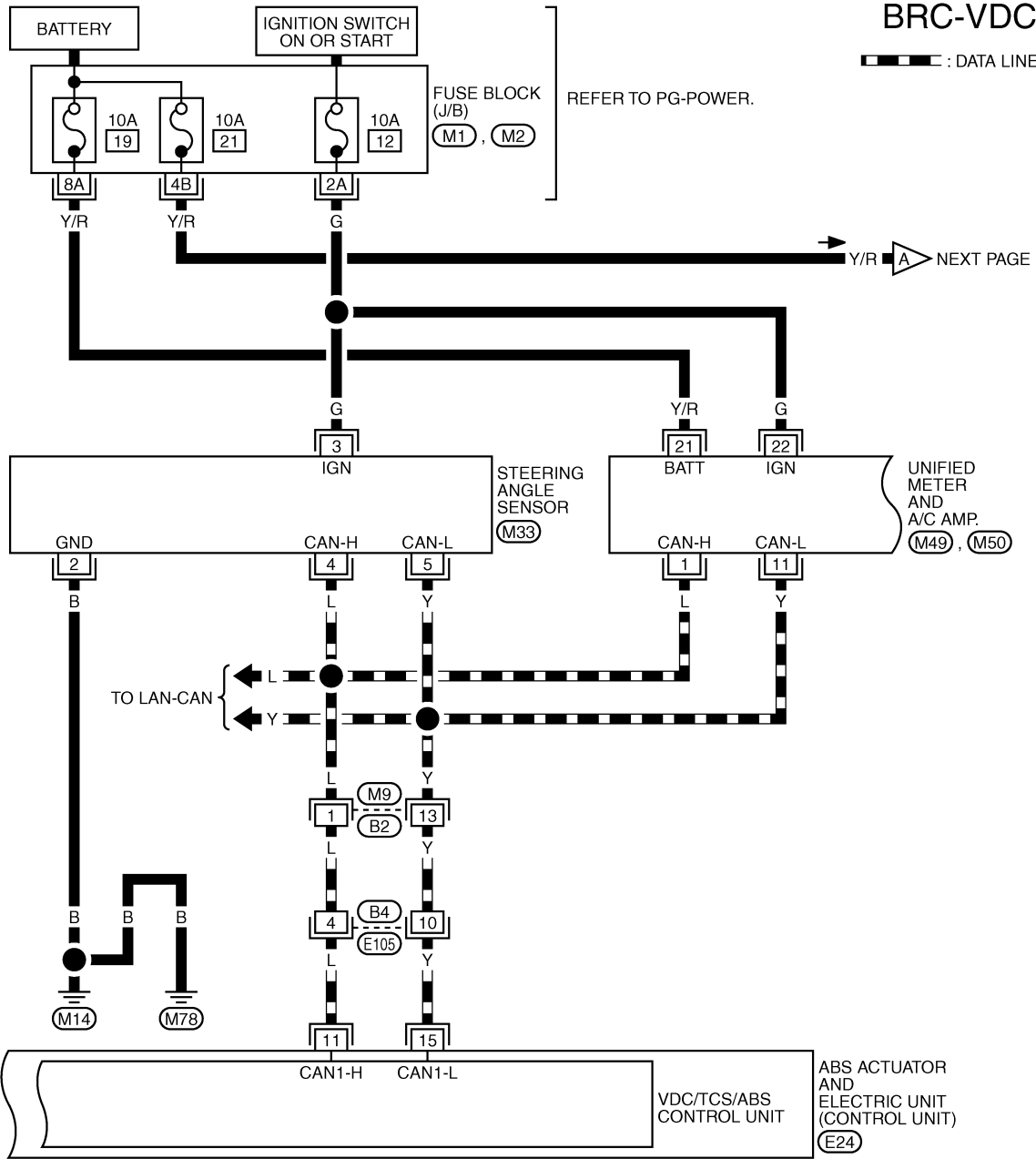
TFWA0069E

TROUBLE DIAGNOSIS

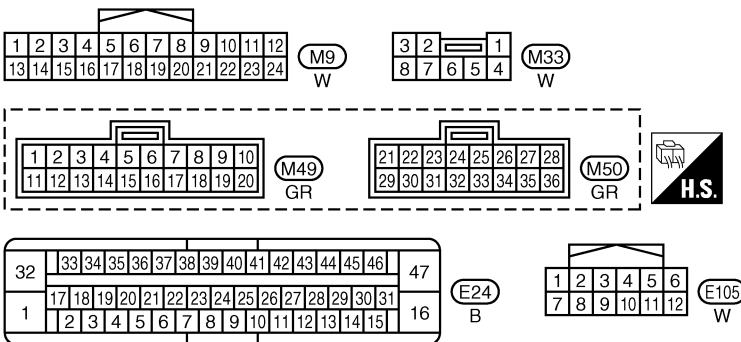
[VDC/TCS/ABS]

BRC-VDC-05

▬ : DATA LINE



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



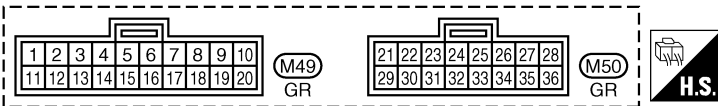
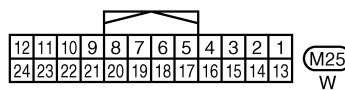
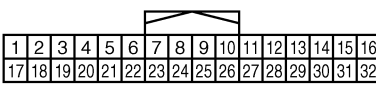
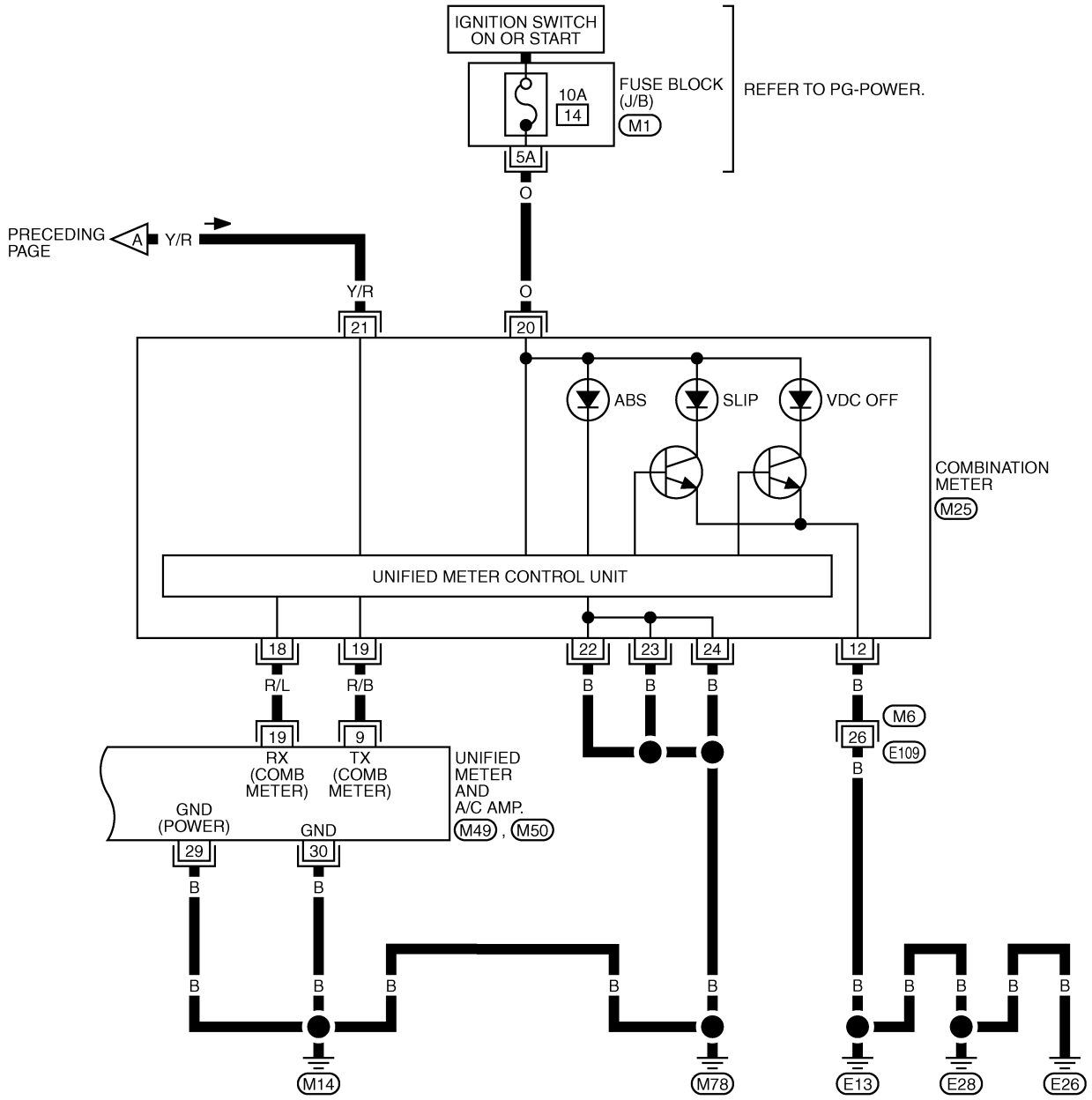
REFER TO THE FOLLOWING.
 (M1), (M2) - FUSE BLOCK-JUNCTION BOX (J/B)

TFWB0040E

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

BRC-VDC-06



REFER TO THE FOLLOWING.
 (M1) - FUSE BLOCK-JUNCTION BOX (J/B)

TFWB0120E

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Control Unit Input/Output Signal Standard

NFS000GH

REFERENCE VALUE FROM CONSULT-II

CAUTION:

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

Monitor item	Display content	Data monitor		Check item
		Condition	Reference value in normal operation	
SLCT LVR POSI	Select shift position	CVT shift position = P, R, D, L, N position	Display selected shift position one of P, R, D, L, and N.	-
		S position	##	
FR RH SENSOR FR LH SENSOR RR RH SENSOR RR LH SENSOR	Wheel speed	Vehicle stopped	0 [km/h]	BRC-81, "Wheel Sensor"
		Vehicle running (Note 1)	Almost in accordance with speedometer display (within ± 10%)	
ACCEL POS SIG	Open/close condition of throttle valve (linked with accelerator pedal).	Accelerator pedal not depressed (ignition switch is ON)	0%	Communication circuit between ABS actuator and electric unit (control unit) and ECM
		Depress accelerator pedal (ignition switch is ON)	0 - 100%	
ENGINE SPEED	With engine running	With engine stopped	0 rpm	BRC-83, "Engine System Control Signal"
		Engine running	Almost in accordance with tachometer display	
STR ANGLE SIG	Steering angle detected by steering angle sensor	Straight-ahead	Approx. 0°	BRC-85, "Steering Angle Sensor"
		Steering wheel turned	-756 - 756°	
YAW RATE SEN	Yaw rate detected by yaw rate/side decel G sensor	Vehicle stopped	Approx. 0 d/s	BRC-87, "Yaw Rate/Side/Decel G Sensor"
		Vehicle running	-100 - 100 d/s	
SIDE G SENSOR	Transverse G detected by yaw rate/side decel G sensor	Vehicle stopped	Approx. 0 m/s ²	BRC-87, "Yaw Rate/Side/Decel G Sensor"
		Vehicle running	-16.7 - 16.7 m/s ²	
PRESS SENSOR	Brake fluid pressure detected by pressure sensor	With ignition switch turned ON and brake pedal released	Approx. 0 bar	BRC-84, "Pressure Sensor"
		With ignition switch turned ON and brake pedal depressed	-0 - 170 bar	
BATTERY VOLT	Battery voltage supplied to ABS actuator and electric unit (control unit)	Ignition switch ON	10 - 16 V	BRC-91, "ABS Actuator and Electric Unit (Control Unit) Power Supply and Ground Circuit"
STOP LAMP SW	Brake pedal operation	Brake pedal depressed	ON	BRC-93, "Stop Lamp Switch"
		Brake pedal not depressed	OFF	
OFF SW	VDC OFF switch ON/OFF status	VDC OFF switch ON (When VDC OFF indicator lamp is ON)	ON	BRC-95, "VDC OFF Switch"
		VDC OFF switch OFF (When VDC OFF indicator lamp is OFF)	OFF	

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Monitor item	Display content	Data monitor		Check item
		Condition	Reference value in normal operation	
ABS WARN LAMP	ABS warning lamp ON condition (Note 2)	ABS warning lamp ON	ON	BRC-79. "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, BRAKE WARNING LAMP AND SLIP INDICATOR LAMP"
		ABS warning lamp OFF	OFF	
MOTOR RELAY	Operation status of motor and motor relay	Ignition switch ON or engine running (ABS not operated)	OFF	BRC-90. "Actuator Motor and Motor Relay"
		Ignition switch ON or engine running (ABS operated)	ON	
ACTUATOR RLY	Actuator relay operation status	Vehicle stopped (Ignition switch ON)	OFF	BRC-90. "Actuator Motor and Motor Relay"
		Vehicle stopped (Engine running)	ON	
OFF LAMP	VDC OFF indicator lamp status (Note 3)	When VDC OFF indicator lamp is ON	ON	BRC-95. "VDC OFF Switch"
		When VDC OFF indicator lamp is OFF	OFF	
SLIP LAMP	SLIP indicator lamp status (Note 4)	When SLIP indicator lamp is ON	ON	BRC-79. "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, BRAKE WARNING LAMP AND SLIP INDICATOR LAMP"
		When SLIP indicator lamp is blinking		
		When SLIP indicator lamp is OFF	OFF	
FR LH IN SOL FR LH OUT SOL FR RH IN SOL FR RH OUT SOL RR RH IN SOL RR RH OUT SOL RR LH IN SOL RR LH OUT SOL	Solenoid valve operation	Actuator (solenoid) is active ("ACTIVE TEST" with CONSULT-II) or actuator relay is inactive (in fail-safe mode).	ON	BRC-89. "Solenoid and VDC Change-Over Valve"
		When actuator (solenoid) is not active and actuator relay is active (ignition switch ON).	OFF	
CV1 CV2 SV1 SV2	VDC/TCS switch-over valve status	When actuator (switch-over valve) is active ("ACTIVE TEST" with CONSULT-II) or actuator relay is inactive (when in fail-safe mode).	ON	BRC-89. "Solenoid and VDC Change-Over Valve"
		When actuator (switch-over valve) is not active and actuator relay is active (ignition switch ON).	OFF	
DECEL G-SEN	Longitudinal acceleration detected by Decel G Sensor (Note5)	Vehicle stopped	Approx. 0G	BRC-87. "Yaw Rate/Side/Decel G Sensor"
		Vehicle running	-1.7 - +1.7G	
FLUID LEV SW	ON/OFF status of brake fluid level switch	When brake fluid level switch ON	ON	BRC-93. "Brake Fluid Level Switch"
		When brake fluid level switch OFF	OFF	

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Monitor item	Display content	Data monitor		Check item
		Condition	Reference value in normal operation	
VDC FAIL SIG TCS FAIL SIG ABS FAIL SIG EBD FAIL SIG	Fail signal status	VDC fail TCS fail ABS fail EBD fail	ON	VDC system TCS system ABS system EBD system
		VDC normal TCS normal ABS normal EBD normal	OFF	
EBD WARN LAMP	Brake warning lamp on condition (Note 6)	Brake warning lamp ON	ON	BRC-79. "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, BRAKE WARNING LAMP AND SLIP INDICATOR LAMP"
		Brake warning lamp OFF	OFF	
EBD SIGNAL	EBD operation	EBD active	ON	-
		EBD not active	OFF	
ABS SIGNAL	ABS operation	ABS active	ON	
		ABS not active	OFF	
TCS SIGNAL	TCS operation	TCS active	ON	
		TCS not active	OFF	
VDC SIGNAL	VDC operation	VDC active	ON	
		VDC not active	OFF	
CRANKING SIG	CRANKING status	Cranking	ON	
		Not cranking	OFF	
4WD FAIL REQ	ETS fail status (Note 5)	ETS fail	ON	
		ETS normal	OFF	
2WD/4WD	Drive axle	2WD model	2WD	
		AWD model	4WD	

A
B
C
D
E
BRC
G
H
I
J
K

Note 1: Confirm tire pressure is normal.

Note 2: ON/OFF timing of ABS warning lamp

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

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

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

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

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

Note 4: ON/OFF timing of SLIP indicator lamp

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

OFF: After ignition switch is turned ON (when system is in normal operation) and VDC/TCS function is not activated.

Blinking: VDC/TCS function is active during driving

Note 5: Only AWD model.

Note 6: Serves as EBD warning lamp.

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

NFS000GI

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.	BRC-49
SELF-DIAG RESULTS	Self-diagnostic results can be read and erased quickly.	BRC-70
DATA MONITOR	Input/Output data in the ABS actuator and electric unit (control unit) can be read.	BRC-72
CAN DIAG SUPPORT MNTR	The results of transmit/receive diagnosis of communication can be read.	LAN-17

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Diagnostic test mode	Function	Reference
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.	BRC-75
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.	BRC-76

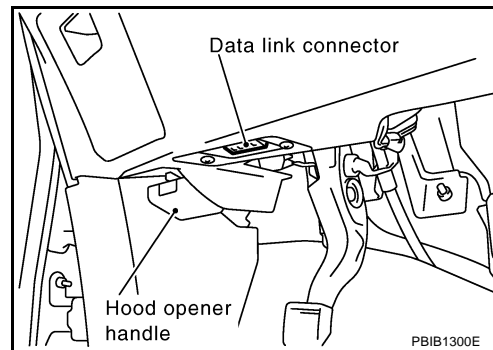
CONSULT-II SETTING PROCEDURE

CAUTION:

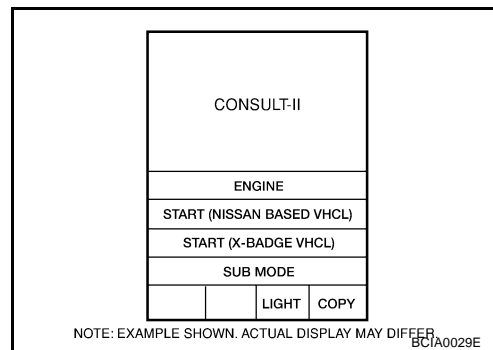
If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which performs CAN communication.

- For further information, see the CONSULT-II Operation Manual.

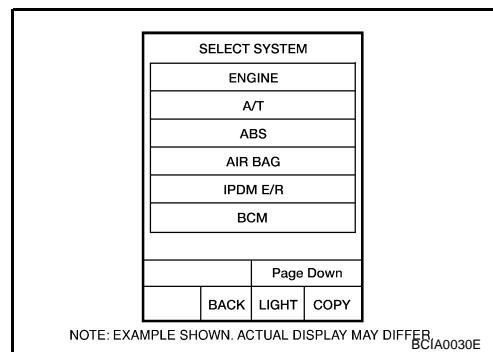
- Turn ignition switch "OFF".
- Connect CONSULT-II and CONSULT-II CONVERTER to the data link connector on vehicle.
- Turn ignition switch "ON".



- Touch "START (NISSAN BASED VHCL)".



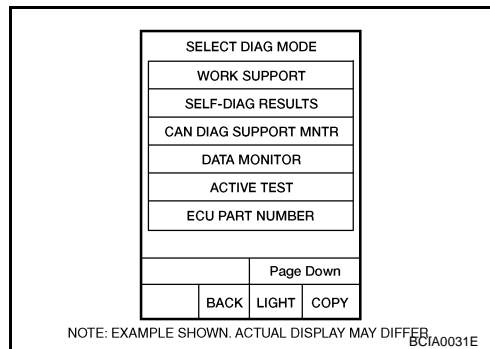
- Touch "ABS".
If "ABS" is not indicated, go to [GI-39, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).



TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

6. Select the required diagnostic location from the "SELECT DIAG MODE" screen.



A

B

C

D

E

BRC

G

H

I

J

K

L

M

SELF-DIAG RESULT MODE

Description

If an error is detected in the system, ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp on the combination meter turn on. In this case, perform self-diagnosis as follows.

Operation Procedure

1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [BRC-68, "CONSULT-II SETTING PROCEDURE"](#).
2. Start engine and drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute.
3. After stopping the vehicle, with engine running at idle speed, touch "START (NISSAN BASED VHCL)", "ABS", "SELF-DIAG RESULTS" in order on the CONSULT-II screen.
If "ABS" is not indicated, go to [GI-39, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).

CAUTION:

- If there is no error during CONSULT-II use, ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp may be turned ON/OFF.
 - If "START (NISSAN BASED VHCL)" is touched immediately after starting engine or turning on ignition switch, "ABS" might not be displayed in the System Selection screen. In this case, repeat the operation from step 1. If it connect be shown after several attempts, ABS actuator and electric unit (control unit) may have malfunction. Repair or replace control unit.
4. The self-diagnostic results are displayed. (If necessary, the self-diagnostic results can be printed out by touching "PRINT".)
 - When "NO FAILURE" is displayed, check ABS warning lamp, VDC OFF indicator lamp, and SLIP indicator lamp.
 5. Conduct the appropriate inspection from the display item list, and repair or replace the malfunctioning component.
 6. Start engine and drive at approximately 30 km/h (19 MPH) or more for approximately 1 minute.

CAUTION:

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

Display Item List

Items (CONSULT-II screen terms)	Malfunction detecting condition	Check item	
FR LH SENSOR- 1 [C1104]	Circuit of front LH wheel sensor is open, or shorted or sensor power voltage is unusual.		
RR RH SENSOR- 1 [C1101]	Circuit of rear RH wheel sensor is open, or shorted or sensor power voltage is unusual.		
FR RH SENSOR- 1 [C1103]	Circuit of front RH wheel sensor is open, or shorted or sensor power voltage is unusual.		
RR LH SENSOR- 1 [C1102]	Circuit of rear LH wheel sensor is open, or shorted or sensor power voltage is unusual.		
FR LH SENSOR- 2 [C1108]	ABS actuator and electric unit (control unit) can not identify sensor pulses, because of large gap between wheel sensor and sensor rotor.		BRC-81, "Wheel Sensor" (Note 1)
RR RH SENSOR- 2 [C1105]	ABS actuator and electric unit (control unit) can not identify sensor pulses, because of large gap between wheel sensor and sensor rotor.		
FR RH SENSOR- 2 [C1107]	ABS actuator and electric unit (control unit) can not identify sensor pulses, because of large gap between wheel sensor and sensor rotor.		
RR LH SENSOR- 2 [C1106]	ABS actuator and electric unit (control unit) can not identify sensor pulses, because of large gap between wheel sensor and sensor rotor.		
STOP LAMP SW [C1116]	Stop lamp switch circuit is open or shorted.	BRC-93, "Stop Lamp Switch"	

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Items (CONSULT-II screen terms)	Malfunction detecting condition	Check item
PRESS SEN CIRCUIT [C1142]	Pressure sensor signal line is open or shorted, sensor power voltage is unusual, or pressure sensor is malfunctioning.	BRC-84. "Pressure Sensor"
ST ANGLE SEN CIRCUIT [C1143]	Neutral position of steering angle sensor is dislocated, or steering angle sensor is malfunctioning.	BRC-85. "Steering Angle Sensor"
YAW RATE SENSOR [C1145]	Yaw rate/side decel G sensor has generated an error, or yaw rate/side decel G sensor signal line is open or shorted.	BRC-87. "Yaw Rate/Side/Decel G Sensor"
FR LH IN ABS SOL [C1120]	Circuit of front LH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	BRC-89. "Solenoid and VDC Change-Over Valve"
FR LH OUT ABS SOL [C1121]	Circuit of front LH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
RR RH IN ABS SOL [C1126]	Circuit of rear RH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
RR RH OUT ABS SOL [C1127]	Circuit of rear RH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
FR RH IN ABS SOL [C1122]	Circuit of front RH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
FR RH OUT ABS SOL [C1123]	Circuit of front RH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
RR LH IN ABS SOL [C1124]	Circuit of rear LH IN ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
RR LH OUT ABS SOL [C1125]	Circuit of rear LH OUT ABS solenoid is open or shorted, or control line is open or shorted to power supply or ground.	
CV1 [C1164]	Front side VDC switch-over solenoid valve (cut valve 1) is open or shorted, or control line is open or shorted to power supply or ground.	
CV2 [C1165]	Rear side VDC switch-over solenoid valve (cut valve 2) is open or shorted, or control line is open or shorted to power supply or ground.	
SV1 [C1166]	Front side VDC switch-over solenoid valve (suction valve 1) is open or shorted, or control line is open or shorted to power supply or ground.	
SV2 [C1167]	Rear side VDC switch-over solenoid valve (suction valve 2) is open or shorted, or control line is open or shorted to power supply or ground.	
PUMP MOTOR (Note 3) [C1111]	During actuator motor operation with ON, when actuator motor turns OFF or when control line for actuator motor relay is open.	BRC-90. "Actuator Motor and Motor Relay"
	During actuator motor operation with OFF, when actuator motor turns ON or when control line for relay is shorted to ground.	
ABS SENSOR [ABNORMAL] [C1115]	Wheel sensor input is malfunction.	BRC-81. "Wheel Sensor" (Note 1)
BATTERY VOLTAGE [ABNORMAL] [C1109]	ABS actuator and electric unit (control unit) power voltage is too low.	BRC-91. "ABS Actuator and Electric Unit (Control Unit) Power Supply and Ground Circuit"
ST ANGLE SEN SIGNAL [C1144]	Neutral position correction of steering angle sensor is not finished.	BRC-85. "Steering Angle Sensor"
ST ANG SEN COM CIR [C1156]	CAN communication line or steering angle sensor has generated an error.	
SIDE G-SEN CIRCUIT [C1146]	Yaw rate/side decel G sensor is malfunctioning, or signal line of yaw rate/side decel G sensor is open or shorted.	BRC-87. "Yaw Rate/Side/Decel G Sensor"
CONTROLLER FAILURE [C1110]	Internal malfunction of ABS actuator and electric unit (control unit)	BRC-84. "ABS Actuator and Electric Unit (Control Unit)"

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Items (CONSULT-II screen terms)	Malfunction detecting condition	Check item
CAN COMM CIRCUIT [U1000]	<ul style="list-style-type: none"> ● CAN communication line is open or shorted. ● ABS actuator and electric unit (control unit) internal malfunction ● Battery voltage for EMC is suddenly interrupted for approximately 0.5 seconds or more. 	BRC-96. "CAN Communication Circuit" (Note 2)
BR FLUID LEVEL LOW [C1155]	Brake fluid level drops or circuit between ABS actuator and electric unit (control unit) and brake fluid level switch is open or shorted.	BRC-93. "Brake Fluid Level Switch"
VARIANT CODING [C1170]	V coding is not functioning.	ABS actuator and electric unit (control unit) and circuit
G - SENSOR [C1113]	Decel G sensor is malfunctioning, or signal line of Decel G sensor is open or shorted.	BRC-87. "Yaw Rate/Side/Decel G Sensor"
ENGINE SIGNAL 1 [C1130]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine fuel cut system is malfunctioning.	BRC-83. "Engine System Control Signal"
ENGINE SIGNAL 2 [C1131]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine ETC system is malfunctioning.	
ENGINE SIGNAL 3 [C1132]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine CAN system is malfunctioning.	
ENGINE SIGNAL 4 [C1133]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine torque down system is malfunctioning.	
ENGINE SIGNAL 6 [C1136]	Based on the signal from ECM, ABS actuator and electric unit (control unit) judges that engine control system is malfunctioning.	
ACTUATOR RLY [C1140]	<ul style="list-style-type: none"> ● Actuator solenoid valve relay is ON, even if control unit sends off signal. ● Actuator solenoid valve relay is OFF, even if control unit sends on signal. 	
DECCEL G SEN SET [C1160]	Neutral position correction of Decel G -sensor is not finished.	BRC-50. "Calibration of Decel G Sensor"

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

How to Erase Self-Diagnostic Results

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

CAUTION:

If memory cannot be erased, perform applicably diagnosis.

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

DATA MONITOR MODE

Operation Procedure

1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [BRC-68. "CONSULT-II SETTING PROCEDURE"](#).
2. Touch "DATA MONITOR".
3. Select from "SELECT MONITOR ITEM", screen of data monitor mode is displayed.

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

NOTE:

When malfunction is detected, CONSULT-II performs REAL-TIME DIAGNOSIS.
Also, any malfunction detected while in this mode will be displayed at real time.

Display Item List

×: Applicable –: Not applicable

Data monitor item (Unit)	SELECT MONITOR ITEM			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
FR RH SENSOR (km/h)	×	×	×	Wheel speed calculated by front RH wheel sensor signal is displayed.
FR LH SENSOR (km/h)	×	×	×	Wheel speed calculated by front LH wheel sensor signal is displayed.
RR RH SENSOR (km/h)	×	×	×	Wheel speed calculated by rear RH wheel sensor signal is displayed.
RR LH SENSOR (km/h)	×	×	×	Wheel speed calculated by rear LH wheel sensor signal is displayed.
BATTERY VOLT (V)	×	×	×	Voltage supplied to ABS actuator and electric unit (control unit).
SLCT LVR POSI	×	×	×	Shift position judged by CVT PNP switch signal.
ACCEL POS SIG (%)	×	–	–	Throttle valve open/close status judged by CAN communication signal is displayed.
ENGINE SPEED (rpm)	×	×	×	Engine speed judged by CAN communication signal is displayed.
STR ANGLE SIG (°)	×	–	–	Steering angle detected by steering angle sensor is displayed.
YAW RATE SEN (d/s)	×	×	–	Yaw rate detected by yaw rate side G sensor is displayed.
DECEL G SEN (G) (Only AWD model)	×	×	×	Decel acceleration detected by Decel G sensor is displayed.
SIDE G-SENSOR (m/s ²)	×	–	–	Lateral acceleration detected by yaw rate/side G sensor is displayed.
PRESS SENSOR (bar)	×	–	–	Brake fluid pressure detected by pressure sensor is displayed.
STOP LAMP SW (ON/OFF)	×	×	×	Stop lamp switch (ON/OFF) status is displayed.
OFF SW (ON/OFF)	×	×	×	VDC OFF switch (ON/OFF) status is displayed.
ABS WARN LAMP (ON/OFF)	–	×	×	ABS warning lamp (ON/OFF) status is displayed.
SLIP LAMP (ON/OFF)	–	×	×	SLIP indicator lamp (ON/OFF) status is displayed.
FR LH IN SOL (ON/OFF)	–	×	×	Front LH IN ABS solenoid (ON/OFF) status is displayed.
FR LH OUT SOL (ON/OFF)	–	×	×	Front LH OUT ABS solenoid (ON/OFF) status is displayed.
RR RH IN SOL (ON/OFF)	–	×	×	Rear RH IN ABS solenoid (ON/OFF) status is displayed.
RR RH OUT SOL (ON/OFF)	–	×	×	Rear RH OUT ABS solenoid (ON/OFF) status is displayed.
FR RH IN SOL (ON/OFF)	–	×	×	Front RH IN ABS solenoid (ON/OFF) status is displayed.

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Data monitor item (Unit)	SELECT MONITOR ITEM			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
FR RH OUT SOL (ON/OFF)	-	×	×	Front RH OUT ABS solenoid (ON/OFF) status is displayed.
RR LH IN SOL (ON/OFF)	-	×	×	Rear LH IN ABS solenoid (ON/OFF) status is displayed.
RR LH OUT SOL (ON/OFF)	-	×	×	Rear LH OUT ABS solenoid (ON/OFF) status is displayed.
OFF LAMP (ON/OFF)	-	×	×	OFF Lamp (ON/OFF) status is displayed.
MOTOR RELAY (ON/OFF)	-	×	×	ABS motor relay signal (ON/OFF) status is displayed.
ACTUATOR RLY (ON/OFF)	-	×	×	ABS actuator relay signal (ON/OFF) status is displayed.
CV1 (ON/OFF)	-	-	×	Front side switch-over solenoid valve (cut valve 1) (ON/OFF) status is displayed.
CV2 (ON/OFF)	-	-	×	Rear side switch-over solenoid valve (cut-valve 2) (ON/OFF) status is displayed.
SV1 (ON/OFF)	-	-	×	Front side switch-over solenoid valve (suction valve 1) (ON/OFF) status is displayed.
SV2 (ON/OFF)	-	-	×	Rear side switch-over solenoid valve (suction valve 2) (ON/OFF) status is displayed.
VDC FAIL SIG (ON/OFF)	-	-	×	VDC fail signal (ON/OFF) status is displayed.
TCS FAIL SIG (ON/OFF)	-	-	×	TCS fail signal (ON/OFF) status is displayed.
ABS FAIL SIG (ON/OFF)	-	-	×	ABS fail signal (ON/OFF) status is displayed.
EBD FAIL SIG (ON/OFF)	-	-	×	EBD fail signal (ON/OFF) status is displayed.
FLUID LEV SW (ON/OFF)	×	-	-	Brake fluid level switch (ON/OFF) status is displayed.
EBD SIGNAL (ON/OFF)	-	-	×	EBD operation (ON/OFF) status is displayed.
ABS SIGNAL (ON/OFF)	-	-	×	ABS operation (ON/OFF) status is displayed.
TCS SIGNAL (ON/OFF)	-	-	×	TCS operation (ON/OFF) status is displayed.
VDC SIGNAL (ON/OFF)	-	-	×	VDC operation (ON/OFF) status is displayed.
EBD WARN LAMP (ON/OFF)	-	-	×	Brake warning lamp (ON/OFF) status is displayed. (Note)
CRANKING SIG (ON/OFF)	-	-	×	Cranking condition (ON/OFF) status is displayed.
4WD FAIL REQ (ON/OFF)	-	-	×	AWD fail-safe signal (ON/OFF) status is displayed.
2WD/4WD (2WD/4WD)	-	-	×	Distinguish 2WD and AWD

Note: Serves as EBD warning lamp.

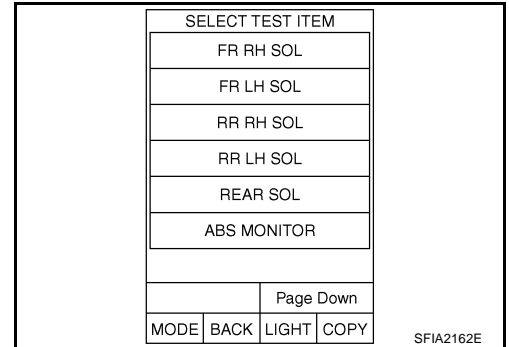
ACTIVE TEST

CAUTION:

- Do not perform active test while driving vehicle.
- Make sure to completely bleed air from the brake system.
- Active test can not be performed when ABS warning lamp is on.
- ABS and brake warning lamps turn on during the active test.

Operation Procedure

1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [BRC-68, "CONSULT-II SETTING PROCEDURE"](#).
2. Touch "ACTIVE TEST".
3. Touch "SELECT TEST ITEM" is displayed.
4. Touch necessary test item.
5. With "SELECT TEST SIGNALS" display shown in reverse, touch "START".
6. "ACTIVE TEST" screen will be displayed, so conduct following test.



NOTE:

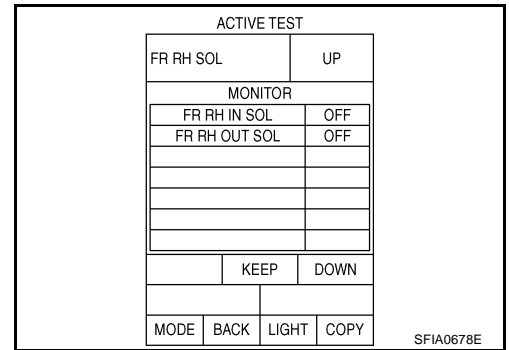
- When active test is performed while depressing pedal, pedal depression amount will change, but this is normal.
- Approximately 10 seconds after operation is begun, "TEST STOP" will be displayed.
- To perform retest after "TEST STOP" is displayed, touch "BACK" and conduct the test from the Step 3.

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". Then use screen monitor to check that solenoid valve operates as shown in Solenoid Valve Operation Chart. Refer to "Solenoid Valve Operation Chart".



Solenoid Valve Operation Chart

Operation	ABS solenoid valve			ABS solenoid valve (ACT)		
	UP	KEEP	DOWN	UP	ACTUATOR UP	ACTUATOR KEEP
FR RH IN SOL	OFF	ON	ON	OFF	OFF	OFF
FR RH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
FR LH IN SOL	OFF	ON	ON	OFF	OFF	OFF
FR LH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
RR RH IN SOL	OFF	ON	ON	OFF	OFF	OFF
RR RH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
RR LH IN SOL	OFF	ON	ON	OFF	OFF	OFF
RR LH OUT SOL	OFF	OFF	ON*	OFF	OFF	OFF
Primary side VDC switch over valve 1 (SV 1)	OFF	OFF	OFF	OFF	ON*	OFF

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

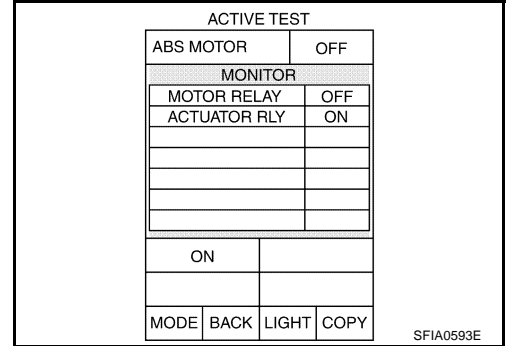
Operation	ABS solenoid valve			ABS solenoid valve (ACT)		
	UP	KEEP	DOWN	UP	ACTUATOR UP	ACTUATOR KEEP
Primary side VDC switch over valve 1 (CV 1)	OFF	OFF	OFF	OFF	ON	ON
Secondary side VDC switch over valve 2 (SV 2)	OFF	OFF	OFF	OFF	ON*	OFF
Secondary side VDC switch over valve 2 (CV 2)	OFF	OFF	OFF	OFF	ON	ON

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

ABS Motor

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

Operation	ON	OFF
ACTUATOR RLY	ON	ON
MOTOR RELAY	ON	OFF



ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) PART NUMBER

Ignore the ABS actuator and electric unit (control unit) part number displayed in the "ECU PART NUMBER". Refer to parts catalog to order the ABS actuator and electric unit (control unit).

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

Trouble Diagnosis Chart for Symptoms

NFS000LF

If ABS warning lamp, VDC OFF indicator lamp and SLIP indicator lamp turn ON, perform self-diagnosis. Refer to [BRC-70, "SELF-DIAG RESULT MODE"](#).

Symptom	Check item	Reference Page
Excessive ABS Function Operation Frequency	Brake force distribution	BRC-98
	Looseness of front and rear axle	
	Wheel sensor and rotor system	
Unexpected pedal reaction	Brake pedal stroke	BRC-98
	Make sure the braking force is sufficient when the ABS is not operating.	
The braking distance is long	Check stopping distance when the ABS is not operating.	BRC-99
ABS function does not operate	Wheel sensor	BRC-99
	The ABS does not operate when the speed is 10 km/h (6MPH) or less.	
Pedal vibration or ABS operation sound occurs	Wheel sensor	BRC-99
	When brake pedal is lightly depressed (just place a foot on it), ABS is activated and vibration is felt. However this is normal,	
Vehicle jerks during VDC/TCS/ABS control	VDC/TCS/ABS control unit	BRC-100
	Unified ECM	
	Unified TCM	
ABS warning lamp indication is not normal	CAN communication line	BRC-100
	VDC/TCS/ABS control unit	
	Combination meter	
Slip indicator lamp is not normal	CAN communication line	BRC-101
	VDC/TCS/ABS control unit	
	Combination meter	
VDC OFF indicator lamp is not normal	CAN communication line	BRC-102
	VDC/TCS/ABS control unit	
	Combination meter	

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

For Fast and Accurate Diagnosis

NFS000GJ

PRECAUTIONS FOR DIAGNOSIS

- Before performing diagnosis, always read precautions. Refer to [GI-4, "General Precautions"](#) .
- If ABS actuator and electric unit (control unit), steering angle sensor, steering system parts, suspension system parts, or tires have been replaced, or if alignment has been adjusted, be sure to adjust neutral position of steering angle sensor before driving. Refer to [BRC-49, "Adjustment of Steering Angle Sensor Neutral Position"](#) .
- After diagnosis is finished, be sure to erase memory. Refer to [BRC-70, "Operation Procedure"](#) .
- When checking continuity and voltage between units, be sure to check for disconnection, looseness, bend, or collapse of connector terminals. If any malfunction is found, repair or replace connector terminals.
- For intermittent symptoms, possible cause is malfunction in harness, harness connector, or terminals. Move harness, harness connector, and terminals to check for poor connections.
- If a circuit tester is used for the check, be careful not to forcibly extend any connector terminal.
- To use CONSULT-II to perform self-diagnosis of ABS actuator and electric unit (control unit), active tests, or work support, first stop work, then connect CONSULT-II and select "ABS".
- While self-diagnosis results of CONSULT-II shows malfunction, if CONSULT-II active test is performed, an engine system error may be indicated. In this case, start engine to resume the normal screen.
- VDC/TCS/ABS system electronically controls brake operation and engine output. The following symptoms may be caused by normal operations:
- When CONSULT-II is used, ABS warning lamp, VDC OFF indicator lamp, SLIP indicator lamp may be ON/OFF.

Symptom	Symptom description	Result
Motor operation noise	This is noise of motor inside ABS actuator and electric unit (control unit). Slight noise may occur during VDC, TCS, and ABS operation.	Normal
	When the vehicle speed goes over 20 km/h (12.5 MPH), the motor and valves operating noise may be heard. It happens only once after IGN (ignition) is ON. This is a normal status of the system operation check.	
System operation check noise	When engine starts, slight "click" noise may be heard from engine compartment. This is normal and is part of system operation check.	Normal
VDC/TCS operation (SLIP lamp Blinking)	TCS may activate momentarily if wheel speed changes when driving over location where friction coefficient varies, when downshifting, or when fully depressing accelerator pedal.	Normal Cancel the VDC/TCS function for the inspection on a chassis dynamometer.
	For inspection of speedometer or other instruments, press VDC OFF SW to turn VDC/TCS function off.	
	When accelerator pedal is depressed on a chassis dynamometer (fixed front-wheel type), vehicle speed will not increase. This is not normal. It is result of TCS being activated by stationary front wheels. Warning lamp may also illuminate to indicate "sensor system error". This is also normal, and is the result of the stationary front wheels being detected. To be certain, restart engine, and drive vehicle at 30 km/h (19 MPH) or above. Make sure that warning lamp does not illuminate.	
ABS operation (Longer stopping distance)	On roads with low friction coefficients, such as snowy roads or gravel roads, vehicles with ABS may require a longer stopping distance. Therefore, when driving on such roads, avoid overconfidence and keep speed sufficiently low.	Normal
Insufficient feeling of acceleration	Depending on road conditions, driver may feel that feeling of acceleration is insufficient. This is because traction control, which controls 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

BRAKE FLUID LEVEL, LEAKS, AND BRAKE PADS

1. Check fluid level in the brake reservoir tank. If fluid level is low, refill the brake fluid.
2. Check the brake piping and around the ABS actuator and electric unit (control unit) for leaks. If leakage or seepage is found, check the following items.
 - If ABS actuator and electric unit (control unit) connection is loose, tighten the piping to the specified torque and make sure there are no leaks.
 - If there is damage to the connection flare nut or ABS actuator and electric unit (control unit) screw, replace the damaged part and re-conduct the leak inspection to make sure there are no leaks.
 - If there is leakage or seepage at any location other than ABS actuator and electric unit (control unit) connection, wipe away leakage or seepage with clean cloth. Then inspect again and confirm the there is on leakage.
 - If there is leakage from ABS actuator and electric unit (control unit), wipe away leakage or seepage with clean cloth. Then inspect again. If there is leakage or seepage, replace ABS actuator and electric unit (control unit).

CAUTION:

ABS actuator and electric unit (control unit) body can not be disassembled.

3. Check brake disc and pads. Refer to [BR-26, "Removal and Installation of Brake Pad"](#) in "Front Disc Brake" and [BR-32, "Removal and Installation of Brake Pad"](#) in "Rear Disc Brake".

POWER SYSTEM TERMINAL LOOSENESS AND BATTERY

Make sure the battery positive cable, negative cable and ground connection are not loose. If looseness is detected, tighten the piping to the specified torquer. In addition, check the battery voltage to make sure it has not dropped and the altimeter is normal.

ABS WARNING LAMP, VDC OFF INDICATOR LAMP, BRAKE WARNING LAMP AND SLIP INDICATOR LAMP

×: ON -: OFF

Condition	ABS warning lamp	VDC OFF indicator lamp	SLIP indicator lamp	Brake warning lamp [Note 1]	Remarks
Ignition SW OFF.	-	-	-	-	-
Approx. 2 seconds after ignition switch is turned ON.	×	×	×	× [Note 2]	-
Approx. 2 seconds later after ignition switch ON.	-	-	-	× [Note 2]	Go out 2 seconds after ignition switch is turned ON.
VDC OFF SW is turned ON. (VDC/TCS function is OFF.)	-	×	-	-	-
VDC/TCS/ABS error.	×	×	×	-	There is an ABS actuator and electric unit (control unit) error. (Power, ground or system malfunction)
When VDC/TCS is not functioning normally.	-	×	×	-	-
EBD error.	×	×	×	×	-

NOTE:

1. Brake warning lamp will turn on in case of operating parking brake (switch turned on) or of actuating brake fluid level switch (brake fluid is insufficient).
2. After starting engine, turn OFF.

Check the following items when unsuitable for an above condition.

- ABS warning lamp: [BRC-96, "CAN Communication Circuit"](#) .
- Brake warning lamp: [BRC-96, "CAN Communication Circuit"](#) , [BRC-93, "Brake Fluid Level Switch"](#) .
- VDC OFF indicator lamp: [BRC-96, "CAN Communication Circuit"](#) , [BRC-95, "VDC OFF Switch"](#) .
- SLIP indicator lamp: [BRC-96, "CAN Communication Circuit"](#) .

TROUBLE DIAGNOSIS

[VDC/TCS/ABS]

If malfunction is not found, refer to [DI-4, "COMBINATION METERS"](#) .

TROUBLE DIAGNOSIS FOR SYSTEM

PFP:00000

Wheel Sensor

NFS000GL

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

CAUTION:

- Do not measure the resistance value and also voltage between sensor terminal with tester etc., because a sensor is an active sensor.
- Do not expand terminal of connector with a tester terminal stick, when it does the inspection with the tester.

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

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

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

Is above displayed in the self-diagnosis display?

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

2. CHECK TIRE

Check air pressure, wear, and size.

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

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

3. CHECK SENSOR AND SENSOR ROTOR

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

OK or NG

- OK >> GO TO 4.
NG >> Repair sensor mount or replace sensor rotor. Refer to [BRC-104, "SENSOR ROTOR"](#).

4. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24 and the malfunctioning wheel sensor connector E20 (FR - LH) or E27 (FR - RH) or B202 (RR - LH), B203 (RR - RH). Check terminal to see if it is deformed, disconnected, loose, etc., and repair or replace it if any malfunction condition is found.
3. Reconnect connectors and check that interference with other parts has not cut wheel sensor cables, drive at a speed of 30 km/h (19 MPH) or above for at least 1minute, and conduct self-diagnosis.

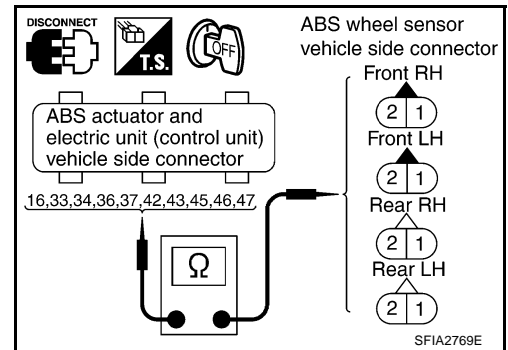
OK or NG

OK >> GO TO 5.

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

5. CHECK WHEEL SENSOR HARNESS

1. Turn ignition switch "OFF".
2. Disconnect the wheel sensor connector E20 (FR - LH), E27 (FR - RH), B202 (RR - LH), B203 (RR - RH) and ABS actuator and electric unit (control unit) connector E24.
3. 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)	ABS actuator and electric unit (control unit) (Ground)
Front RH	34	1	33	2	33, 34	16, 47
Front LH	45	1	46	2	45, 46	
Rear RH	43	1	42	2	43, 42	
Rear LH	36	1	37	2	36, 37	

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 harness and connector between ABS actuator and electric unit (control unit) and wheel sensor.

6. CHECK WHEEL SENSOR

1. Replace wheel sensor that resulted in malfunction by self-diagnosis.
2. Reconnect connectors, drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute, and then perform self-diagnosis.

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

Is above displayed on self-diagnosis display?

YES >> Wheel sensor has malfunction.

NO >> ● Replace ABS actuator and electric unit (control unit).

- Perform to self-diagnosis again, and make sure that the result shows "NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED".

**Engine System Control Signal
INSPECTION PROCEDURE**

NFS000GM

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

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

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

Is above displayed in the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK ENGINE SYSTEM

1. Perform an ECM self-diagnosis and repair or replace any malfunction items. Perform the ECM self-diagnosis again.
2. Perform ABS actuator and electric unit (control unit) self-diagnosis again.

OK or NG

OK >> INSPECTION END

NG >> ● Repair or replace malfunctioning components.

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

ABS Actuator and Electric Unit (Control Unit) INSPECTION PROCEDURE

NFS000GN

1. CHECK SELF-DIAGNOSTIC RESULTS

Ⓟ With CONSULT-II

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

 Self-diagnostic results

 CONTROLLER FAILURE

Is above displayed in 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

Pressure Sensor INSPECTION PROCEDURE

NFS000GO

1. CHECK SELF-DIAGNOSTIC RESULTS

Ⓟ With CONSULT-II

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

 Self-diagnostic results

 PRESS SEN CIRCUIT

Is above displayed in the self-diagnosis display?

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

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect pressure sensor connector E23 and ABS actuator and electric unit (control unit) connector E24, check terminals for deformation, disconnection, looseness, and so on. If there is an error, repair or replace terminal.
3. Reconnect connectors and perform the self-diagnosis. Refer to [BRC-70, "SELF-DIAG RESULT MODE"](#).

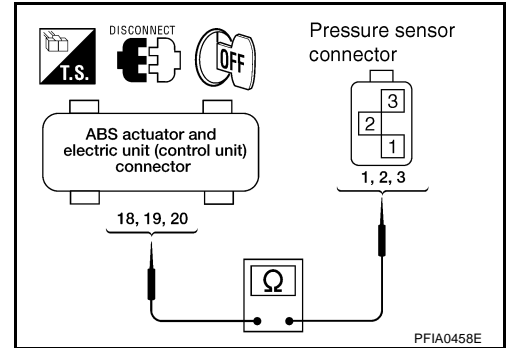
OK or NG

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

3. CHECK PRESSURE SENSOR CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect pressure sensor connector E23 and ABS actuator and electric unit (control unit) connector E24.
3. Check continuity between ABS actuator and electric unit (control unit) connector and pressure sensor connector.

- 19 - 1 : Continuity should exist.**
- 20 - 2 : Continuity should exist.**
- 18 - 3 : Continuity should exist.**



OK or NG

- OK >> GO TO 4.
- NG >> If the open or short in harness, repair or replace harness.

4. CHECK PRESSURE SENSOR

1. Connect pressure sensor connector E23 and ABS actuator and electric unit (control unit) connectors E24.
2. Use "DATA MONITOR" to check the pressure sensor value.

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

OK or NG

- OK >> Perform ABS actuator and electric unit (control unit) self-diagnosis again.
- NG >> Pressure sensor malfunction. Replace ABS actuator and electric unit.

Steering Angle Sensor INSPECTION PROCEDURE

NFS000GP

1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "ABS" with CONSULT-II.
3. Check the self-diagnostic results.

Self-diagnosis results
ST ANGLE SEN COM CIR

Is the "ST ANGLE SEN COM CIR" display?

- YES >> GO TO [LAN-3, "Precautions When Using CONSULT-II"](#).
- NO >> GO TO 2.

2. CHECK SELF-DIAGNOSIS RESULTS

With CONSULT-II

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

Self-diagnosis results

ST ANGLE SEN CIRCUIT

Is the "ST ANGLE SEN CIRCUIT" display?

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

3. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect steering angle sensor connector M33 and ABS actuator and electric unit (control unit) connector E24 and check terminals for deformation, disconnection, looseness, and so on. If there is an error, repair or replace terminal.
3. Reconnect connectors and perform an ABS actuator and electric unit (control unit) self-diagnosis again.

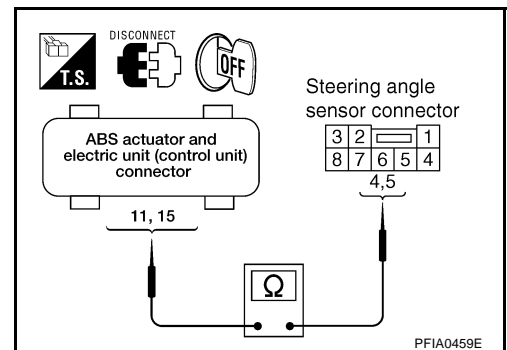
OK or NG

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

4. CHECK STEERING ANGLE SENSOR CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect steering angle sensor connector M33 and ABS actuator and electric unit (control unit) connector E24.
3. Check continuity between ABS actuator and electric unit (control unit) connector terminal and steering angle sensor connector terminal.

- 11 - 4 : Continuity should exist.**
15 - 5 : Continuity should exist.



OK or NG

- OK >> GO TO 5.
 NG >> If the open or short in harness, repair or replace harness.

5. CHECK STEERING WHEEL PLAY

Check steering wheel play. Refer to [PS-36, "SERVICE DATA AND SPECIFICATIONS \(SDS\)"](#) .

OK or NG

- OK >> GO TO 6
 NG >> Adjust steering wheel play.

6. CHECK DATA MONITOR**With CONSULT-II**

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

Steering condition	Data monitor
Straight-ahead	-3.5° to +3.5°
Turn wheel to the right by 90°	Approx. - 90°
Turn wheel to the left by 90°	Approx.+ 90°

OK or NG

- OK >> Perform ABS actuator and electric unit (control unit) self-diagnosis again.
 NG >> Replace spiral cable (steering angle sensor) and adjust neutral position of steering angle sensor.
 Refer to [BRC-49. "Adjustment of Steering Angle Sensor Neutral Position"](#).

Yaw Rate/Side/Decel G Sensor

NFS000GQ

BRC

CAUTION:

Sudden turns (such as spin turns, acceleration turns), drifting, etc. may cause yaw rate/side/decel G sensor circuit indicate a malfunction. However this is not a malfunction if normal operation can be resumed after restarting engine.

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

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

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

CAUTION:

When on a turntable, such as at a parking structure entrance, or when on a moving object with engine running, the VDC OFF indicator lamp might turn on and self-diagnosis using the CONSULT-II yaw rate sensor system malfunction might be displayed, but in this case there is no malfunction with yaw rate/side/decel G sensor circuit. As soon as the vehicle leaves the turntable or moving object, restart engine to return the system to normal. And after doing spin turns or acceleration turns with VDC "OFF" (VDC OFF switch "ON"), too, the results will return to a normal state by restarting vehicle.

Is above displayed in the self-diagnosis display?

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

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect yaw rate/side/decel G sensor connector M61 and ABS actuator and electric unit (control unit) connector E24 and check terminals for deformation, disconnection, looseness, and so on. If there is an error, repair or replace terminal.
3. Reconnect connectors and then perform the self-diagnosis.

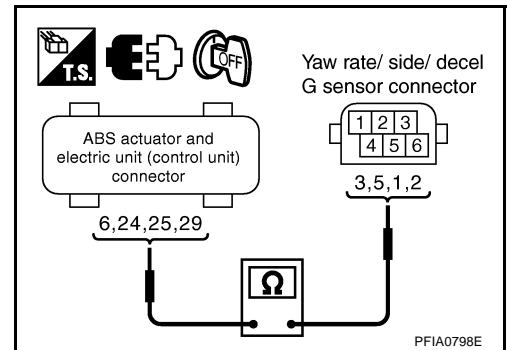
OK or NG

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

3. CHECK YAW RATE/SIDE DECEL G SENSOR HARNESS

1. Turn ignition switch "OFF".
2. Disconnect yaw rate/side/decel G sensor connector M61 and ABS actuator and electric unit (control unit) connector E24.
3. Check continuity between ABS actuator and electric unit (control unit) vehicle side connector and yaw rate/side/decel G sensor vehicle side connector.

- | | |
|---------------|-----------------------------------|
| 6 - 3 | : Continuity should exist. |
| 25 - 1 | : Continuity should exist. |
| 29 - 2 | : Continuity should exist. |
| 24 - 5 | : Continuity should exist. |



OK or NG

- OK >> GO TO 4.
 NG >> If open or short in harness, repair or replace harness.

4. CHECK YAW RATE/SIDE DECEL G SENSOR

With CONSULT-II

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

Vehicle status	Yaw rate sensor (Data monitor standard)	Side G sensor (Data monitor standard)	Decel G sensor (Data monitor standard)
When stopped	-4 to +4°/s	-1.1 to +1.1 m/s ²	-0.11 to +0.11 G
Right turn	Negative value	Negative value	-
Left turn	Positive value	Positive value	-
Speed up	-	-	Negative value
Speed down	-	-	Positive value

OK or NG

- OK >> Perform ABS actuator and electric unit (control unit) self diagnosis again.
 NG >> Replace the malfunctioning yaw rate sensor/side/decel G sensor, and then perform ABS actuator and electric unit (control unit) self-diagnosis again.

Solenoid and VDC Change-Over Valve INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

④ With CONSULT-II

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

Self-diagnostic results
FR LH IN SOL
FR LH OUT SOL
RR RH IN SOL
RR RH OUT SOL
FR RH IN SOL
FR RH OUT SOL
RR LH IN SOL
RR LH OUT SOL
CV 1
CV 2
SV 1
SV 2

Is above displayed in the self-diagnosis display?

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

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24 check terminals for deformation, disconnection, looseness, and so on. If there is an error, repair or replace terminal.
3. Reconnect connectors and then perform the self-diagnosis.

OK or NG

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

A

B

C

D

E

BRC

G

H

I

J

K

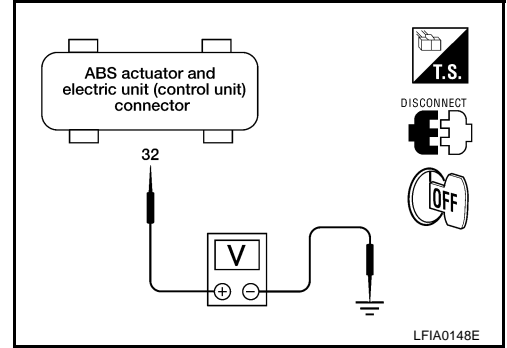
L

M

3. CHECK SOLENOID POWER AND GROUND CIRCUIT

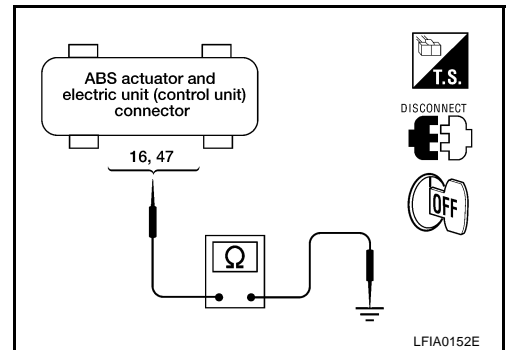
1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24.
3. Check voltage between ABS actuator and electric unit (control unit) harness connector E24 and ground.

32 - Ground : Battery voltage



4. Check resistance between ABS actuator and electric unit (control unit) harness connector E24 and ground.

16 - Ground : Continuity should exist.
47 - Ground : Continuity should exist.



OK or NG

OK >> Perform self-diagnosis again. If the same results appear, replace ABS actuator and electric unit (control unit). Refer to [BRC-105, "ACTUATOR AND ELECTRIC UNIT \(ASSEMBLY\)"](#).

NG >> Repair harness or connectors.

Actuator Motor and Motor Relay INSPECTION PROCEDURE

NFS000GS

1. CHECK SELF-DIAGNOSTIC RESULTS (1)

With CONSULT-II

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

Self-diagnostic results
PUMP MOTOR
ACTUATOR RLY

Is above displayed in the self-diagnosis display?

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

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24 check terminals for deformation, disconnection, looseness, and so on. If there is an error, repair or replace terminal.
3. Reconnect connectors and then perform the self-diagnosis.

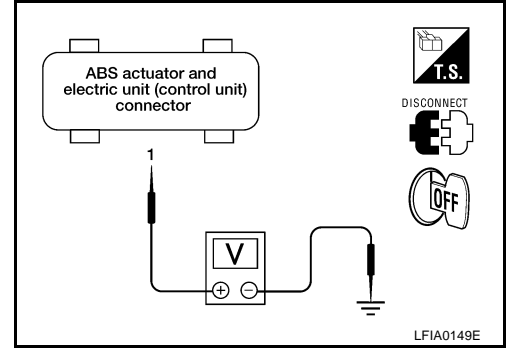
OK or NG

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

3. CHECK ABS MOTOR AND MOTOR RELAY POWER SUPPLY CIRCUIT

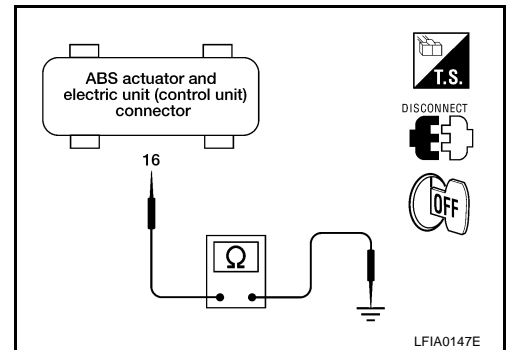
1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24.
3. Check voltage between ABS actuator and electric unit (control unit) connector E24 and ground.

1 - Ground : Battery voltage



4. Check resistance between ABS actuator and electric unit (control unit) connector E24 and ground.

16 - Ground : Continuity should exist.



OK or NG

OK >> Perform self-diagnosis again. If the same result appears, replace ABS actuator and electric unit (control unit). Refer to [BRC-105, "ACTUATOR AND ELECTRIC UNIT \(ASSEMBLY\)"](#).

NG >> Repair harness or connectors.

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

NFS000GT

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-II

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

Self-diagnostic results

BATTERY VOLTAGE [ABNORMAL]

Does "BATTERY VOLTAGE" appear in self-diagnosis results display?

YES >> GO TO 2.

NO >> INSPECTION END.

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24 check terminals for deformation, disconnection, looseness, and so on. If there is an error, repair or replace terminal.
3. Reconnect connectors and then perform the self-diagnosis.

OK or NG

OK >> INSPECTION END.

NG >> GO TO 3.

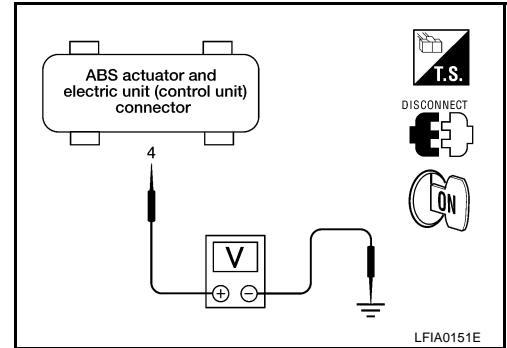
3. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24.
3. Turn ignition switch ON (but do not start engine). Check voltage between ABS actuator and electric unit (control unit) harness connector E24 and ground.

4 - Ground : **Battery voltage**

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 5



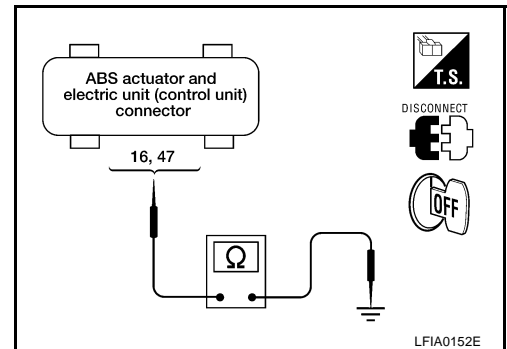
4. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) GROUND CIRCUITS

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24.
3. Check ABS actuator and electric unit (control unit) ground circuits.

16 - Ground : **Continuity should exist.**
47 - Ground : **Continuity should exist.**

OK or NG

- OK >> Perform ABS actuator and electric unit (control unit) self-diagnosis again.
 NG >> Repair harness or connectors.



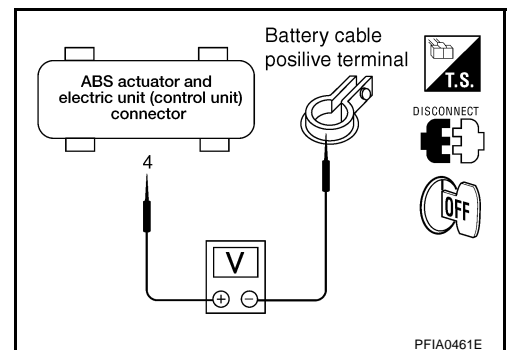
5. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) POWER SUPPLY CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24.
3. Check continuity between battery positive terminal and ABS actuator and electric unit (control unit) connector E24.

4 - Ground : **Continuity should exist.**

OK or NG

- YES >> Check for malfunction conditions in battery (terminal looseness, low voltage, etc.) and alternator.
 NO >> Repair harness or connectors.



Stop Lamp Switch INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Ⓟ With CONSULT-II

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

Self-diagnostic results

STOP LAMP SW

Is above displayed in the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect the stop lamp switch connector E116 and ABS actuator and electric unit (control unit) connector E24 and 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.

Do any self-diagnosis items appear?

OK >> GO TO 3.

NG >> Poor connection. Repair or replace applicable connector.

3. CHECK STOP LAMP SWITCH CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect stop lamp switch connector E116 and ABS actuator and electric unit (control unit) connector E24.
3. Check continuity between stop lamp switch harness connector E116 and ABS actuator and electric unit (control unit) harness connector E24.

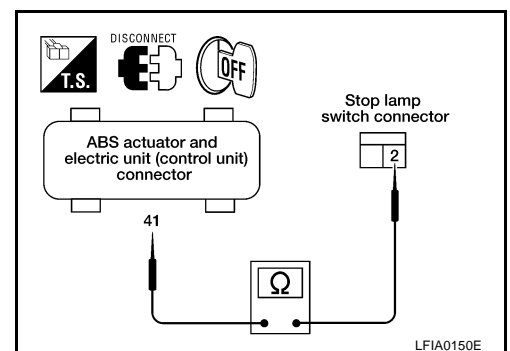
41 - 2

: Continuity should exist.

OK or NG

OK >> Connect connectors and perform an ABS actuator and electric unit (control unit) self-diagnosis.

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



Brake Fluid Level Switch INSPECTION PROCEDURE

CAUTION:

Check the brake reservoir tank fluid level. If the level is low, add brake fluid.

1. CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-II

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

Self-diagnostic results

BR FLUID LEVEL LOW

Is above displayed in the self-diagnosis display?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK CONNECTOR

1. Turn ignition switch "OFF".
2. Disconnect the brake fluid level switch connector E21 and ABS actuator and electric unit (control unit) connector E24 and check terminal for deformation, disconnection, looseness, and so on. If there is any malfunction condition, repair or replace terminal.
3. Reconnect connectors and then perform the self-diagnosis.

OK or NG

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

NG >> GO TO 3.

3. CHECK HARNESS BETWEEN THE BRAKE FLUID LEVEL SWITCH AND ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

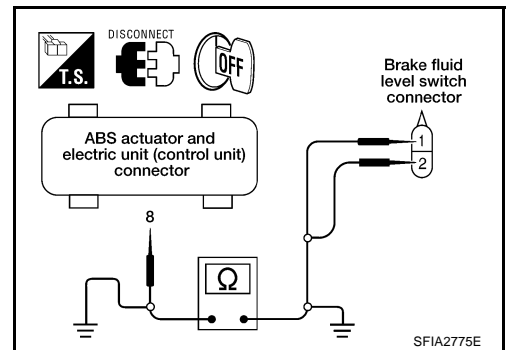
1. Turn ignition switch "OFF".
2. Disconnect the brake fluid level switch connector E21, ABS actuator and electric unit (control unit) connectors E24.
3. Check continuity between the brake fluid level switch connector E21 and ABS actuator and electric unit (control unit) connector E24 and ground.

ABS actuator and electric unit (control unit)	Brake fluid level switch	Continuity
8	1	Yes
8	Ground	No
Ground	2	Yes

OK or NG

OK >> GO TO 4.

NG >> If the open or short in harness, repair or replace harness.



4. CHECK BRAKE FLUID LEVEL SWITCH

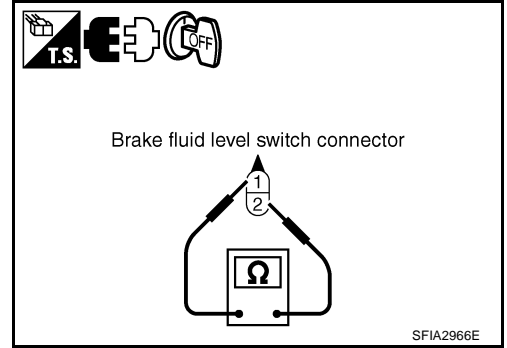
1. Turn ignition switch "OFF".
2. Disconnect brake fluid level switch connector E21.
3. Check continuity between brake fluid level switch connector E21 terminal 1 and 2.

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 >> INSPECTION END.

- NG >> ● Brake fluid level switch is malfunctioning. Replace reservoir tank. Refer to [BR-14, "BRAKE MASTER CYLINDER"](#).
- Perform brake fluid level switch self-diagnosis.



VDC OFF Switch INSPECTION PROCEDURE

NFS000H0

1. CHECK VDC OFF SWITCH

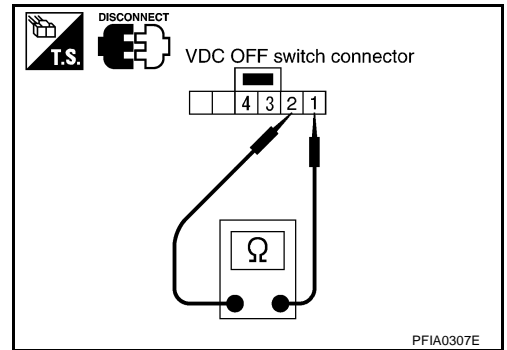
1. Turn ignition switch "OFF".
2. Disconnect VDC OFF switch connector M17.
3. Check continuity between VDC OFF switch connector M17 terminal 1 and 2.

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

OK or NG

OK >> GO TO 2.

NG >> Replace VDC OFF switch.



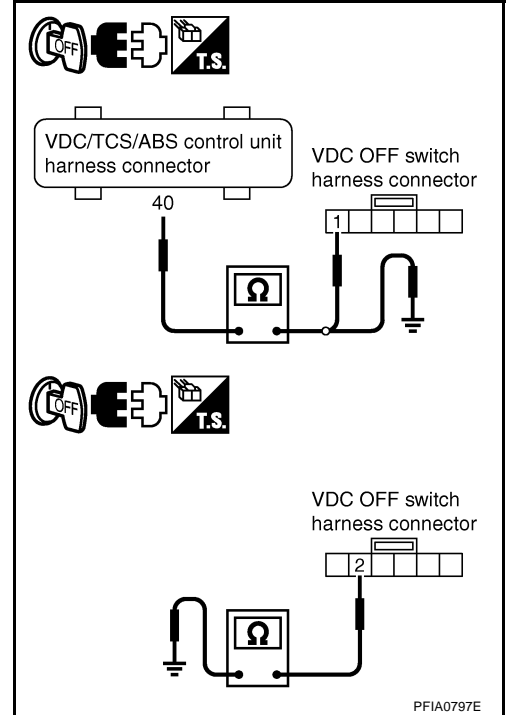
2. CHECK VDC OFF SWITCH HARNESS

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24.
3. Check continuity between VDC OFF switch connector M17 and ABS actuator and electric unit (control unit) connector E24.

ABS actuator and electric unit	VDC OFF switch	Continuity
40	1	Yes
	Ground	No
Ground	2	Yes

OK or NG

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



PFIA0797E

NFS000GX

CAN Communication Circuit INSPECTION PROCEDURE

- Check the following if "CAN COMM CIRCUIT [U1000]" or "ST ANG SEN COM CIR" is detected in self-diagnostic results of CONSULT-II.

1. CHECK CONNECTOR

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

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

Is above displayed in the self-diagnosis display?

- YES >> Print out self-diagnostic results and go to [LAN-3, "Precautions When Using CONSULT-II"](#).
- NO >> INSPECTION END

Component Inspection VDC OFF SWITCH

NFS000H1

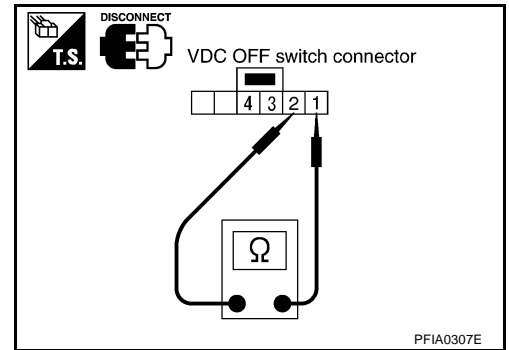
1. Turn ignition switch "OFF".
2. Disconnect VDC OFF switch connector M17.

TROUBLE DIAGNOSIS FOR SYSTEM

[VDC/TCS/ABS]

3. Check continuity between VDC OFF switch connector M17 terminal 1 and 2.

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

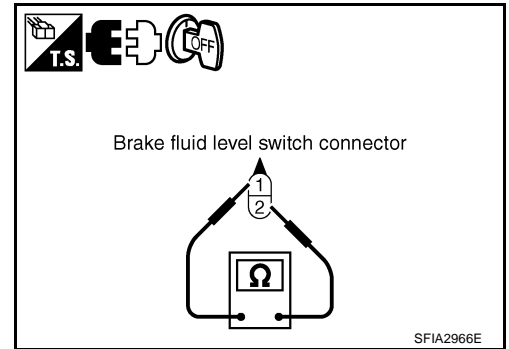


A
B
C
D
E

BRAKE FLUID LEVEL SWITCH

1. Turn ignition switch "OFF".
2. Disconnect brake fluid level switch connector E21.
3. Check continuity between brake fluid level switch connector E21 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



BRC

G
H
I
J
K
L
M

TROUBLE DIAGNOSIS FOR SYMPTOMS

PFP:00007

Excessive ABS Function Operation Frequency

NFS000H2

1. CHECK ABS WARNING LAMP DISPLAY

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

OK or NG

OK >> GO TO 2.

NG >> Perform self-diagnosis. Refer to [BRC-70, "SELF-DIAG RESULT MODE"](#).

2. CHECK BRAKE FORCE DISTRIBUTION

Check front and rear brake force distribution using a brake tester. Refer to [BR-37, "SERVICE DATA AND SPECIFICATIONS \(SDS\)"](#).

OK or NG

OK >> GO TO 3.

NG >> Check brake system.

3. CHECK FRONT AND REAR AXLE

Make sure that there is no excessive in the front and rear axles. Refer to front axle [FAX-5, "FRONT WHEEL HUB AND KNUCKLE"](#), rear axle [RAX-5, "WHEEL HUB"](#).

OK or NG

OK >> GO TO 4.

NG >> Axle inspection and repair

4. CHECK WHEEL SENSOR AND SENSOR ROTOR

Check the following.

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

OK or NG

OK >> INSPECTION END

NG >> Repair wheel sensor and rotor system.

Unexpected Pedal Reaction

NFS000H3

1. CHECK BRAKE PEDAL STROKE

Check brake pedal stroke. Refer to [BR-6, "BRAKE PEDAL"](#).

Is the stroke too long?

YES >> ● Bleed air from the brake piping.

- Check the brake pedal, brake booster, and master cylinder mount for play, looseness, and brake system for fluid leaks, etc. If any malfunctions are found, make repair.

NO >> GO TO 2.

2. CHECK FUNCTION

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24 and make sure the braking force is sufficient when ABS is not operating. After the inspection, reconnect connector.

OK or NG

OK >> GO TO 4. "CHECK WHEEL SENSOR AND SENSOR ROTOR" in [BRC-98, "Excessive ABS Function Operation Frequency"](#).

NG >> Check brake system.

The Braking Distance is Long

NFS000H4

CAUTION:

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

1. CHECK FUNCTION

1. Turn ignition switch "OFF".
2. Disconnect ABS actuator and electric unit (control unit) connector E24 to deactivate ABS. In this condition, check stopping distance. After inspection, connect connector.

OK or NG

YES >> GO TO 4. "CHECK WHEEL SENSOR AND SENSOR ROTOR" in [BRC-98, "Excessive ABS Function Operation Frequency"](#) .

NG >> Perform self-diagnosis. Refer to [BRC-70, "SELF-DIAG RESULT MODE"](#) .

ABS Function Does Not Operate

NFS000H5

CAUTION:

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

1. CHECK ABS WARNING LAMP DISPLAY

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

OK or NG

OK >> GO TO 4. "CHECK WHEEL SENSOR AND SENSOR ROTOR" in [BRC-98, "Excessive ABS Function Operation Frequency"](#) .

NG >> Perform self-diagnosis. Refer to [BRC-70, "SELF-DIAG RESULT MODE"](#) .

Pedal Vibration or ABS Operation Sound Occurs

NFS000H6

CAUTION:

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

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

1. SYMPTOM CHECK

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

OK or NG

OK >> GO TO 2.

NG >> Perform self-diagnosis. Refer to [BRC-70, "SELF-DIAG RESULT MODE"](#) .

2. INSPECTION CHECK 1

Does vibration occur during normal parking?

CAUTION:

In addition to activation for sudden braking, ABS may activate in conditions such as those listed below.

- Roads with low surface.
- Turning at high speed.
- Passing through gusts of wind.

OK or NG

OK >> GO TO 3.

NG >> Normal

3. INSPECTION CHECK 2

Check for vibration when engine speed is increased while vehicle is stopped.

OK or NG

- OK >> GO TO 4
 NG >> ● Normal

CAUTION:

Vibration may occur when vehicle is stopped.

4. INSPECTION CHECK 3

Check for vibration when switches of electrical components are operated.

OK or NG

- OK >> Check for any wireless devices, or antenna lead near control unit (including wiring).
 NG >> GO TO 5.

5. CHECK ABS WARNING LAMP INDICATION

Confirm ABS warning lamp turns on.

OK or NG

- OK >> Perform self-diagnosis. Refer to [BRC-70, "SELF-DIAG RESULT MODE"](#).
 NG >> GO TO 4. "CHECK WHEEL SENSOR AND SENSOR ROTOR" in [BRC-98, "Excessive ABS Function Operation Frequency"](#).

Vehicle Jerks During VDC/TCS/ABS Control

NFS000H7

1. CHECK SELF-DIAGNOSTIC RESULTS

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

Are self-diagnostic results indicated?

- YES >> Check the corresponding items, make repairs, and perform ABS actuator and electric unit (control unit) self-diagnosis.
 NO >> GO TO 2.

2. CHECK ABS ACTUATOR ELECTRIC UNIT (CONTROL UNIT)

1. Turn ignition switch "OFF".
2. Check ABS actuator and electric unit (control unit) input/output signal. Refer to [BRC-65, "Control Unit Input/Output Signal Standard"](#).

OK or NG

- OK >> GO TO 3.
 NG >> Check ABS actuator and electric unit (control unit) pin terminals for damage or loose connection with harness connector. If any item is damaged, repair or replace damaged parts.

3. CHECK ECM AND TCM SELF-DIAGNOSTIC RESULTS

Perform ECM and TCM self-diagnosis.

Are self-diagnostic results indicated?

- YES >> ● Check the corresponding items.
 - ECM: Refer to [EC-80, "TROUBLE DIAGNOSIS"](#).
 - TCM: Refer to [CVT-33, "TROUBLE DIAGNOSIS"](#).
 NO >> Replace ABS actuator and electric unit (control unit).

ABS Warning Lamp Indication is Not Normal

NFS000LG

NOTE:

For lighting condition of ABS warning lamp. Refer to [BRC-79, "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, BRAKE WARNING LAMP AND SLIP INDICATOR LAMP"](#).

1. CHECK SYSTEM FOR CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [BRC-70, "SELF-DIAG RESULT MODE"](#) .

Is the "CAN COMM CIRCUIT [U1000]" displayed?

- YES >> Perform trouble diagnosis for CAN communication line. Refer to [BRC-96, "CAN Communication Circuit"](#) .
- NO >> GO TO 2.

2. CHECK ABS ACTUATOR ELECTRIC UNIT (CONTROL UNIT)

1. Turn ignition switch "OFF".
2. Check ABS actuator and electric unit (control unit) input/output signal. Refer to [BRC-65, "Control Unit Input/Output Signal Standard"](#) .

OK or NG

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

3. CHECK COMBINATION METER INDICATION

Check the combination meter indication and operation. Refer to [DI-15, "Self-Diagnosis Mode of Combination Meter"](#) .

OK or NG

- OK >> INSPECTION END.
- NG >> Combination meter is malfunctioning. Check combination meter. Refer to [DI-4, "COMBINATION METERS"](#) .

Slip Indicator Lamp Indication is Not Normal

NFS000LH

NOTE:

For lighting condition of slip indicator lamp. Refer to [BRC-79, "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, BRAKE WARNING LAMP AND SLIP INDICATOR LAMP"](#) .

1. CHECK SYSTEM FOR CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [BRC-70, "SELF-DIAG RESULT MODE"](#) .

Is the "CAN COMM CIRCUIT [U1000]" displayed?

- YES >> Perform trouble diagnosis for CAN communication line. Refer to [BRC-96, "CAN Communication Circuit"](#) .
- NO >> GO TO 2.

2. CHECK ABS ACTUATOR ELECTRIC UNIT (CONTROL UNIT)

1. Turn ignition switch "OFF".
2. Check ABS actuator and electric unit (control unit) input/output signal. Refer to [BRC-65, "Control Unit Input/Output Signal Standard"](#) .

OK or NG

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

3. CHECK COMBINATION METER INDICATION

Check the combination meter indication and operation. Refer to [DI-15, "Self-Diagnosis Mode of Combination Meter"](#) .

OK or NG

- OK >> INSPECTION END.
- NG >> Combination meter is malfunctioning. Check combination meter. Refer to [DI-4, "COMBINATION METERS"](#) .

VDC OFF Indicator Lamp Indication is Not Normal**NOTE:**

- For lighting condition of VDC OFF indicator lamp. Refer to [BRC-79, "ABS WARNING LAMP, VDC OFF INDICATOR LAMP, BRAKE WARNING LAMP AND SLIP INDICATOR LAMP"](#) .
- Make sure that VDC OFF switch is normal. Refer to [BRC-95, "VDC OFF Switch"](#) .

1. CHECK SYSTEM FOR CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [BRC-70, "SELF-DIAG RESULT MODE"](#) .

Is the "CAN COMM CIRCUIT [U1000]" displayed?

- YES >> Perform trouble diagnosis for CAN communication line. Refer to [BRC-96, "CAN Communication Circuit"](#) .
- NO >> GO TO 2.

2. CHECK ABS ACTUATOR ELECTRIC UNIT (CONTROL UNIT)

1. Turn ignition switch "OFF".
2. Check ABS actuator and electric unit (control unit) input/output signal. Refer to [BRC-65, "Control Unit Input/Output Signal Standard"](#) .

OK or NG

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

3. CHECK COMBINATION METER INDICATION

Check the combination meter indication and operation. Refer to [DI-15, "Self-Diagnosis Mode of Combination Meter"](#) .

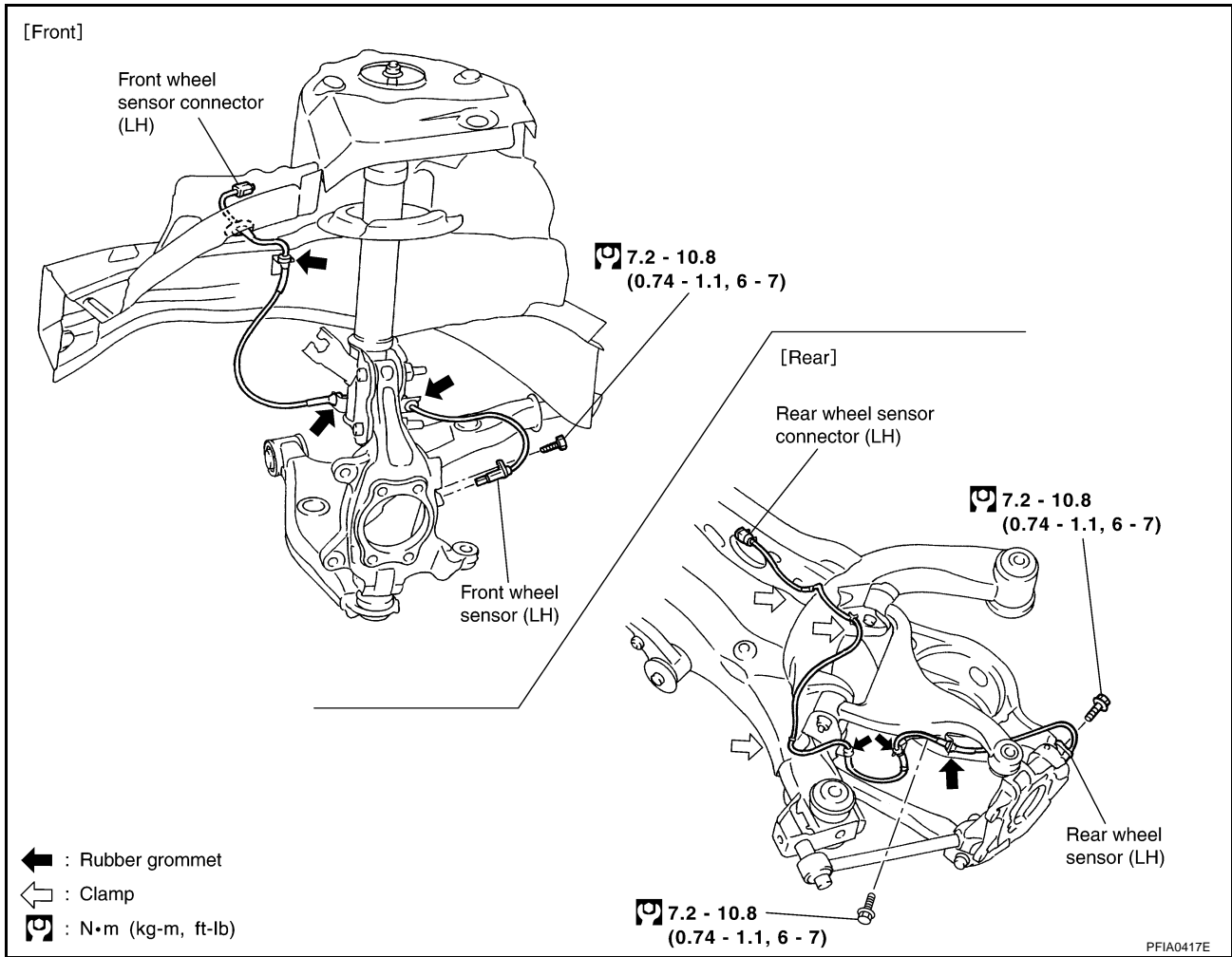
OK or NG

- OK >> INSPECTION END.
- NG >> Combination meter is malfunctioning. Check combination meter. Refer to [DI-4, "COMBINATION METERS"](#) .

WHEEL SENSORS

Removal and Installation

NFS000H8



REMOVAL

Be careful of the following.

CAUTION:

- As much as possible, avoid rotating wheel sensor when removing it. Pull wheel sensors out without pulling on sensor harness.
- Take care to avoid damaging wheel sensor edges or rotor teeth. Remove wheel sensor first before removing front or rear wheel hub. This is to avoid damage to wheel sensor wiring and loss of sensor function.

INSTALLATION

Be careful of the following. Tighten the mounting bolts and nuts to the specified torque. Refer to [BRC-103, "Removal and Installation"](#).

- 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 figure. When installed, harness must not be twisted.

SENSOR ROTOR

PF:47970

Removal and Installation REMOVAL

NFS000H9

Front

Sensor rotor cannot be disassembled. To replace sensor rotor, replace hub bearing assembly. Refer to [FAX-5](#), "[FRONT WHEEL HUB AND KNUCKLE](#)" in "FAX" section.

Rear

Sensor rotor cannot be disassembled. To replace sensor rotor, replace hub bearing assembly. Refer to [RAX-5](#), "[WHEEL HUB](#)" in "RAX" section.

INSTALLATION

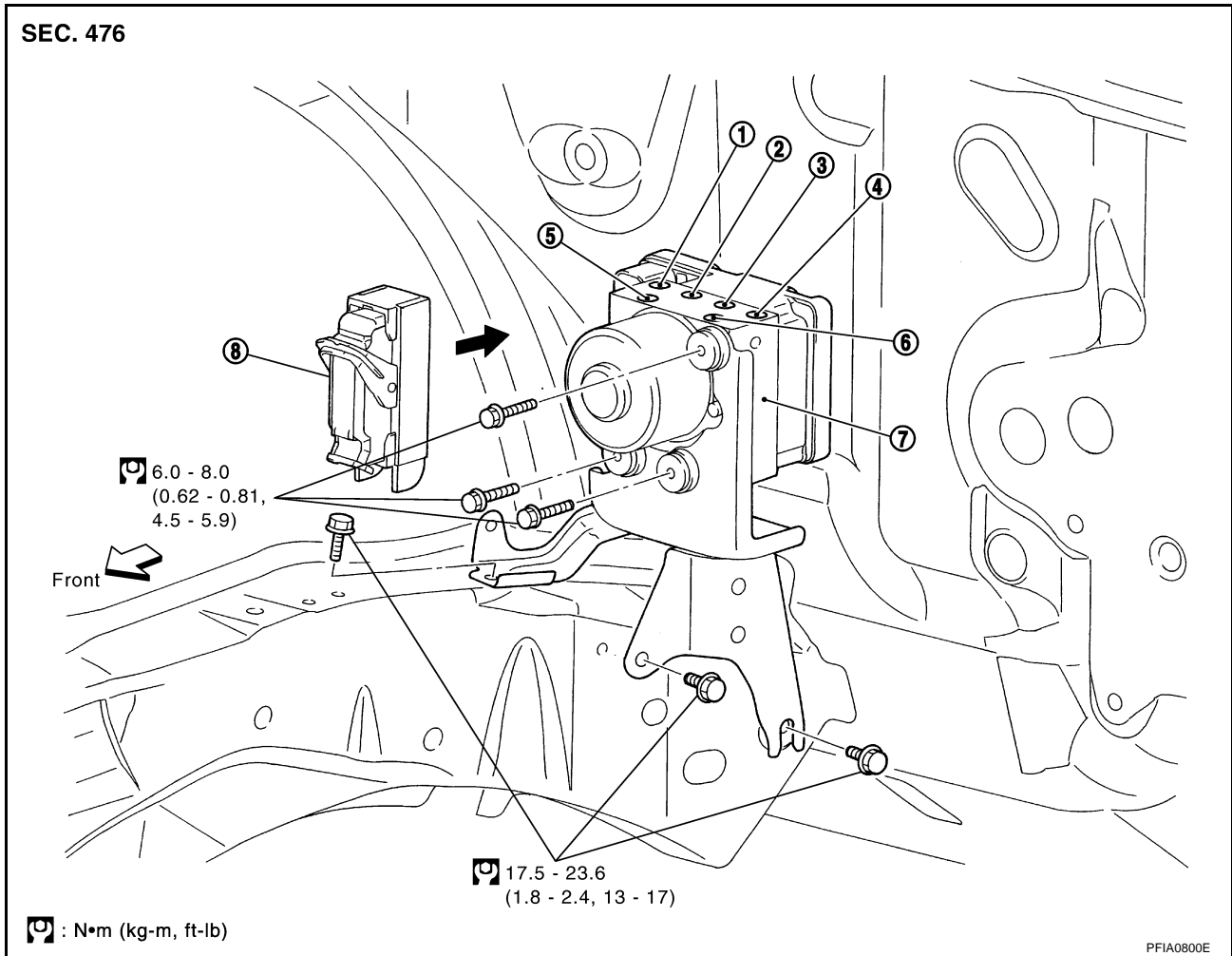
Installation is the reverse order of removal.

ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

PFPA:47660

Removal and Installation

NFS000HA



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

- | | | |
|--|--|--------------------------------------|
| 1. To front left | 2. To rear right | 3. To rear left |
| 4. To front right | 5. From master cylinder secondary side | 6. From master cylinder primary side |
| 7. ABS actuator and electric unit (control unit) | 8. Harness connector | |

Pay attention to the following when removing actuator.

CAUTION:

- If the part number on the part number label (pasted on actuator upper surface) is the same, ABS actuator and electric unit (control unit) (integrated in control unit, part No.: 47660 *****) can not be used on another vehicle. If it is used on another vehicle, ABS warning lamp, SLIP indicator lamp, VDC OFF indicator lamp may turn ON or VDC/TCS/ABS may not operate normally. When replacing ABS actuator and electric unit (control unit) (integrated in control unit), must use new service parts.
- Before servicing, disconnect battery cables.
- To remove brake tube, use flare nut torque wrench to prevent flare nuts and brake tube from being damaged. To install, use flare nut wrench (commercial service tool).
- Do not remove and install actuator by holding harness.
- After work is completed, bleed air from brake piping. Refer to [BR-11, "Bleeding Brake System"](#).

NOTE:

- After performing above works, calibrate decel G sensor (AWD model). Refer to [BRC-50, "Calibration of Decel G Sensor"](#).

ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

[VDC/TCS/ABS]

-
- In the case that ABS actuator and electric unit (control unit) are replaced, make sure to adjust position of steering angle sensor. Refer to [BRC-49, "Adjustment of Steering Angle Sensor Neutral Position"](#) .

G SENSOR

PFP:47930

Removal and Installation

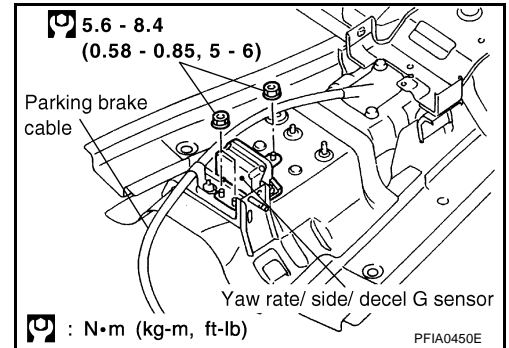
NFS000HB

REMOVAL

1. Remove center console. Refer to [IP-17, "CENTER CONSOLE ASSEMBLY"](#) .
2. Disconnect harness connector.
3. Remove mounting nuts. Remove yaw rate/side/decel G sensor.

CAUTION:

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

**INSTALLATION**

Installation is in the revers order of removal.

CAUTION:

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

NOTE:

- After performing above work, calibrate decel G sensor (AWD model). Refer to [BRC-50, "Calibration of Decel G Sensor"](#) .

A
B
C
D
E

BRC

G
H
I
J
K
L
M

STEERING ANGLE SENSOR

PFP:25554

Removal and Installation

NFS000HC

Refer to [SRS-41, "SPIRAL CABLE"](#) .

NOTE:

- Steering angle sensor is built into the spiral cable.
- In the case that ABS actuator and electric unit (control unit) are replaced, make sure to adjust position of steering angle sensor. Refer to [BRC-49, "Adjustment of Steering Angle Sensor Neutral Position"](#) .