How to Follow Trouble Diagnoses

EAS000G3

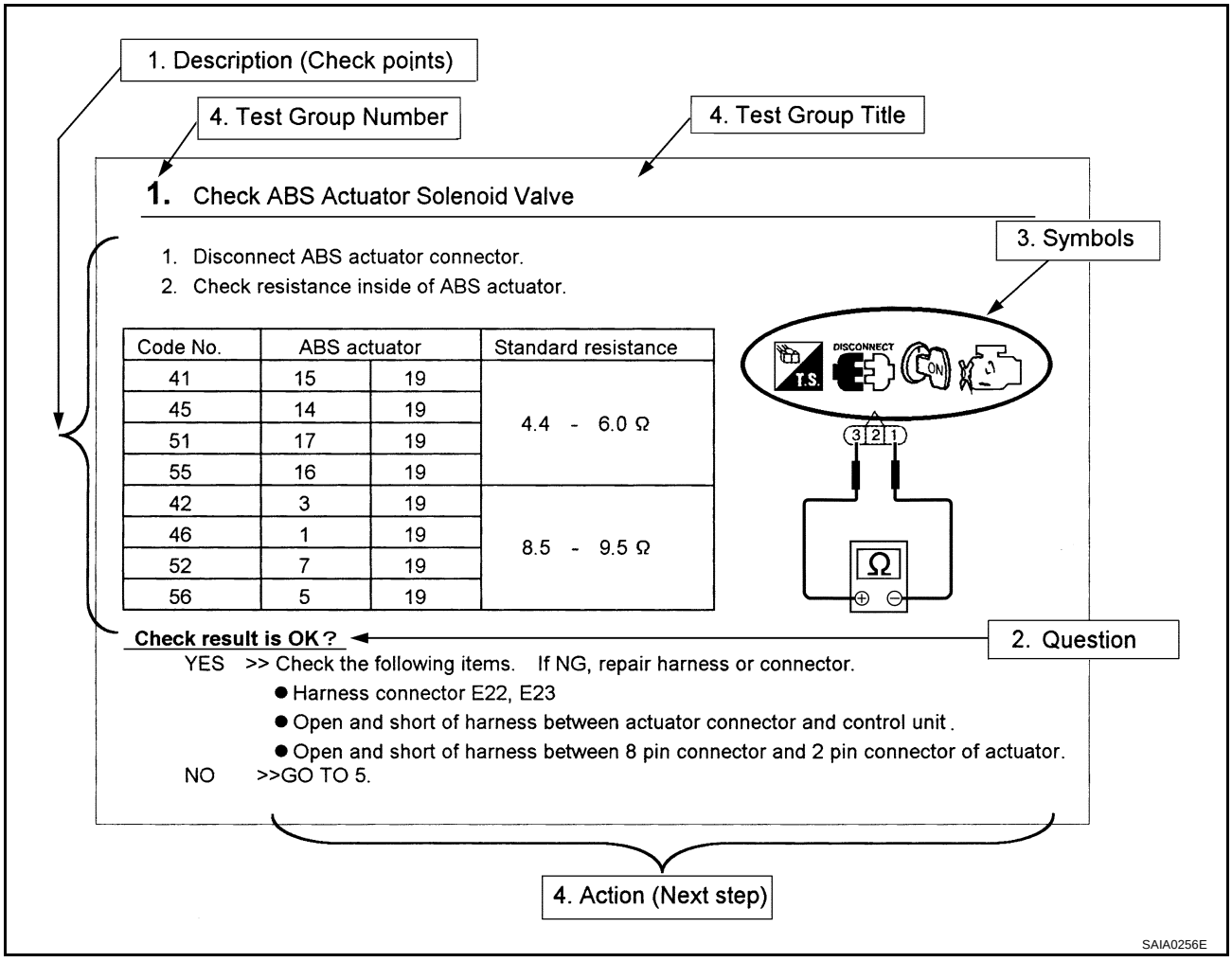
DESCRIPTION

NOTICE:

Trouble diagnoses indicate work procedures required to diagnose problems effectively. Observe the following instructions before diagnosing.

1. **Before performing trouble diagnoses, read the "Preliminary Check", the "Symptom Chart" or the "Work Flow".**
2. **After repairs, re-check that the problem has been completely eliminated.**
3. **Refer to Component Parts and Harness Connector Location for the Systems described in each section for identification/location of components and harness connectors.**
4. **Refer to the Circuit Diagram for quick pinpoint check.**
   If you need to check circuit continuity between harness connectors in more detail, such as when a sub-harness is used, refer to Wiring Diagram in each individual section and Harness Layout in PG section for identification of harness connectors.
5. **When checking circuit continuity, ignition switch should be OFF.**
6. **Before checking voltage at connectors, check battery voltage.**
7. **After accomplishing the Diagnostic Procedures and Electrical Components Inspection, make sure that all harness connectors are reconnected as they were.**

HOW TO FOLLOW TEST GROUPS IN TROUBLE DIAGNOSES



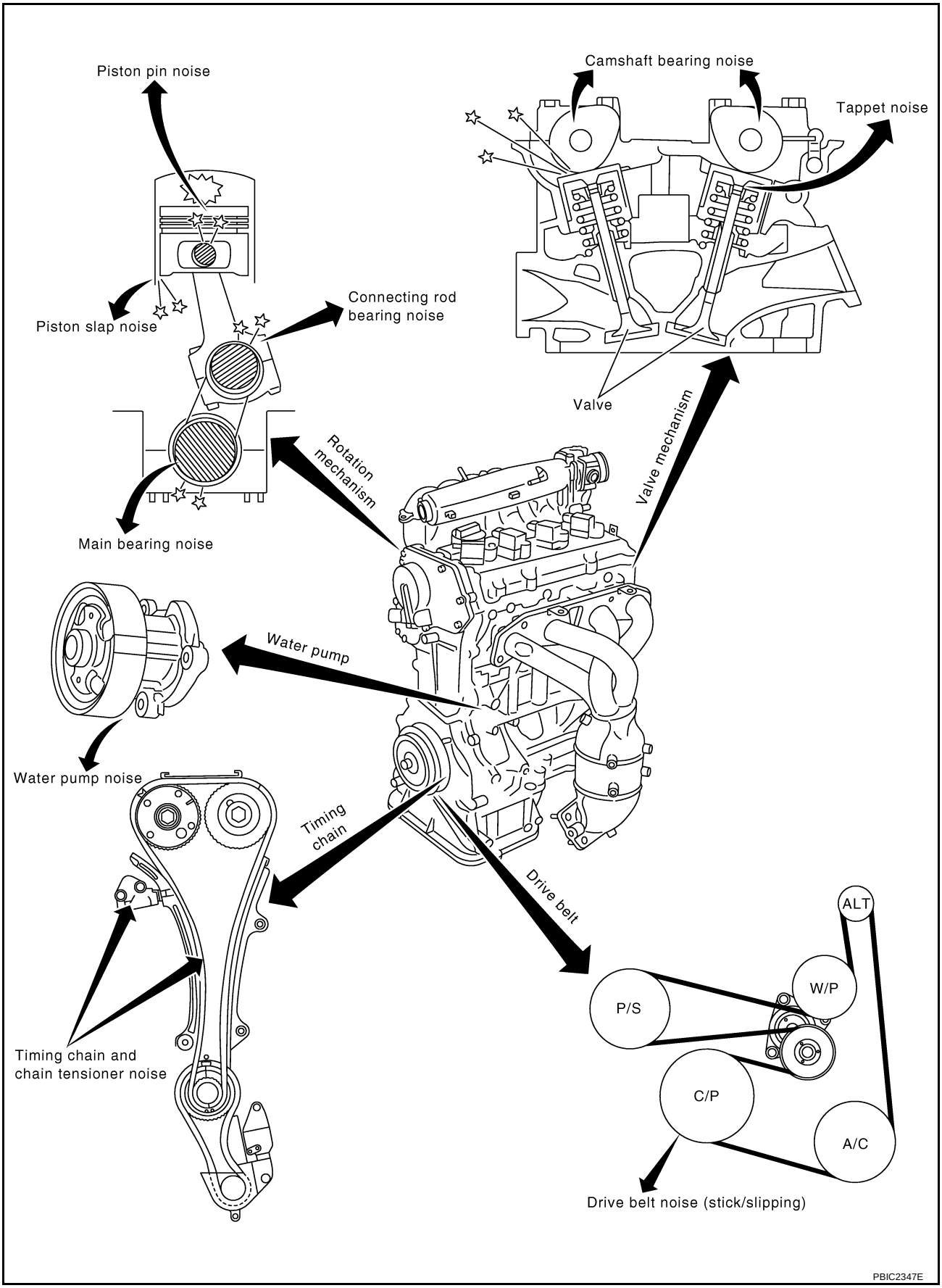
1. **Work and diagnostic procedure**
   Start to diagnose a problem using procedures indicated in enclosed test groups.
2. **Questions and required results**
   Questions and required results are indicated in bold type in test group.
   The meaning of are as follows:

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting — Engine Noise

EBS00L7P

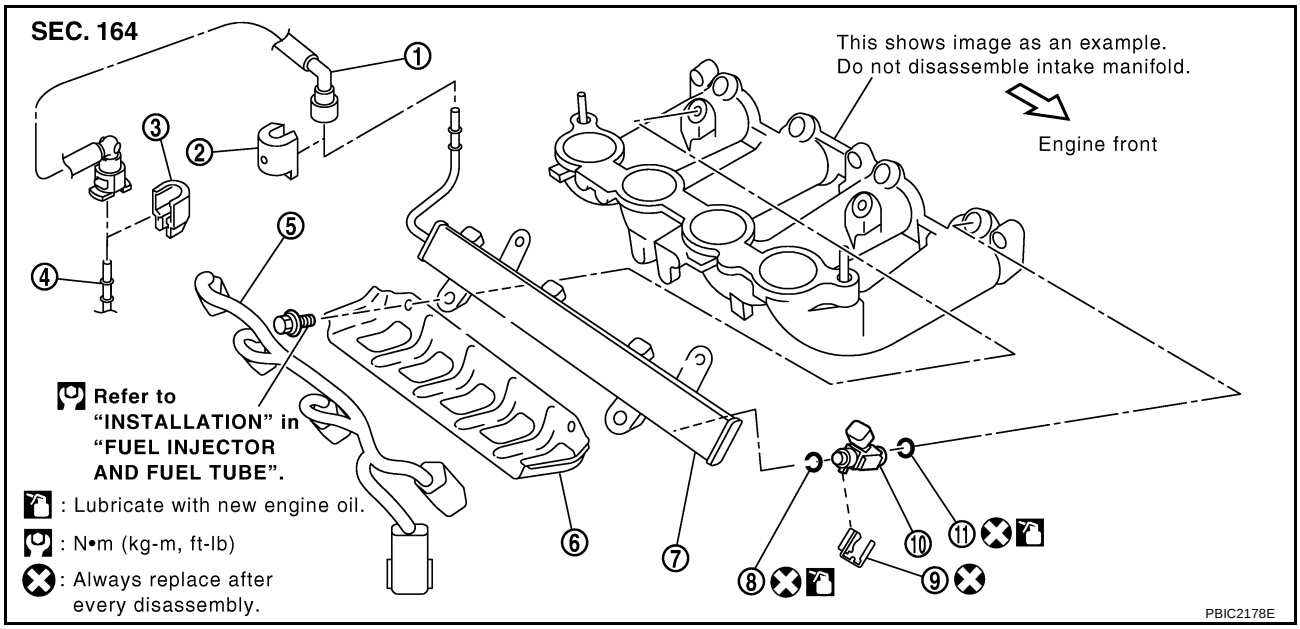


FUEL INJECTOR AND FUEL TUBE

PFP:16600

Removal and Installation (QR20DE)

EBS00KNH



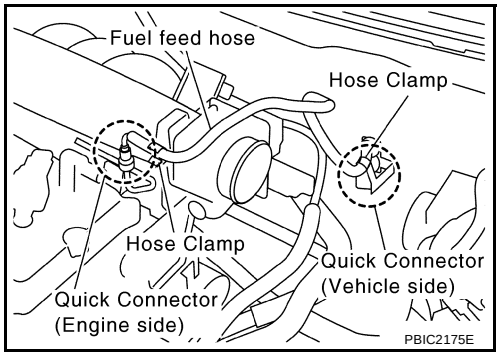
1. Fuel feed hose
2. Quick connector cap (engine side)
3. Quick connector cap (vehicle side)
4. Centralized under-floor piping
5. Sub-harness
6. Fuel tube protector
7. Fuel tube
8. O-ring (black)
9. Clip
10. Fuel injector
11. O-ring (green)

CAUTION:

Do not remove or disassemble parts unless instructed as shown in the figure.

REMOVAL

1. Release fuel pressure. Refer to EC-48, "FUEL PRESSURE RELEASE" (WITH EURO-OBD) or EC-510, "FUEL PRESSURE RELEASE" (WITHOUT EURO-OBD).
2. Remove air cleaner case upper, mass air flow sensor and air duct assembly. Refer to EM-15, "AIR CLEANER AND AIR DUCT" .
3. Disconnect quick connectors at engine side and vehicle side as follows, and remove fuel feed hose.



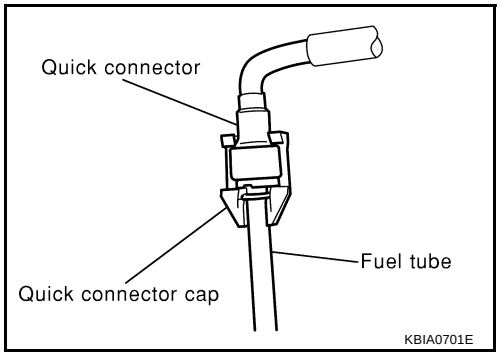
CAUTION:

Disconnect quick connector by using quick connector release (special service tool), not by picking out retainer tabs.

NOTE:

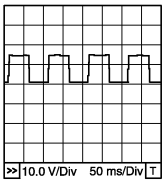
There is quick connector for the engine side and for the vehicle side, and they have different shapes. But disconnection is same procedure. The following procedure shows the engine side.

a. Remove quick connector cap (engine side).



Specification data are reference values and are measured between each terminal and ground.
Pulse signal is measured by CONSULT-II.

CAUTION:
Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TERMINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
24	G/W	Heated oxygen sensor 1 heater	**[Engine is running]** ● **Warm-up condition.** ● Engine speed is below 3,600 rpm	Approximately 7.0V★  PBIB0519E
			[Engine is running] ● Engine speed is above 3,600 rpm	BATTERY VOLTAGE (11 - 14V)

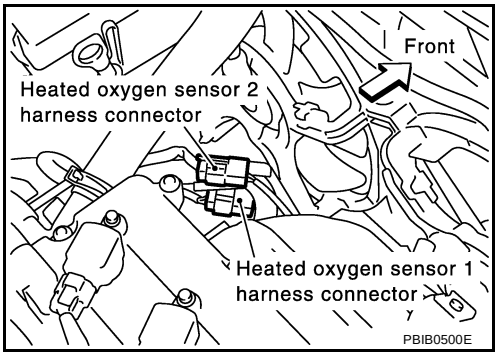
★: Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnostic Procedure

EBS010MQ

1. CHECK HO2S1 POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect heated oxygen sensor 1 harness connector.
3. Turn ignition switch ON.

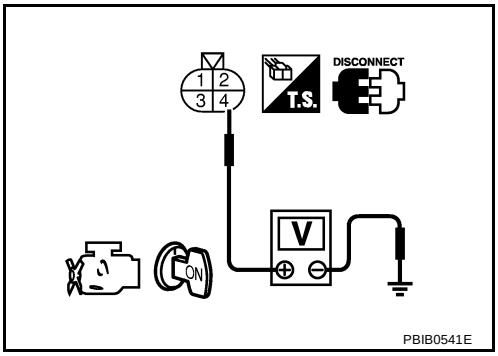


4. Check voltage between HO2S1 terminal 4 and ground with CONSULT-II or tester.

Voltage: Battery voltage

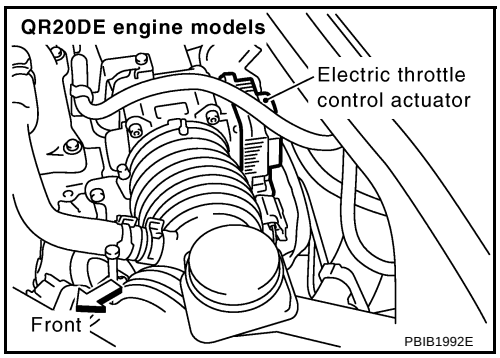
OK or NG

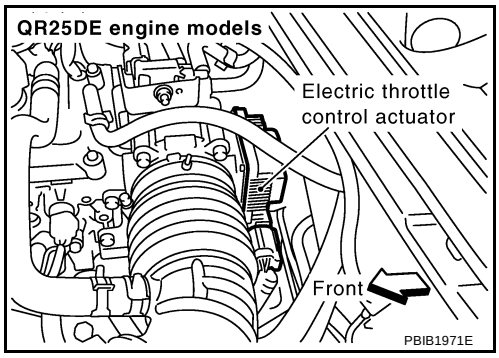
OK >> GO TO 3.
NG >> GO TO 2.



2. CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY CIRCUIT-I

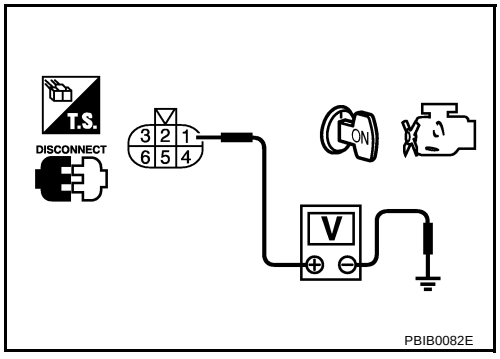
1. Disconnect electric throttle control actuator harness connector.





2. Turn ignition switch ON.
3. Check voltage between electric throttle control actuator terminal 1 and ground with CONSULT-II or tester.

Voltage: Approximately 5V



OK or NG

OK >> GO TO 7.
NG >> GO TO 3.

3. CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY CIRCUIT-II

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check harness continuity between electric throttle control actuator terminal 1 and ECM terminal 47. Refer to Wiring Diagram.

Continuity should exist.

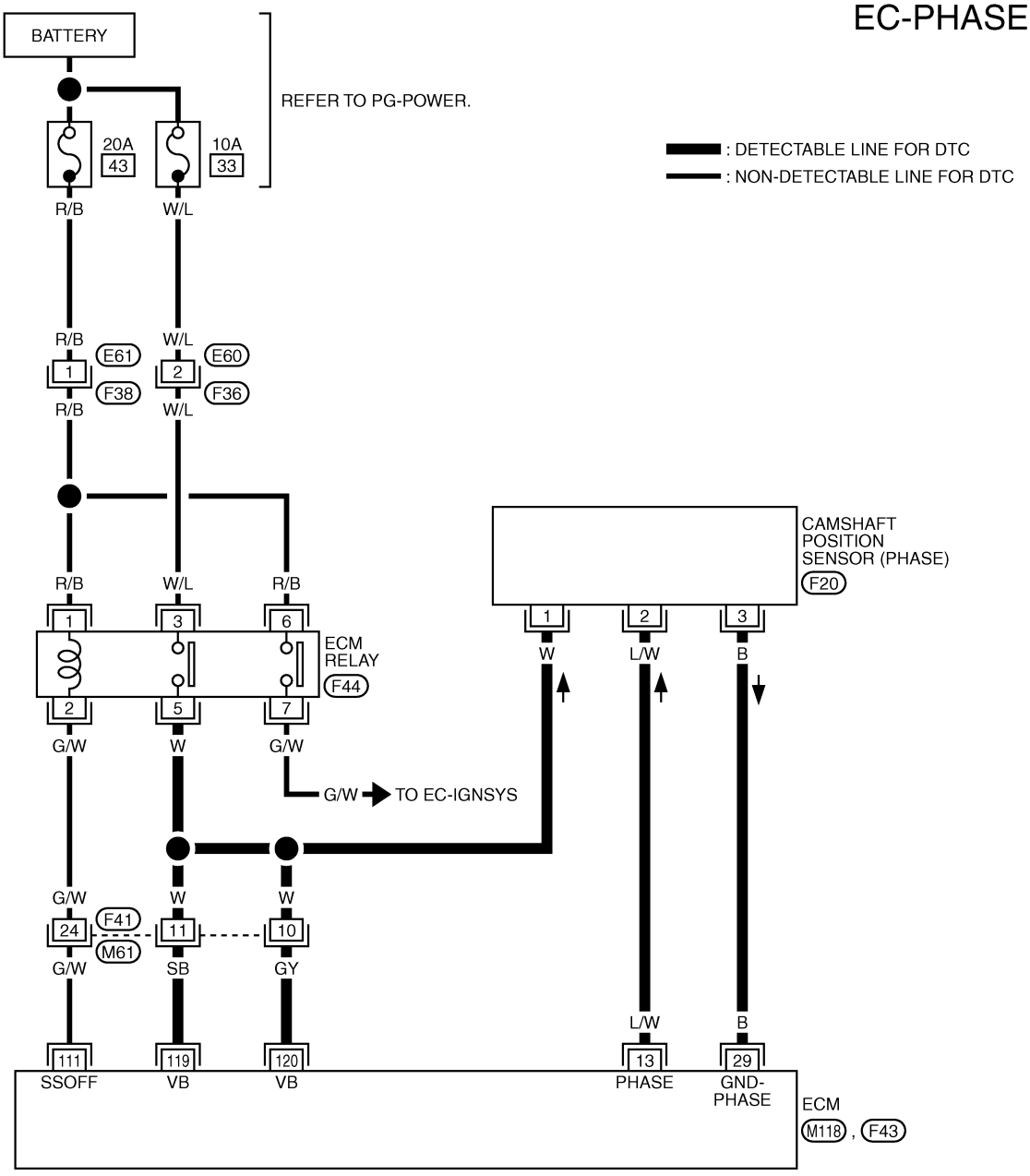
OK or NG

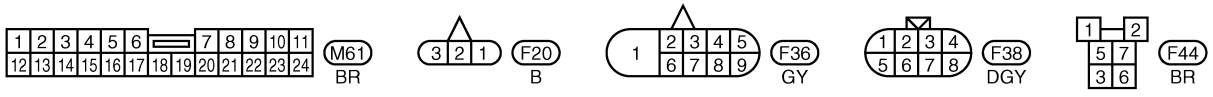
OK >> GO TO 4.
NG >> Repair or replace open circuit.

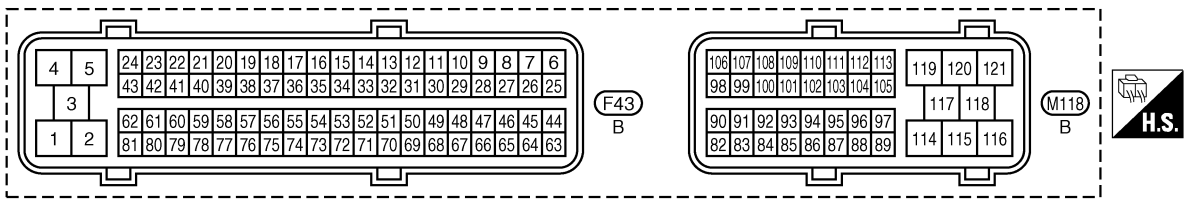
Wiring Diagram

EBS010ZS

EC-PHASE-01







TBWA0608E

Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TERMINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
2	PU/R	Heated oxygen sensor 2 heater	**[Engine is running]** ● Engine speed: Below 3,600 rpm after the following conditions are met – Warm-up condition – Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load	0 - 1.0V
			[Ignition switch: ON] ● Engine stopped **[Engine is running]** ● Engine speed is above 3,600 rpm	BATTERY VOLTAGE (11 - 14V)

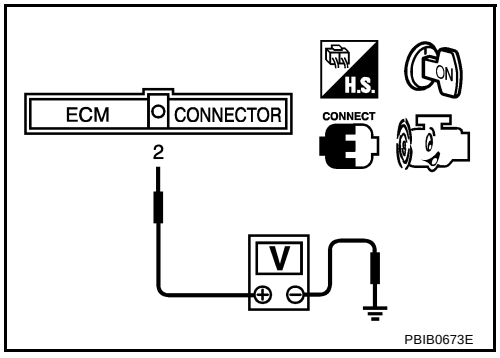
Diagnostic Procedure

EBS0113D

1. CHECK OVERALL FUNCTION

1. Start engine and warm it up to the normal operating temperature.
2. Turn ignition switch OFF and wait at least 10 seconds.
3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
4. Let engine idle for 1 minute.
5. Set voltmeter proves between ECM terminal 2 (HO2S2 heater signal) and ground.
6. Check the voltage under the following conditions.

Conditions	Voltage
At idle	0 - 1V
Engine speed is above 3,600 rpm	Battery voltage



OK or NG

OK >> **INSPECTION END**
NG >> GO TO 2.

5. BLEED AIR FROM FUEL SYSTEM

1. Stop engine.
2. Use priming pump to bleed air from fuel system. Refer to EC-1221, "AIR BLEEDING" .

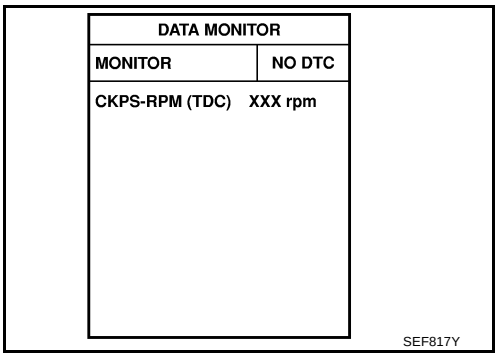
>> GO TO 6.

6. CHECK IDLE SPEED AGAIN

With CONSULT-II

1. Start engine and let it idle.
2. Select “CKPS·RPM (TDC)” in “DATA MONITOR” mode with CONSULT-II.
3. Read idle speed.

725±25 rpm



OK or NG

OK >> **INSPECTION END**
NG >> GO TO 7.

7. DRAIN WATER FROM FUEL FILTER

Drain water from fuel filter. Refer to EC-1221, "WATER DRAINING" .

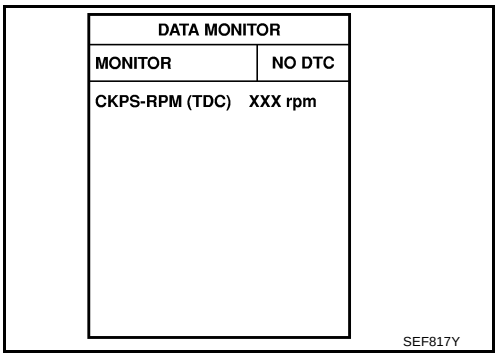
>> GO TO 8.

8. CHECK IDLE SPEED AGAIN

With CONSULT-II

1. Start engine and let it idle.
2. Select “CKPS·RPM (TDC)” in “DATA MONITOR” mode with CONSULT-II.
3. Read idle speed.

725±25 rpm



OK or NG

OK >> **INSPECTION END**
NG >> GO TO 9.

9. CHECK AIR CLEANER FILTER

Check air cleaner filter for clogging or breaks.

OK or NG

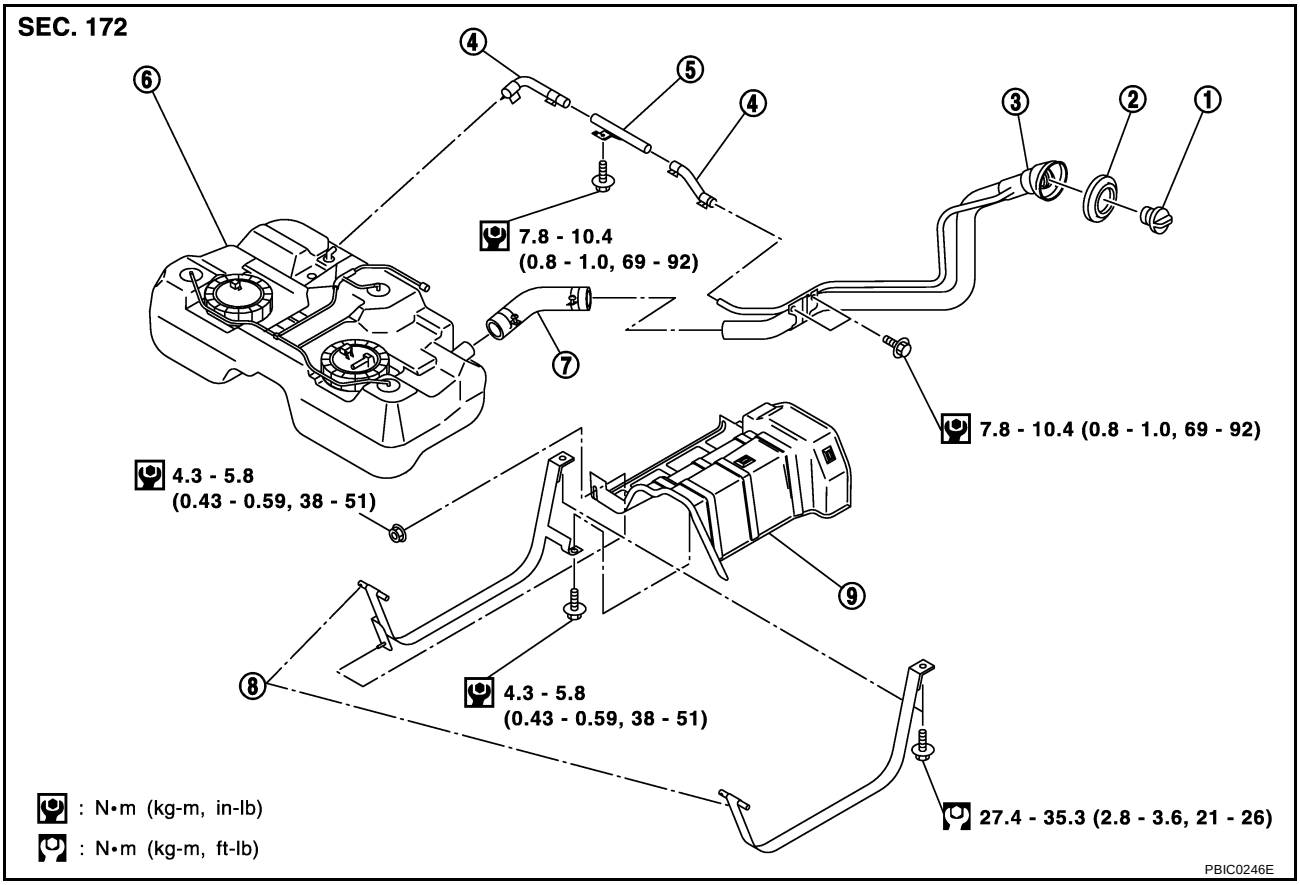
OK >> GO TO 10.
NG >> Replace air cleaner filter.

FUEL TANK

PFP:17202

Removal and Installation

EBS00KOW



1. Fuel filler cap
2. Grommet
3. Fuel filler tube
4. Vent hose
5. Vent tube
6. Fuel tank
7. Fuel filler hose
8. Fuel tank band
9. Fuel tank protector

REMOVAL

WARNING:

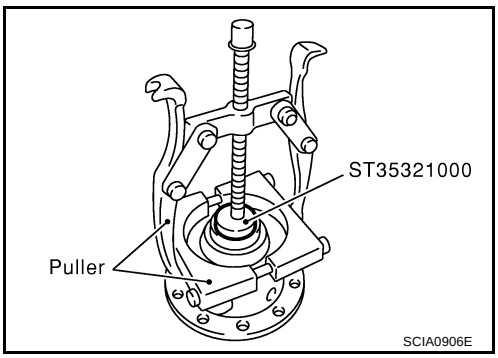
Be sure to read “General Precautions” when working on the fuel system. Refer to FL-3, "General Precautions" .

1. Perform the steps 1 to 7 of “REMOVAL” in “ FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY”. Refer to FL-4, "REMOVAL" .
2. Drain fuel more from fuel tank if necessary.

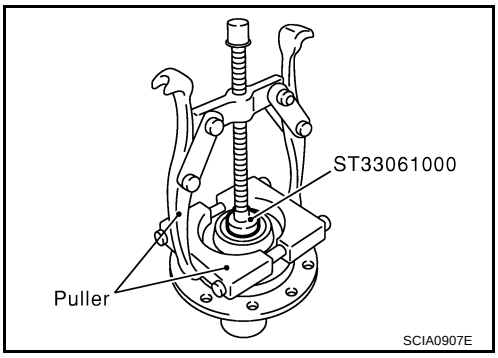
   CAUTION:

   Because fuel tank forwardly inclines and becomes unstable when installing/removing, fuel should be drained if found the remaining quantity.
3. Remove exhaust center tube and insulator. Refer to EX-2, "EXHAUST SYSTEM" .
4. Remove propeller shaft. Refer to PR-3, "REAR PROPELLER SHAFT" .

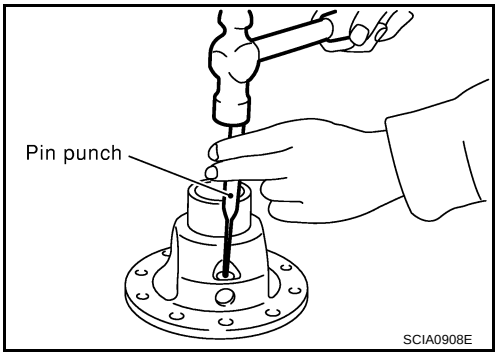
2. Remove differential side bearing (clutch housing side) using the drift and pullers.



3. Remove differential side bearing (transaxle case side) using the drift and pullers.



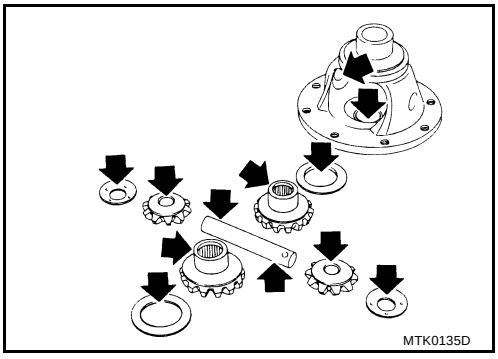
4. Remove retaining pin from differential case, and then remove pinion mate shaft using a pin punch.
5. Rotate pinion mate gears, and remove pinion mate gears, pinion mate thrust washers, side gears, and side gear thrust washers from differential case.



INSPECTION AFTER DISASSEMBLY

Gear, Washer, Shaft and Case

- Check side gears, side gear thrust washers, pinion mate shaft, pinion mate gears, pinion mate thrust washers and differential case. If necessary, replace with a new one.



PRECAUTIONS

PFP:00001

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

EFS004GW

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

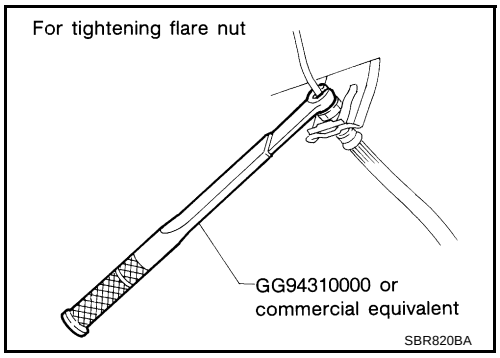
WARNING:

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

Precautions for Brake System

EFS004GX

- Recommended fluid is brake fluid “DOT 3” or “DOT 4”.
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas such as body. If brake fluid is splashed, wipe it off and flush area with water immediately.
- Never use mineral oils such as gasoline or kerosene to clean. They will ruin rubber parts and cause improper operation.
- Using a flare nut torque wrench, securely tighten brake tube flare nuts.
- Brake system is an important safety part. If a brake fluid leak is detected, always disassemble the affected part. If a malfunction is detected, replace part with a new one.
- Before working, turn ignition switch OFF and disconnect harness connectors of ABS actuator and electric unit (control unit) or battery negative terminal.
- When installing brake piping, be sure to check torque.



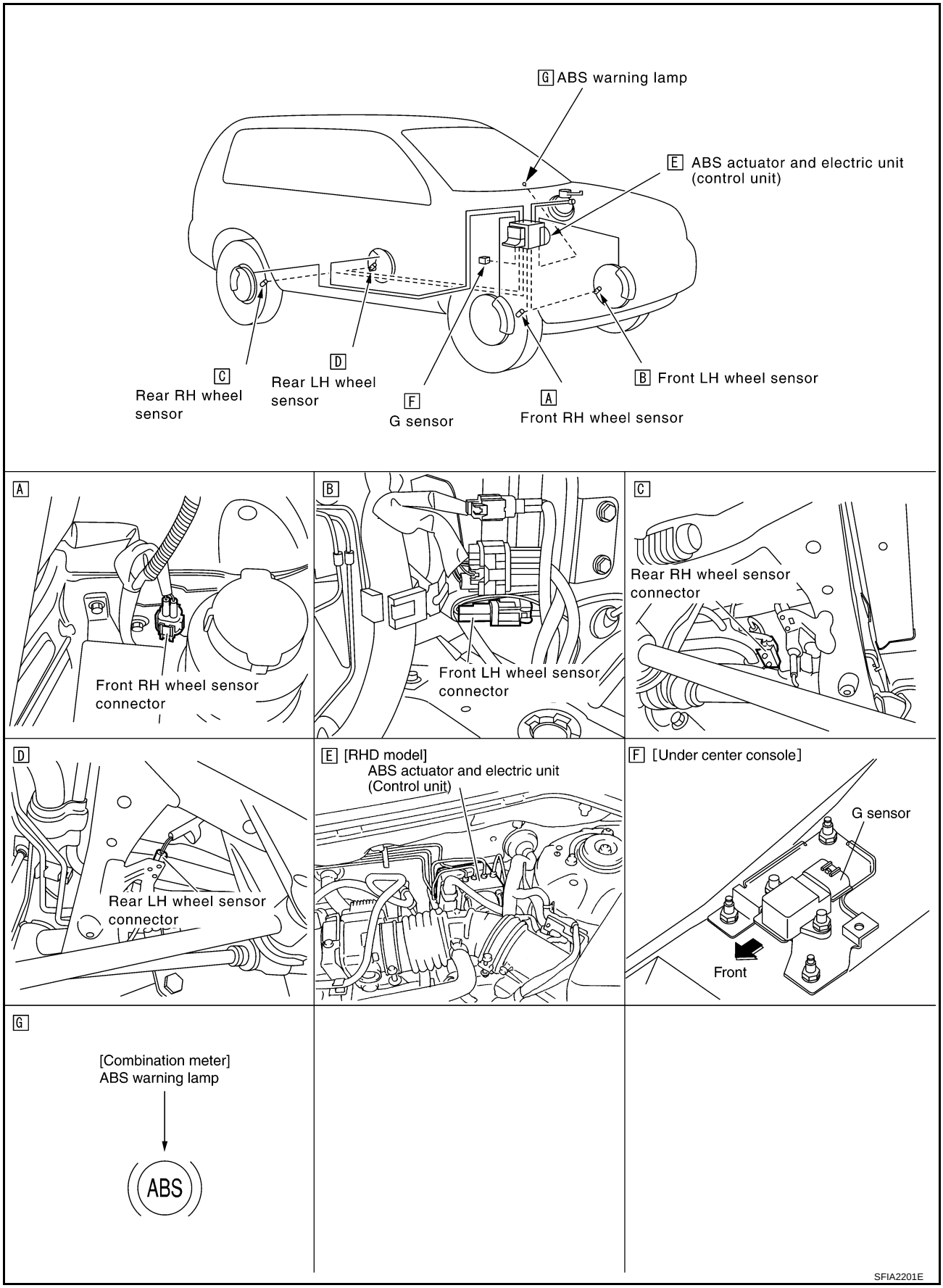
Precautions for Brake Control

EFS004FV

- 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 booster operation, brake fluid level, and oil leaks.
- If tyre size and type are used in an improper combination, or brake pads are not Genuine NISSAN parts, stopping distance or steering stability may deteriorate.
- If there is a radio, antenna, or antenna lead-in wire (including wiring) near control module, ABS function may have a malfunction or error.
- If aftermarket parts (car stereo, CD player, etc.) Have been installed, check for incidents such as harness pinches, open circuits, and improper wiring.

Component Parts Location

EFS004G7



Suspect Systems	Malfunction detecting condition	Inspection system
CAN COMM CIRCUIT	When there is an error in the CAN communication system.	BRC-42, "Inspection 7: CAN Communication System" (Note 2)
PUMP MOTOR	During actuator motor operation with ON, when actuator motor turns OFF or when control line for actuator motor relay is open.	BRC-38, "Inspection 4: ABS Actuator Relay or ABS Motor Relay Power System"
G - SENSOR	Decel G-sensor is malfunctioning, or signal line of Decel G-sensor is open or shorted.	BRC-40, "Inspection 6: G Sensor System"

Note 1: After completing repairs of shorted sensor circuit, when ignition switch is turned ON, ABS warning lamp turns on. Check that ABS warning lamp turns off while driving vehicle at 30 km/h (19 MPH) or more for approximately 1 minute according to self-diagnosis procedure. In addition, if wheel sensor 2 is displayed for wheels, check wheel sensor circuit and also check control unit power voltage.
Note 2: When errors are detected in several systems, including CAN communication system [U1000], troubleshoot CAN communication system.

DATA MONITOR

Operation Procedure

1. Touch “ABS”, “DATA MONITOR” in order on the CONSULT-II screen.
2. Return to the Monitor Item Selection screen, and touch “ECU INPUT SIGNALS”, “MAIN SIGNALS” or “SELECTION FROM MENU”. Refer to the following information.
3. When “START” is touched, the data monitor screen is displayed.

Display Item List

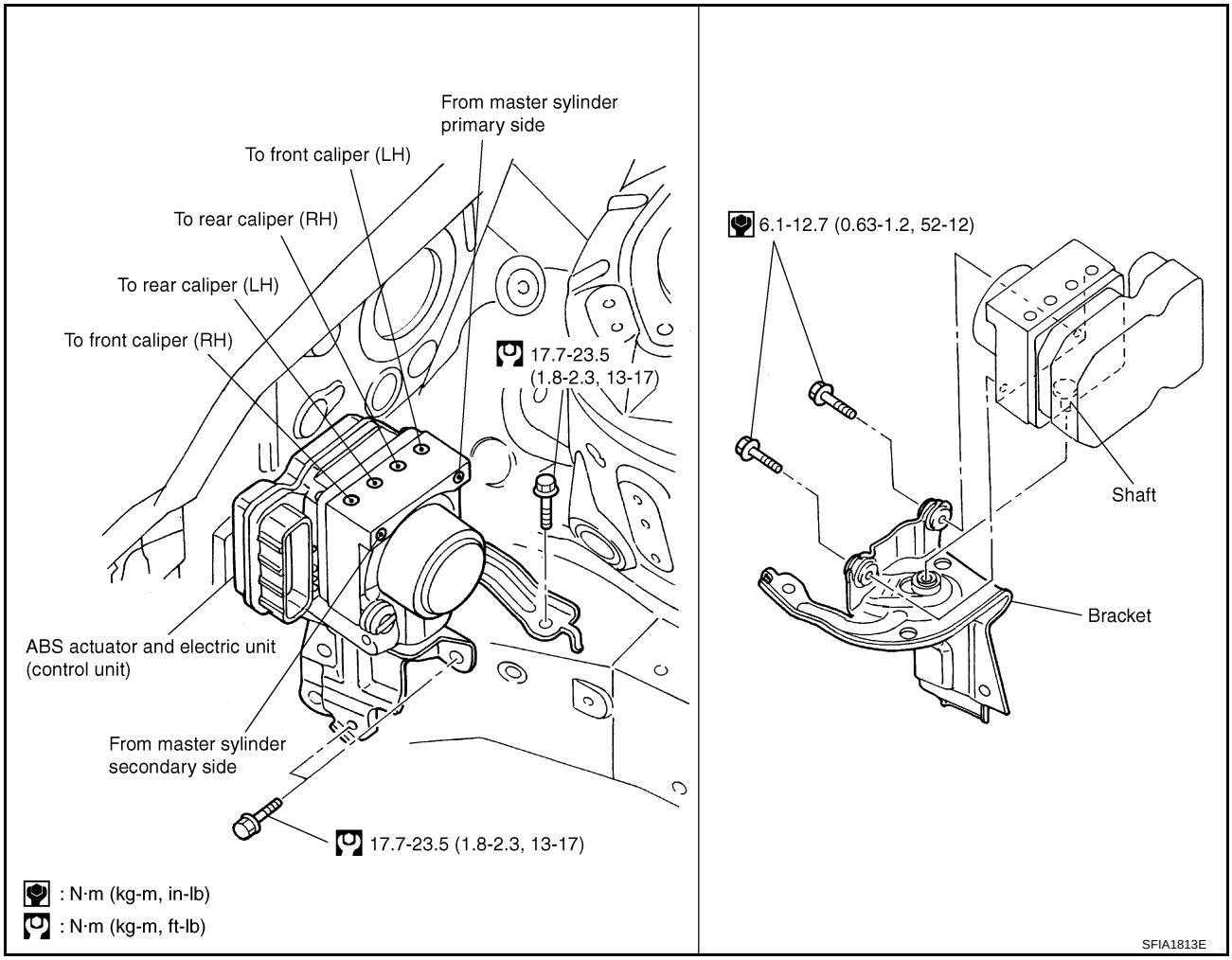
Item (Unit)	SELECT MONITOR ITEM			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
FR LH SENSOR [km/h (MPH)]	×	×	×	Wheel speed calculated by front LH wheel sensor signal is displayed.
FR RH SENSOR [(km/h (MPH)]	×	×	×	Wheel speed calculated by front RH wheel sensor signal is displayed.
RR LH SENSOR [km/h (MPH)]	×	×	×	Wheel speed calculated by Rear LH wheel sensor signal is displayed.
RR RH SENSOR [km/h (MPH)]	×	×	×	Wheel speed calculated by Rear RH wheel sensor signal is displayed.
DECEL G-SEN 1 (ON/OFF)	×	×	×	Decel G-sensor 1 (ON/OFF) status is displayed.
DECEL G-SEN 2 (ON/OFF)	×	×	×	Decel G-sensor 2 (ON/OFF) status is displayed.
FR LH IN SOL (ON/OFF)	–	×	×	Front left inlet ABS solenoid valve (ON/OFF) status is displayed.
FR LH OUT SOL (ON/OFF)	–	×	×	Front left outlet ABS solenoid valve (ON/OFF) status is displayed.
RR RH IN SOL (ON/OFF)	–	×	×	Rear right inlet ABS solenoid valve (ON/OFF) status is displayed.
RR RH OUT SOL (ON/OFF)	–	×	×	Rear right outlet ABS solenoid valve (ON/OFF) status is displayed.

ABS ACTUATOR AND ELECTRIC UNIT (ASSEMBLY)

PFP:47660

Removal and Installation

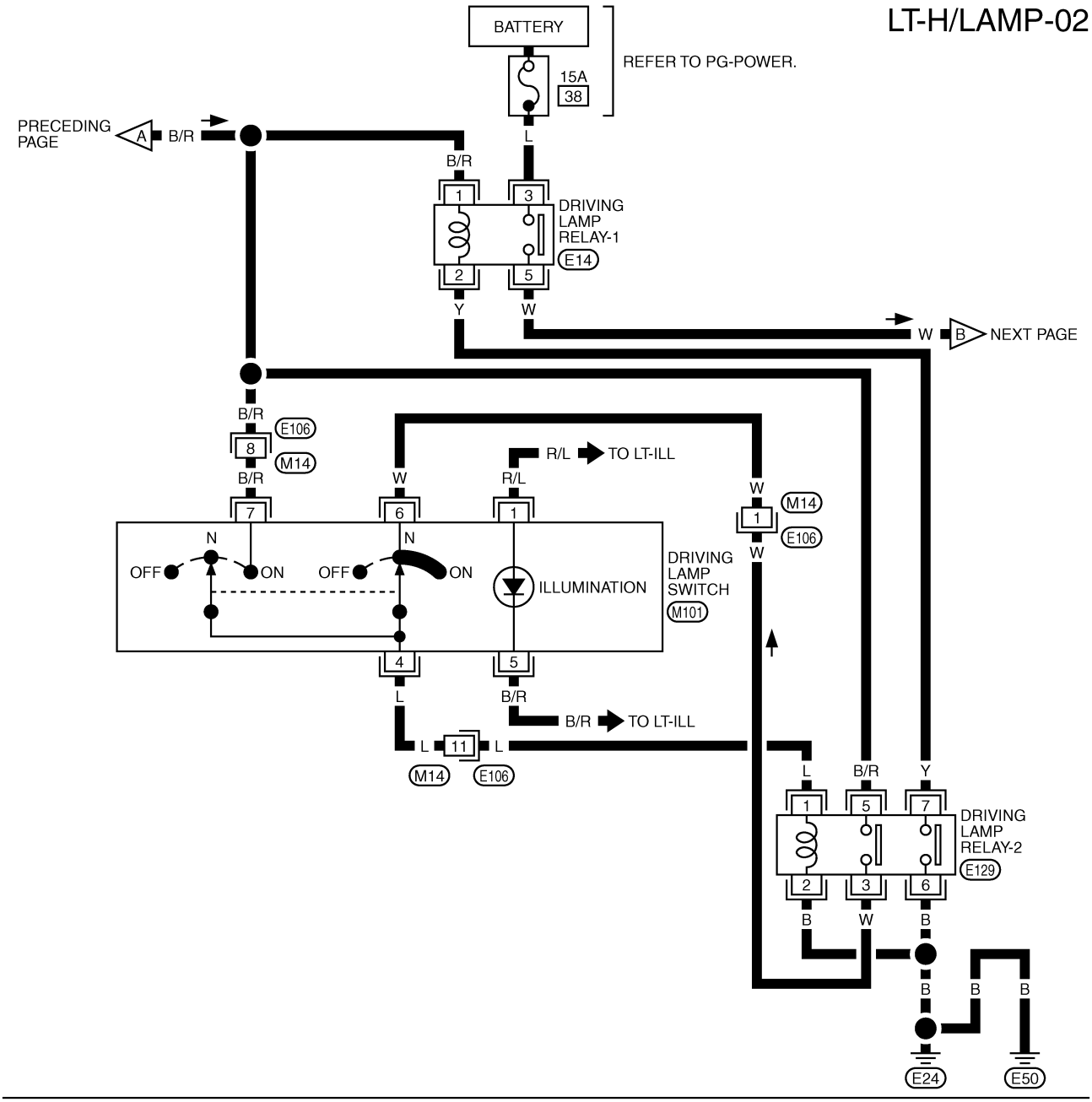
EFS004GT



- The above figure shows RH model. LH model figure is the mirror image.
- Pay attention to the following when removing actuator.

CAUTION:

- **Before servicing, disconnect battery terminals.**
- **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 (special service tool).**
- **Do not apply excessive impact to actuator, such as dropping it.**
- **Do not remove and install ABS actuator and electric unit (control unit) by holding harness.**
- **After work is completed, bleed air from brake piping. Refer to BR-9, "Bleeding Brake System" .**


LT-H/LAMP-02
BATTERY
REFER TO PG-POWER.
15A
38
PRECEDING PAGE
A
B/R
L
B/R
1
3
DRIVING LAMP RELAY-1
E14
2
5
Y
W
W
B
NEXT PAGE
B/R
E106
8
M14
B/R
7
W
6
R/L
1
R/L
TO LT-ILL
W
M14
1
E106
W
N
OFF
ON
N
OFF
ON
ILLUMINATION
DRIVING LAMP SWITCH
M101
4
5
L
B/R
B/R
TO LT-ILL
L
11
L
M14
E106
L
B/R
Y
1
5
7
DRIVING LAMP RELAY-2
E129
2
3
6
B
W
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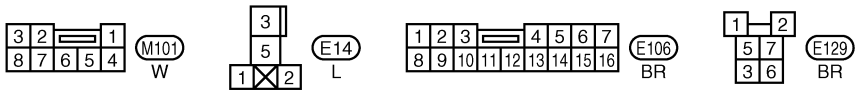
E24
E50


M101
W
E14
L
E106
BR
E129
BR

TKWA1517E