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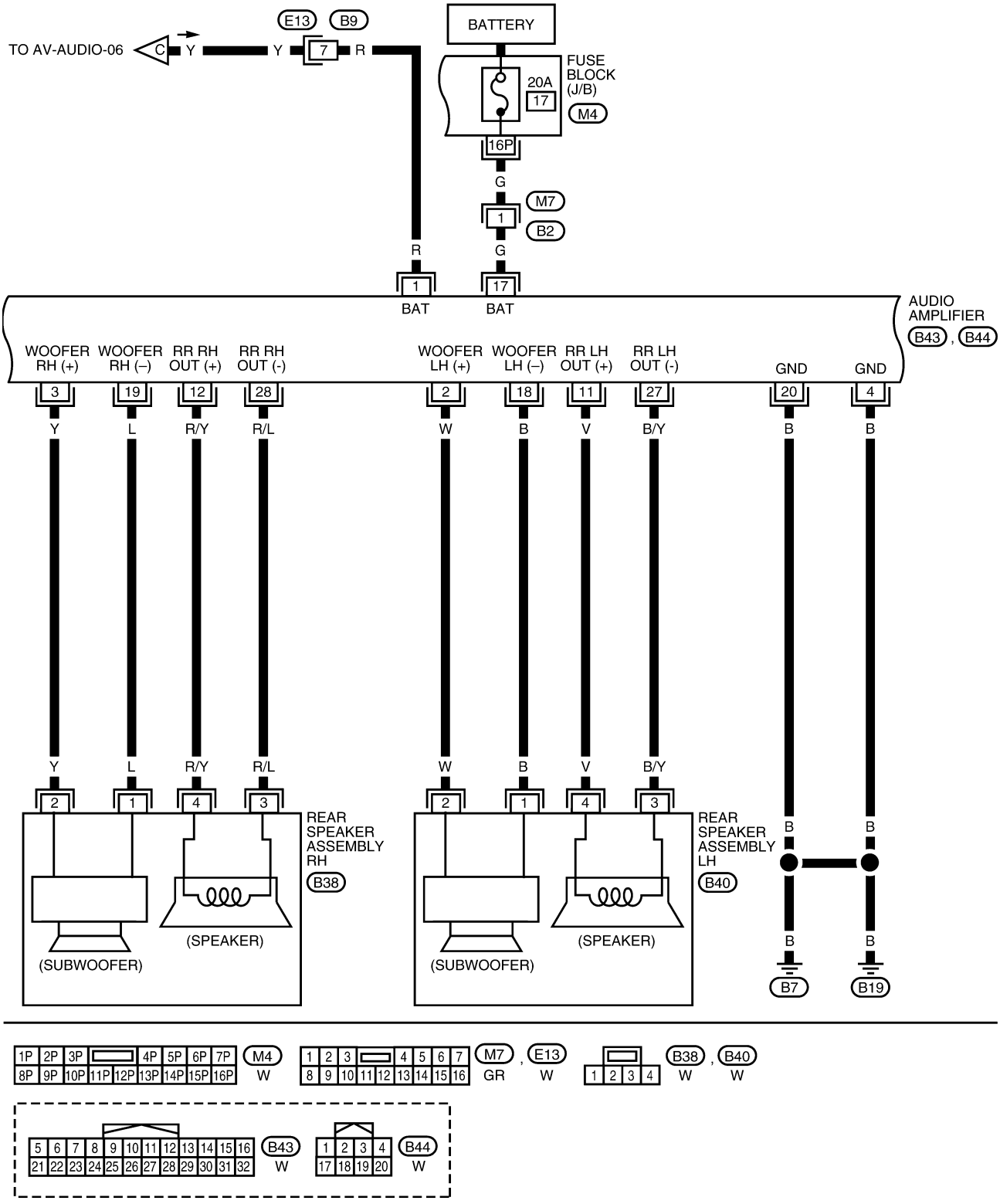
NISSAN SENTRA

MODEL B16 SERIES

QUICK REFERENCE INDEX

AV-AUDIO-08



BKWA0765E

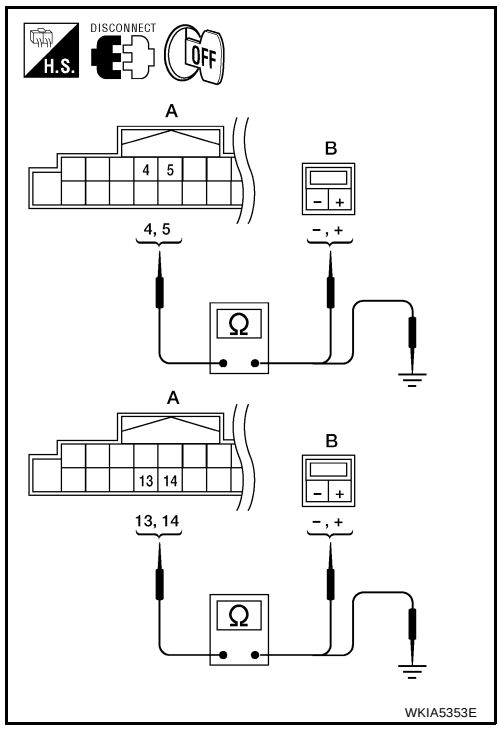
Sound Is Not Heard From Rear Speaker (Base and Mid System)

EKS00KFI

1. HARNESS CHECK

1. Disconnect audio unit connector and rear speaker connector.
2. Check continuity between audio unit harness connector terminal and rear speaker harness connector terminal.

Terminals				Continuity
Audio unit		Speaker		
Connector	Terminal	Connector	Terminal	
A: M43	4	B: B27	+	Yes
	5		-	
	13	B: B39	+	
	14		-	



3. Check continuity between audio unit harness connector terminal and ground.

Terminals		—	Continuity
Audio unit			
Connector	Terminal		
A: M43	4	Ground	No
	5		
	13		
	14		

OK or NG

OK >> GO TO 2.

NG >> ● Check connector housings for disconnected or loose terminals.
● Repair harness or connector.

BLUETOOTH ANTENNA

Removal

NOTE:
Bluetooth antenna is mounted on top of the Bluetooth control unit.

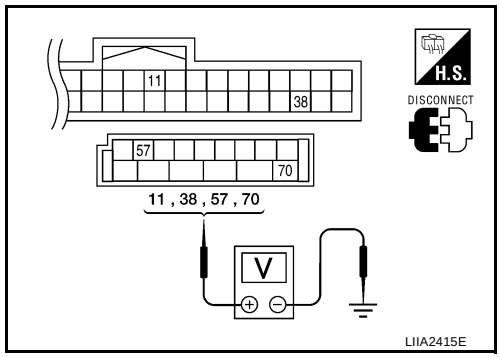
1. Slide the LH front seat toward the rear.
2. Disconnect the Bluetooth antenna connector.
3. Remove the Bluetooth antenna screws and remove the Bluetooth antenna.

Installation

Installation is in the reverse order of removal.

2. CHECK BCM POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM.
3. Check voltage between BCM connectors and ground.



Connector	Terminals (+)	Terminals (-)	Power source	Condition	Voltage (V) (Approx.)
M18	11	Ground	ACC power supply	Ignition switch ACC or ON	Battery voltage
	38	Ground	Ignition power supply	Ignition switch ON or START	Battery voltage
M20	57	Ground	Battery power supply	Ignition switch OFF	Battery voltage
	70	Ground	Battery power supply	Ignition switch OFF	Battery voltage

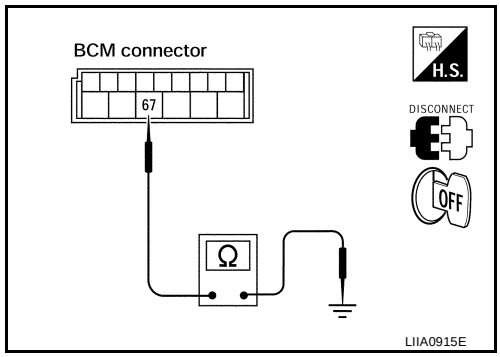
OK or NG

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

3. CHECK GROUND CIRCUIT

Check continuity between BCM connector M20 terminal 67 and ground.

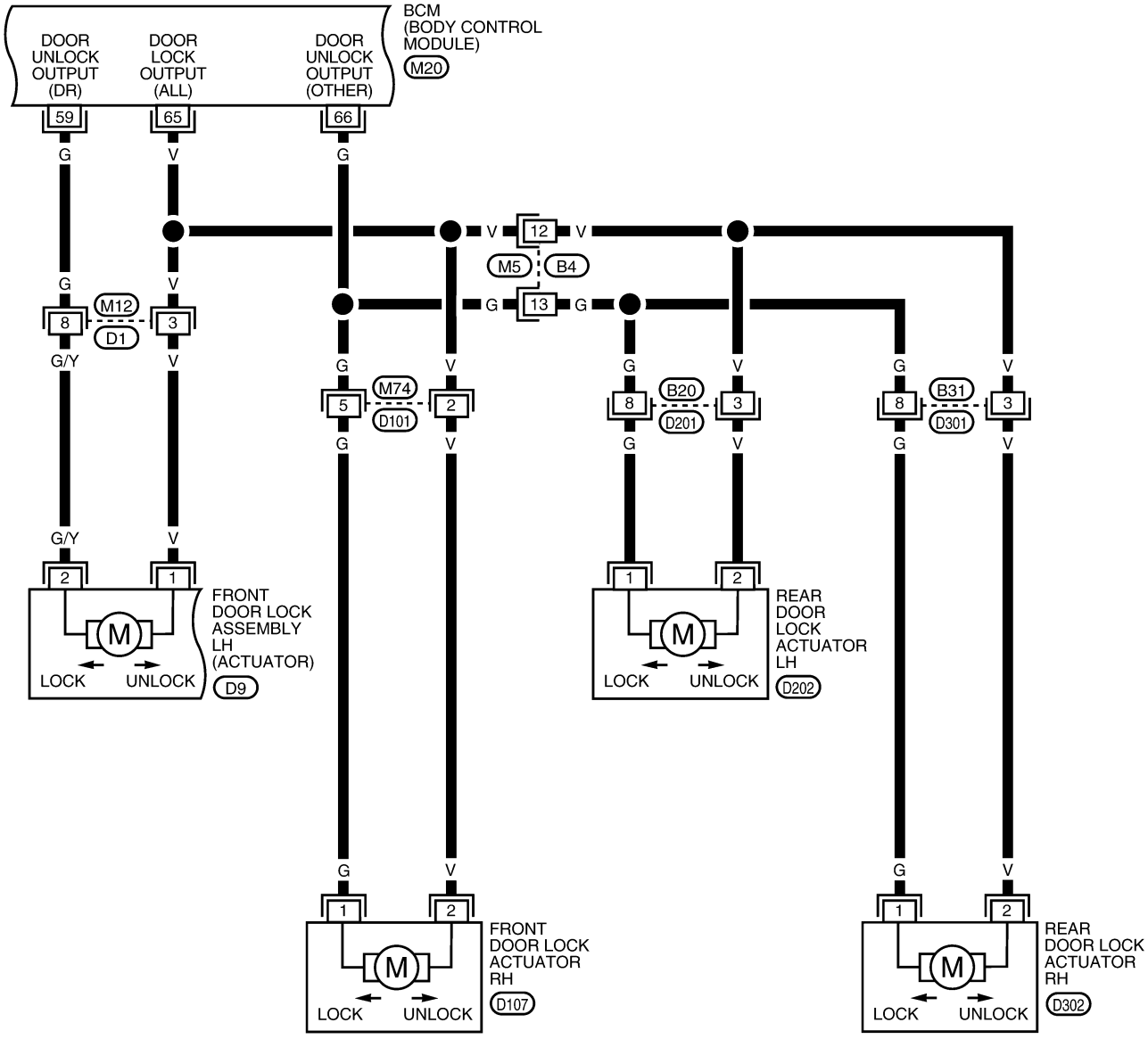
67 - Ground : Continuity should exist.

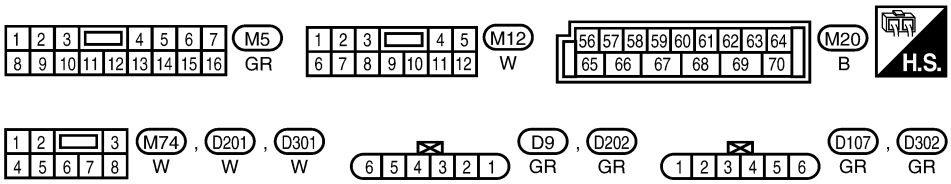


OK or NG

OK >> Power supply and ground circuit is OK.
NG >> Repair or replace harness.

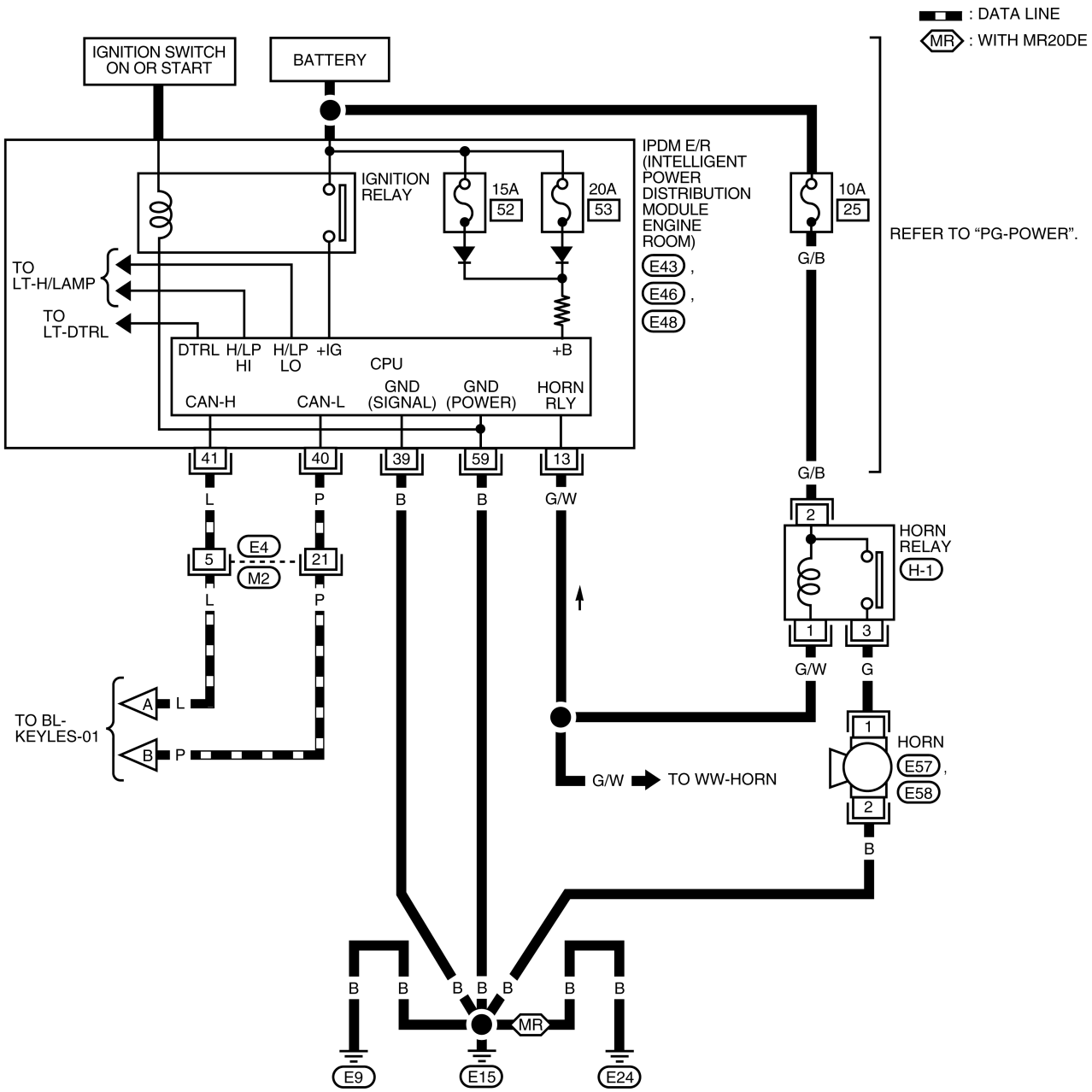
BL-D/LOCK-03

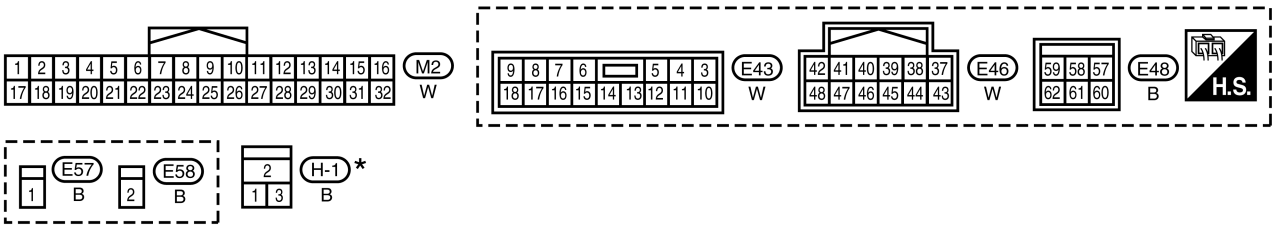




WIWA2177E

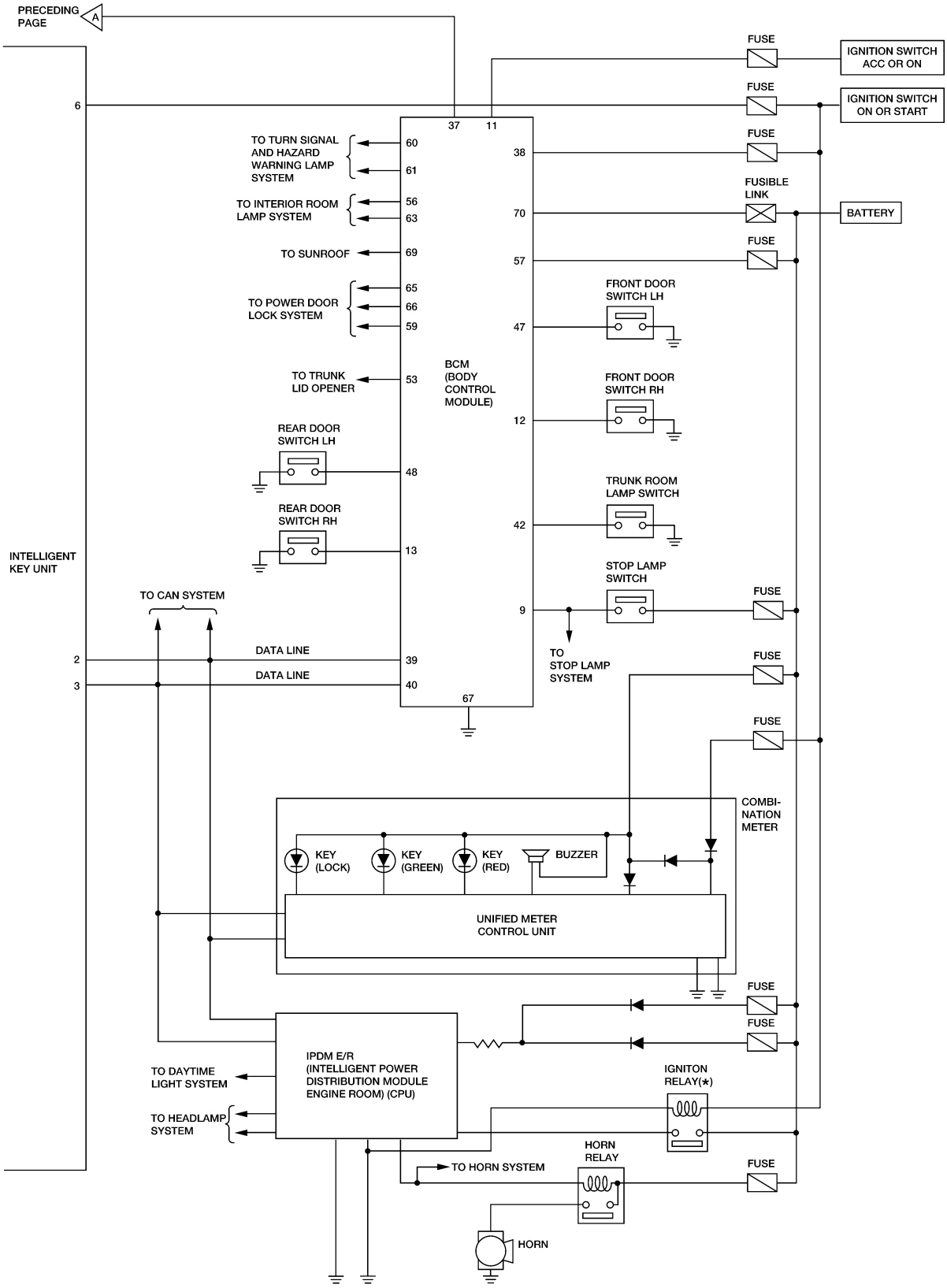
BL-KEYLES-03





*: THIS CONNECTOR IS NOT SHOWN IN “HARNESS LAYOUT” OF PG SECTION.

WIWA2323E



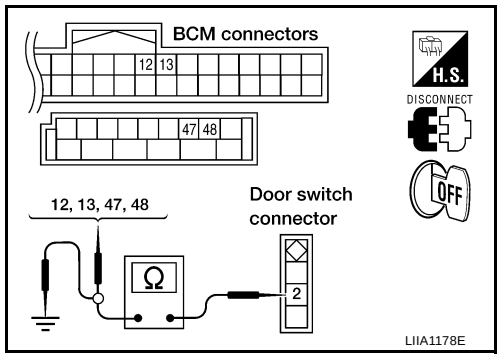
*: THIS RELAY IS BUILT INTO THE IPDM E/R
(INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

WIWA2196E

2. CHECK DOOR SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect door switch and BCM.
3. Check continuity between door switch connector B21 (Front LH), B28 (Front RH), B26 (Rear LH), B41 (Rear RH) terminal 2 and BCM connector M18, M19 terminals 12, 13, 47 and 48.

2 - 47 : Continuity should exist.
2 - 12 : Continuity should exist.
2 - 48 : Continuity should exist.
2 - 13 : Continuity should exist.



4. Check continuity between door switch connector B21 (Front LH), B28 (Front RH), B26 (Rear LH), B41 (Rear RH) terminal 2 and ground.

2 - Ground : Continuity should not exist.

OK or NG

OK >> GO TO 3.
NG >> Repair or replace harness.

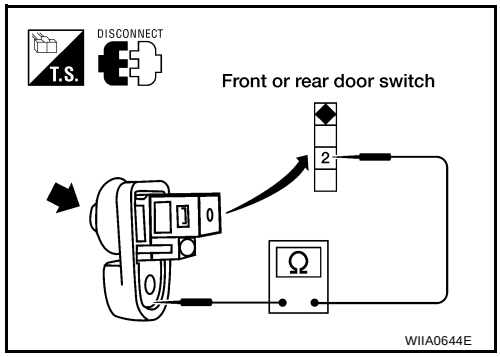
3. CHECK DOOR SWITCHES

Check continuity between door switch terminals.

	Terminals	Condition	Continuity
Door switch (front or rear)	2 – Ground	Pressed	No
		Released	Yes

OK or NG

OK >> GO TO 4.
NG >> Replace door switch.



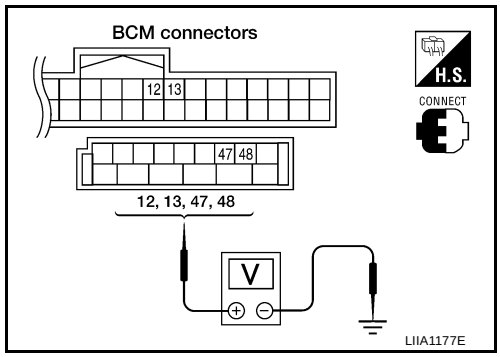
4. CHECK BCM OUTPUT VOLTAGE

1. Reconnect BCM connectors.
2. Check voltage between BCM connector M18, M19 terminals 12, 13, 47, 48 and ground.

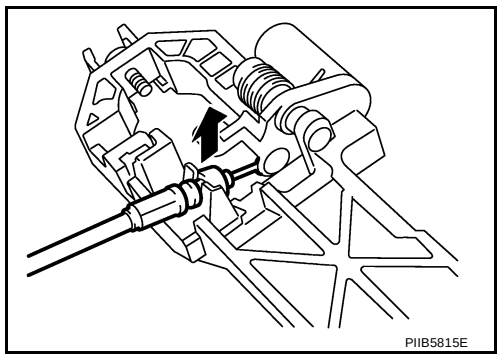
12 - Ground : Battery voltage
13 - Ground : Battery voltage
47 - Ground : Battery voltage
48 - Ground : Battery voltage

OK or NG

OK >> Door switch circuit is OK.
NG >> Replace BCM. Refer to BCS-21, "Removal and Installation of BCM" .



10. Disconnect the outside handle cable from the outside handle bracket.



INSTALLATION

Installation is in the reverse order of removal.

Diagnostic Procedure 4

EIS00BAX

VEHICLE SECURITY HORN ALARM CHECK

1. CHECK HORN OPERATION

Check if horn sounds with horn switch.

Does horn operate?

YES >> Check harness for open or short between IPDM E/R and horn relay.
NO >> Check horn circuit. Refer to WW-28, "HORN" .

Diagnostic Procedure 5

EIS00BAY

VEHICLE SECURITY HEADLAMP ALARM CHECK

1. CHECK VEHICLE SECURITY HEADLAMP ALARM OPERATION

Check if headlamps operate with lighting switch.

Do headlamps come on when turning switch ON?

YES >> Headlamp alarm is OK.
NO >> Check headlamp system. Refer to LT-5, "HEADLAMP (FOR USA)" or LT-27, "HEADLAMP (FOR CANADA) - DAYTIME LIGHT SYSTEM -" .

Diagnostic Procedure 6

EIS00BAZ

DOOR LOCK/UNLOCK SWITCH CHECK

1. CHECK DOOR LOCK/UNLOCK SWITCH INPUT SIGNAL

Check if power door lock operates with door lock/unlock switch.

Do doors lock/unlock when using each door lock/unlock switch?

YES >> Door lock/unlock switch is OK.
NO >> Refer to BL-42, "Door Lock and Unlock Switch Check" .

Diagnostic Procedure 7

EIS00BDA

TRUNK ROOM LAMP SWITCH CHECK

1. CHECK TRUNK ROOM LAMP SWITCH INPUT SIGNAL

With CONSULT-III

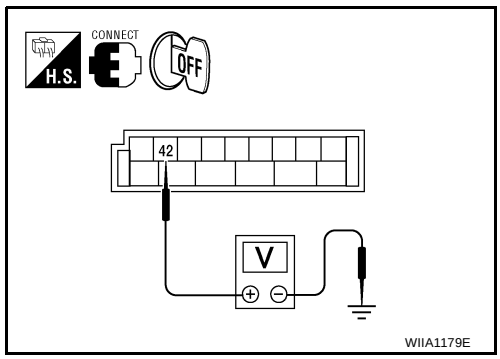
Check (“TRUNK SW”) in “DATA MONITOR” mode with CONSULT-III.

Monitor item	Trunk condition	
TRUNK SW	OPEN	: ON
	CLOSED	: OFF

Without CONSULT-III

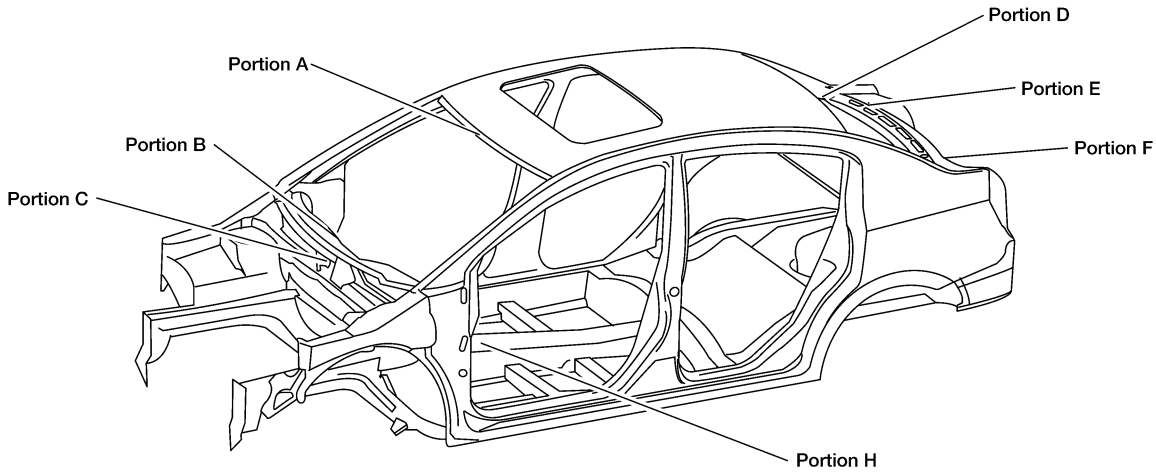
1. Turn ignition switch OFF.
2. Check voltage between BCM harness connector M19 terminal 42 and ground.

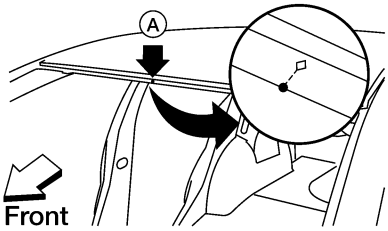
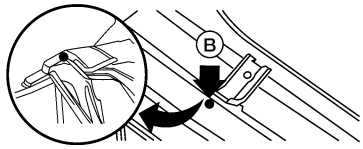
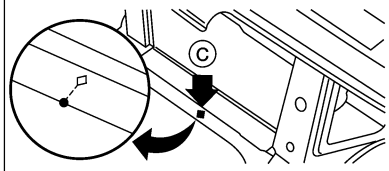
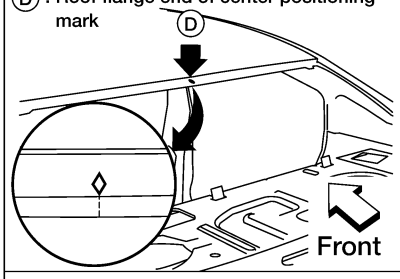
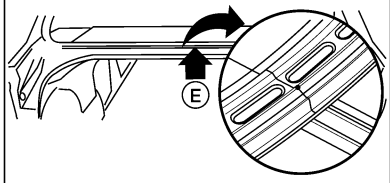
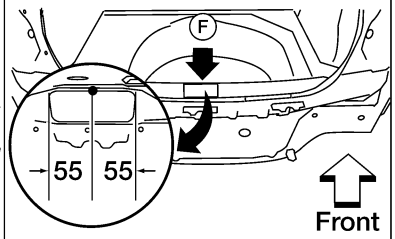
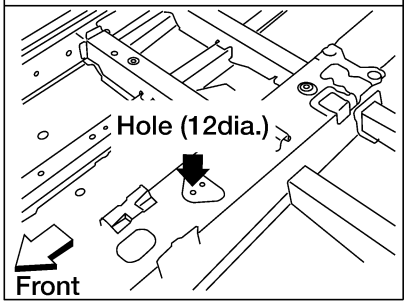
Connector	Terminals (+)	Terminals (-)	Trunk condition	Voltage (V) (Approx.)
M19	42	Ground	CLOSED	Battery voltage
			OPEN	0



OK or NG

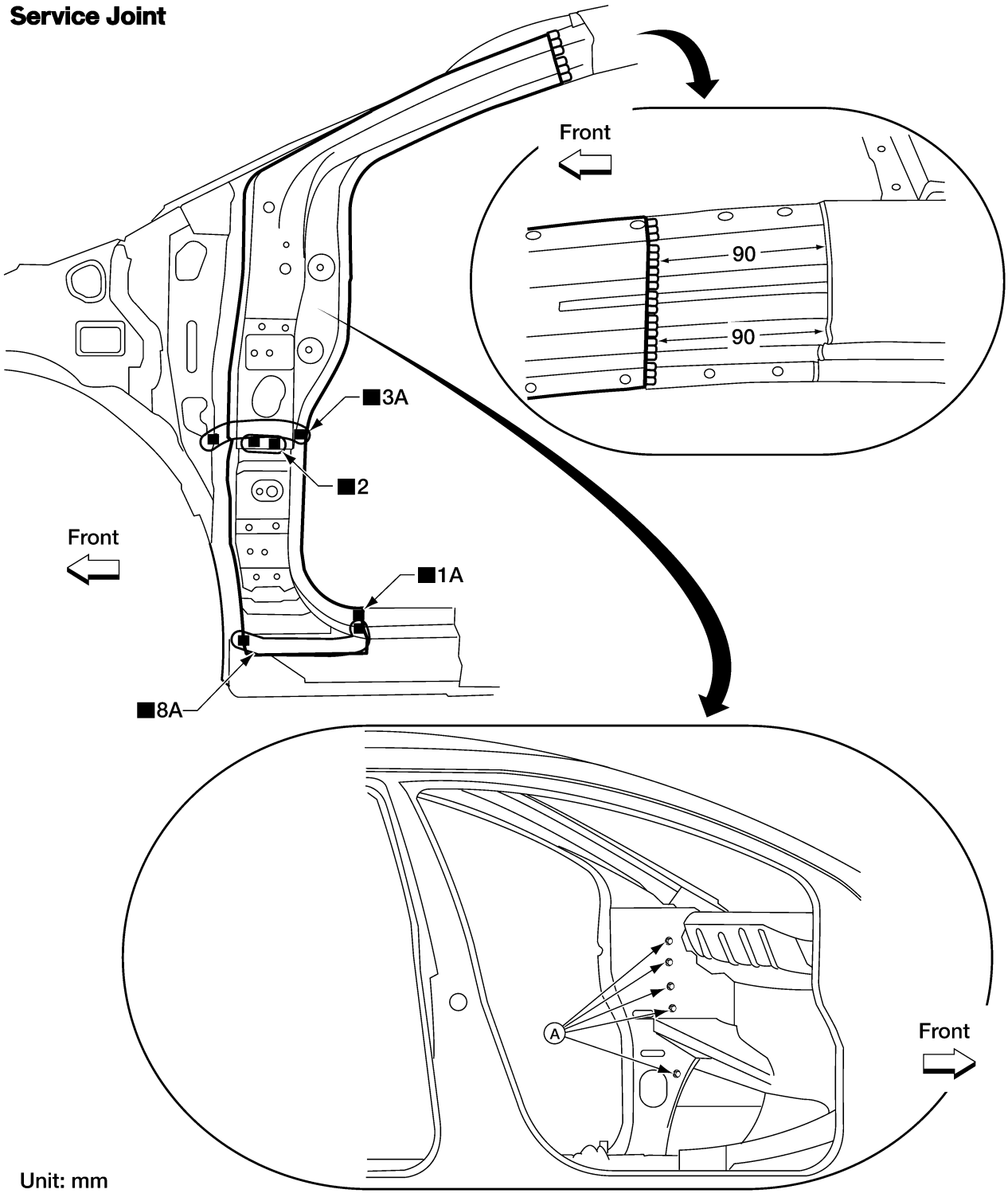
OK >> Trunk room lamp switch circuit is OK.
NG >> GO TO 2.



Portion A	Portion B	Portion C
(A) : Roof flange end of center positioning mark 	(B) : Bottom center of windshield opening 	(C) : Cowl top flange end of center positioning mark 
Portion D	**Portion E**	**Portion F**
(D) : Roof flange end of center positioning mark 	(E) : Rear waist panel flange end 	
Portion H		
		

LIIA2690E

Service Joint



Unit: mm

2-spot welds	3-spot welds	MIG Plug weld	For 3 panels plug weld method		MIG seam weld/ Point weld
●	◉	■	■ A	■ B	

LIIA2710E

Change parts

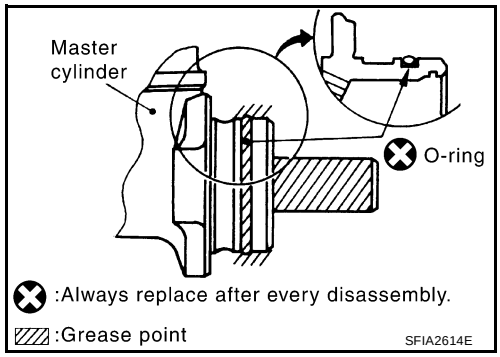
- ● Front pillar upper reinforcement
- ● Front pillar lower reinforcement

A. Body assembly bolts
24 Nm (2.4 kg-m, 18 ft-lb)

1. Install master cylinder to brake booster assembly, and tighten nuts to the specified torque.

CAUTION:

- **Do not damage or strain rod of primary piston.**
- **Apply silicone grease for O-ring, primary piston rod and to inside of booster.**



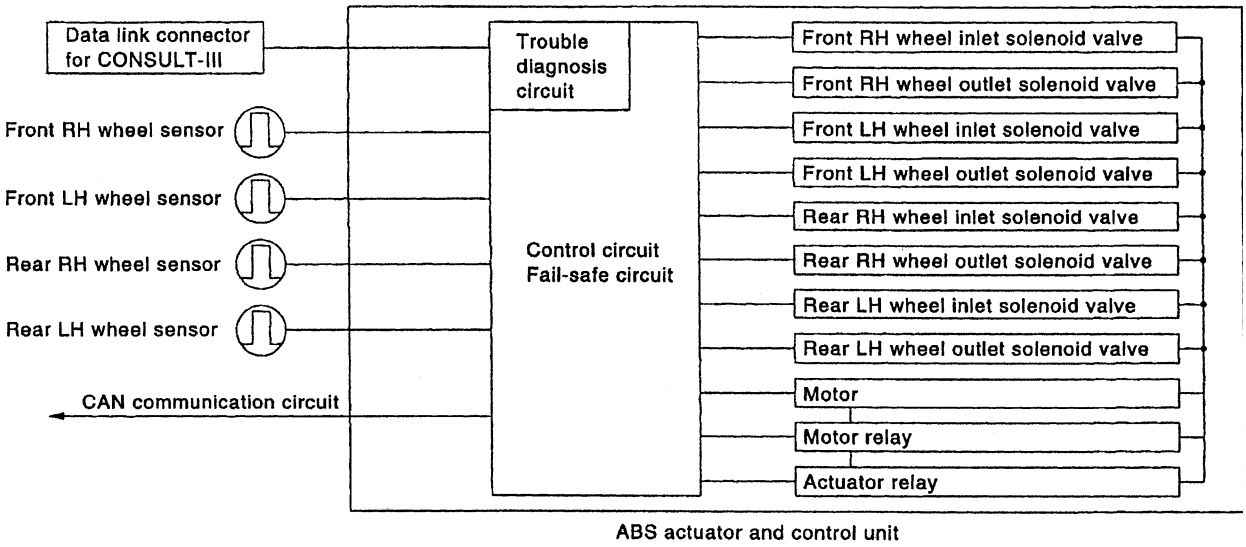
2. Install brake tube to master cylinder, and temporarily tighten the flare nuts on the brake tube to master cylinder by hand.
3. Install brake tube to brake hose, then tighten flare nut to the specified torque using a flare nut torque wrench. Refer to BR-11, "Hydraulic Circuit" .
4. Connect brake fluid level switch harness connector and clutch master cylinder hose (if equipped).
5. Refill new brake fluid and bleed air. Refer to BR-10, "Bleeding Brake System" .

SYSTEM DESCRIPTION

PFP:00000

System Components

EFS006YY



WFIA0563E

ABS Function

EFS006YZ

- The Anti-Lock Brake System detects wheel revolution while braking and improves handling stability during sudden braking by electrically preventing wheel lockup. Maneuverability is also improved for avoiding obstacles during emergency braking.
- If the electrical system malfunctions, the Fail-Safe function is activated, the ABS becomes inoperative and the ABS warning lamp turns on.
- The electrical system can be diagnosed using CONSULT-III.
- During ABS operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting the vehicle, the brake pedal may vibrate or motor operating noises may be heard from the engine compartment. This is normal due to the self check operation.
- 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 Function

EFS006Z0

- Electronic Brake Distribution is a function that detects subtle slippages between the front and rear wheels during braking, and it improves handling stability by electronically controlling the brake fluid pressure which results in reduced rear wheel slippage.
- If the electrical system malfunctions, the Fail-Safe function is activated, the EBD and ABS become inoperative, and the ABS warning lamp and brake warning lamp are turned on.
- The electrical system can be diagnosed using CONSULT-III.
- During EBD operation, the brake pedal may vibrate lightly and a mechanical noise may be heard. This is normal.
- Just after starting the vehicle, the brake pedal may vibrate or motor operating noises may be heard from the engine compartment. This is normal due to the self check operation.

SECTION CL
CLUTCH

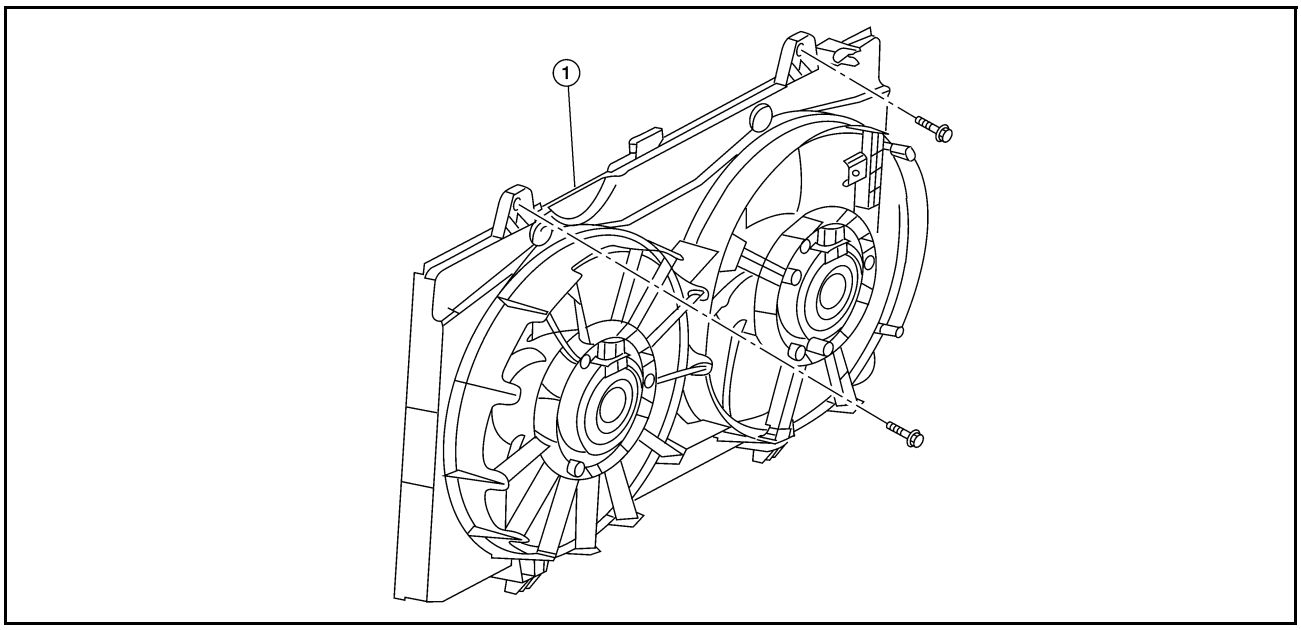
CONTENTS

COOLING FAN

PFP:21140

Components

EBS00Z60



1. Cooling fan assembly

Removal and Installation

EBS00Z61

REMOVAL

1. Partially drain engine coolant from radiator. Refer to CO-10, "DRAINING ENGINE COOLANT" .

   CAUTION:
   - **Perform this step when engine is cold.**
   - **Do not spill engine coolant on drive belt.**
2. Remove air duct (inlet). Refer to EM-18, "AIR CLEANER AND AIR DUCT" .
3. Disconnect radiator hose (upper) at radiator side. Refer to CO-13, "RADIATOR" .
4. Disconnect harness connectors from fan motor, and move harness to aside.
5. Remove cooling fan assembly.

   CAUTION:
   Be careful not to damage or scratch the radiator core.

INSTALLATION

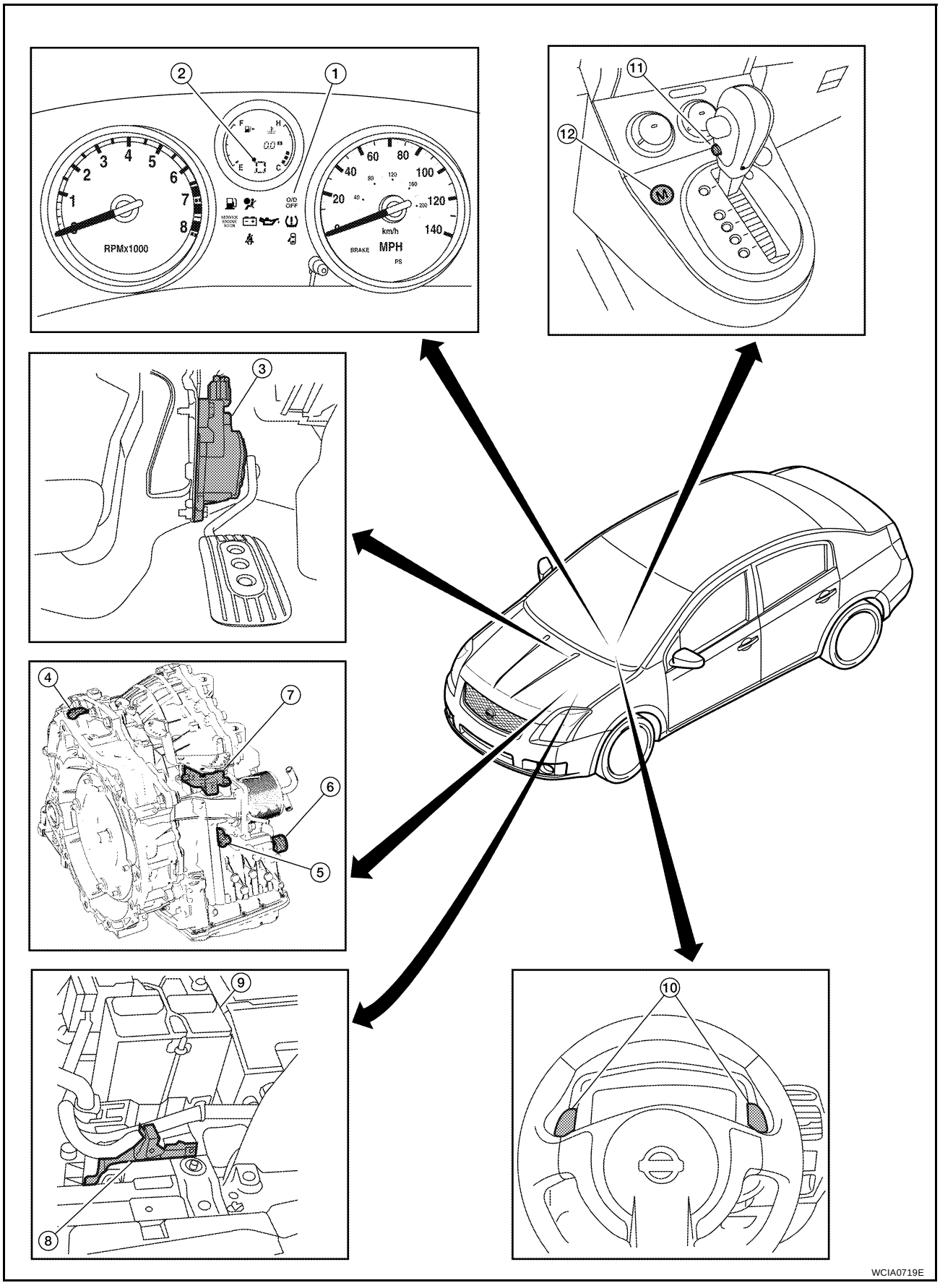
Installation is the reverse order of removal.

- Cooling fans are controlled by ECM. For details, refer to EC-420, "DTC P1217 ENGINE OVER TEMPERATURE" .

CAUTION:
Be careful not to damage or scratch the radiator core.

CVT Electrical Parts Location

UCS005Y9



WITH GST

Follow the procedure “WITH CONSULT-III”.

6. CHECK TCM

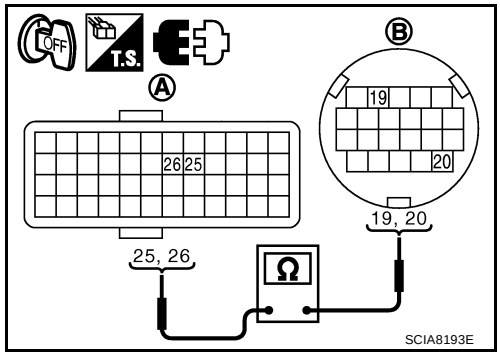
1. Check TCM input/output signals. Refer to CVT-49, "TCM Input/Output Signal Reference Values" .
2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**
NG >> 1. Repair or replace damaged parts.
2. Replace the transaxle assembly. Refer to CVT-204, "Removal and Installation (MR20DE)" .

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)

1. Turn ignition switch OFF.
2. Disconnect TCM connector (A) and CVT unit harness connector (B).
3. Check continuity between TCM connector (A) terminals and CVT unit harness connector (B) terminals.



Item	Connector	Terminal	Continuity
TCM	F23	26	Yes
CVT unit harness connector	F46	20	
TCM	F23	25	Yes
CVT unit harness connector	F46	19	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> GO TO 4.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK SENSOR POWER AND SENSOR GROUND

1. Turn ignition switch ON.
2. Disconnect CVT unit harness connector.
3. Check voltage between CVT unit harness connector terminal.

Item	Connector	Terminal	Data (Approx.)
CVT unit harness connector (vehicle side)	F46	19 - 20	5.0 V

OK or NG

OK >> Replace the transaxle assembly. Refer to CVT-204, "TRANSAXLE ASSEMBLY" .
NG >> Replace TCM. Refer to CVT-180, "Removal and Installation" .

5. CHECK DTC

Perform CVT-128, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 6.

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-49, "TCM Input/Output Signal Reference Values" .
2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> Replace the transaxle assembly. Refer to CVT-204, "Removal and Installation (MR20DE)" .
NG >> Repair or replace damaged parts.

SHIFT POSITION INDICATOR CIRCUIT

PFP:24810

Description

UCS006XJ

TCM sends the switch signals to combination meter via CAN communication line. Then selector lever position is indicated on the shift position indicator.

CONSULT-III Reference Value

UCS00642

Item name	Condition	Display value
RANGE	Selector lever in “N” or “P” position.	N·P
	Selector lever in “R” position.	R
	Selector lever in “D” position.	D
	Selector lever in “L” position.	L

Diagnostic Procedure

UCS00643

1. CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select “MAIN SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III and read out the value of “RANGE”.
3. Check that the following three positions or indicators are same.

- Actual position of the selector lever
- “RANGE” on CONSULT-III screen
- Shift position indicator in the combination meter

OK or NG

OK >> **INSPECTION END**
NG >> Check the following.

SHIFT POSITION INDICATOR SYMPTOM CHART

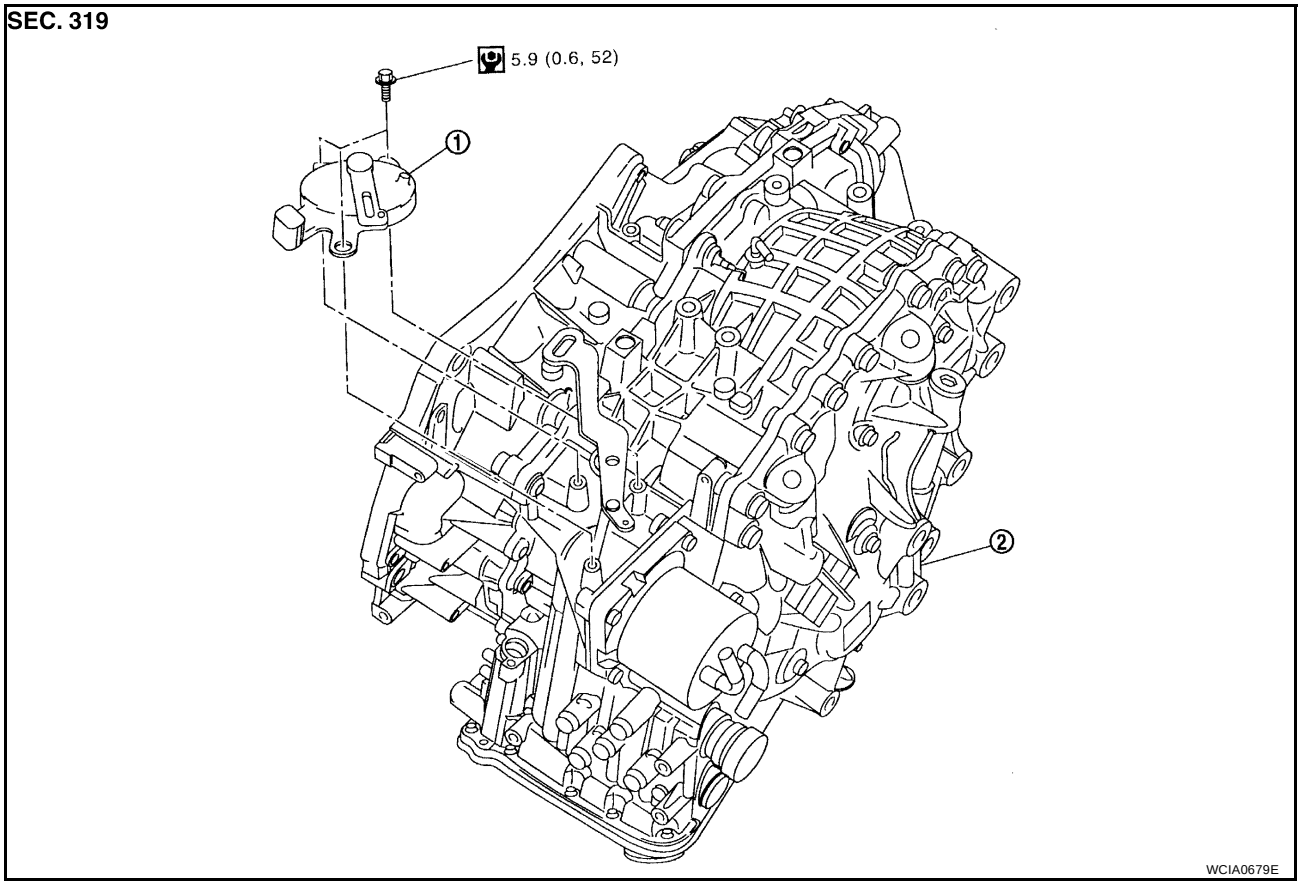
Items	Presumed location of trouble
Actual position does not change.	Park/neutral position switch ● Refer to CVT-66, "DTC P0705 PARK/NEUTRAL POSITION SWITCH" . CVT main system (Fail-safe function actuated) ● Refer to CVT-54, "SELF-DIAGNOSTIC RESULT MODE" .
Shift position indicator in the combination meter does not indicate any position.	Perform the self-diagnosis for CVT and the combination meter. ● Refer to CVT-54, "SELF-DIAGNOSTIC RESULT MODE" and DI-5, "COMBINATION METERS" .
Actual position changes, but the shift position indicator in the combination meter does not change.	
Actual position differs from the shift position indicator in the combination meter.	
Shift position indicator in the combination meter does not indicate specific position only.	Check the combination meter. ● Refer to DI-5, "COMBINATION METERS" .

Park/Neutral Position (PNP) Switch

UCS006YC

COMPONENTS

SEC. 319



1. PNP switch
2. CVT assembly

NOTE:

- Align PNP switch position when installing.
- After installation of PNP switch, check the continuity of PNP switch. Refer to CVT-190, "Adjustment of PNP switch" .
- After installation is complete, adjust and check CVT position. Refer to CVT-189, "Adjustment of CVT Position" , CVT-190, "Checking of CVT Position" .

CONSULT-III Function (METER/M&A)

EKS00JQ4

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

METER diagnosis mode	Description
SELF-DIAG RESULTS	Displays combination meter self-diagnosis results.
DATA MONITOR	Displays combination meter input/output data in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.

SELF-DIAGNOSTIC RESULTS

Display Item List

CONSULT-III display	Malfunction	Reference page
CAN COMM CIRC [U1000]	Malfunction is detected in CAN communication lines. **CAUTION:** **Even when there is no malfunction on CAN communication system, malfunction may be misinterpreted when battery has low voltage (when maintaining 7 - 8 V for about 2 seconds) or 10A fuse [No. 14, located in the fuse block (J/B)] is removed.**	DI-23
VEHICLE SPEED CIRC [B2205]	Malfunction is detected when an erroneous speed signal is input. **CAUTION:** **Even when there is no malfunction on speed signal system, malfunctions may be misinterpreted when battery has low voltage (when maintaining 7 - 8 V for about 2 seconds).**	DI-19

NOTE:

"TIME" indicates the following.

- 0: Indicates that a malfunction is detected at present.
- 1-63: Indicates that a malfunction was detected in the past. (Displays number of ignition switch OFF → ON cycles after malfunction is detected. Self-diagnostic result is erased when "63" is exceeded.)

DATA MONITOR

Display Item List

Display item [Unit]	MAIN SIGNALS	SELECTION FROM MENU	Contents
SPEED METER [km/h]	X	X	The value of vehicle speed signal, which is input from ABS actuator and electric unit (control unit).
SPEED OUTPUT [km/h]	X	X	The value of vehicle speed signal, which is transmitted to each unit with CAN communication.
TACHO METER [rpm]	X	X	The value of engine speed signal, which is input from ECM.
W TEMP METER [°C]	X	X	The value of engine coolant temperature signal, which is input from ECM.
FUEL METER [lit.]	X	X	The value, which processes a resistance signal from fuel gauge.
FUEL W/L [ON/OFF]	X	X	Indicates [ON/OFF] condition of low-fuel warning lamp.
C-ENG W/L [ON/OFF]		X	Indicates [ON/OFF] condition of malfunction indicator lamp (MIL).
AIR PRES W/L		X	Indicates [ON/OFF] condition of low tire pressure warning lamp.
SEAT BELT W/L		X	Indicates [ON/OFF] condition of seat belt warning lamp.
BUZZER [ON/OFF]	X	X	Indicates [ON/OFF] condition of buzzer.
DOOR W/L [ON/OFF]		X	Indicates [ON/OFF] condition of door warning lamp.
HI-BEAM IND [ON/OFF]		X	Indicates [ON/OFF] condition of high beam indicator lamp.
TURN IND [ON/OFF]		X	Indicates [ON/OFF] condition of turn indicator.
OIL W/L [ON/OFF]		X	Indicates [ON/OFF] condition of oil pressure warning lamp.

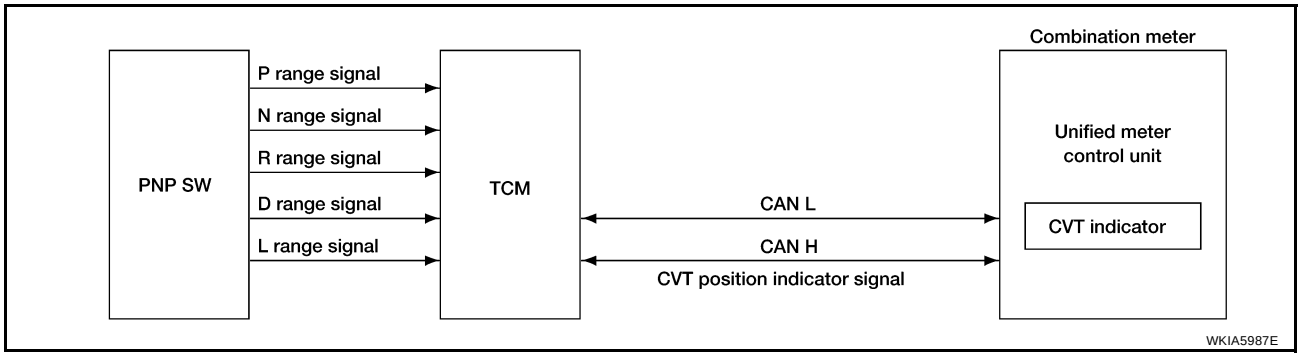
CVT INDICATOR

PFP:24820

System Description

EKS00JQO

The TCM receives CVT indicator signals from the park/neutral position (PNP) switch. The TCM then sends CVT position indicator signals to the combination meter via CAN communication lines. The combination meter indicates the received shift position.



SYMPTOM: CANNOT REFUEL/FUEL ODOR FROM THE FUEL FILLER OPENING IS STRONG WHILE REFUELING.

1. CHECK EVAP CANISTER

1. Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
2. Weigh the EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
   The weight should be less than 1.9 kg (4.2 lb).

OK or NG

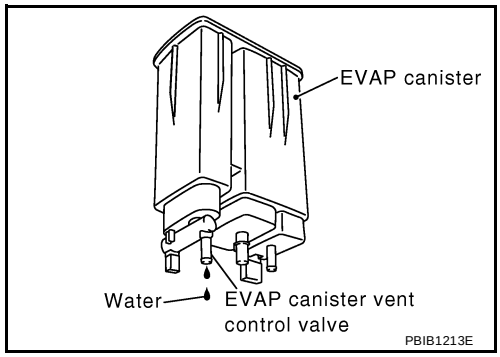
OK >> GO TO 2.
NG >> GO TO 3.

2. CHECK IF EVAP CANISTER SATURATED WITH WATER

Does water drain from the EVAP canister?

Yes or No

Yes >> GO TO 3.
No >> GO TO 5.



3. REPLACE EVAP CANISTER

Replace EVAP canister with a new one.

>> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the EVAP hose between EVAP canister and vehicle frame for clogging or poor connection.

>> Repair or replace EVAP hose.

5. CHECK VENT HOSES AND VENT TUBES

Check hoses and tubes between EVAP canister and refueling EVAP vapor cut valve for clogging, kink, looseness and improper connection.

OK or NG

OK >> GO TO 6.
NG >> Repair or replace hoses and tubes.

6. CHECK FILLER NECK TUBE

Check recirculation line for clogging, dents and cracks.

OK or NG

OK >> GO TO 7.
NG >> Replace filler neck tube.

16. CHECK TIMING CHAIN INSTALLATION

Check timing chain installation. Refer to EM-39, "TIMING CHAIN" .

OK or NG

OK >> GO TO 17.
NG >> 1. Repair the timing chain installation.
2. GO TO 4.

17. DETECT MALFUNCTIONING PART

Check the following.

- Check crankshaft position sensor (POS) and circuit.
  Refer to EC-301, "DTC P0335 CKP SENSOR (POS)" .
- Check camshaft position sensor (PHASE) and circuit.
  Refer to EC-308, "DTC P0340 CMP SENSOR (PHASE)" .

OK or NG

OK >> GO TO 18.
NG >> 1. Repair or replace.
2. GO TO 4.

18. CHECK ECM FUNCTION

1. Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)
2. Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs.
   Refer to BL-191, "ECM Re-communicating Function" .

>> GO TO 4.

19. INSPECTION END

Did you replace ECM, referring this Basic Inspection procedure?

Yes or No

Yes >> 1. Perform EC-77, "VIN Registration" .
2. **INSPECTION END**

No >> **INSPECTION END**

Idle Speed and Ignition Timing Check

UBS00QBL

IDLE SPEED

With CONSULT-III

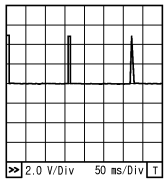
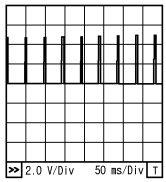
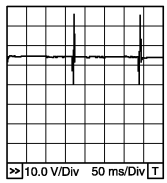
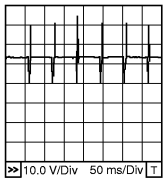
Check idle speed in “DATA MONITOR” mode with CONSULT-III.

With GST

Check idle speed in Service $01 with GST.

IGNITION TIMING

Any of following two methods may be used.

TERMINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
17 18 21 22	V BR/Y G Y	Ignition signal No. 1 Ignition signal No. 2 Ignition signal No. 4 Ignition signal No. 3	**[Engine is running]** ● **Warm-up condition** ● Idle speed **NOTE:** The pulse cycle changes depending on rpm at idle.	0 - 0.3V★  PBIA9265J
			[Engine is running] ● **Warm-up condition** ● Engine speed: 2,500 rpm.	0.2 - 0.5V★  PBIA9266J
23	B/O	Fuel pump relay	**[Ignition switch: ON]** ● For 1 second after turning ignition switch ON **[Engine is running]**	0 - 1.0V
			[Ignition switch: ON] ● More than 1 second after turning ignition switch ON	BATTERY VOLTAGE (11 - 14V)
25 29 30 31	R O GR L	Fuel injector No. 4 Fuel injector No. 3 Fuel injector No. 2 Fuel injector No. 1	**[Engine is running]** ● **Warm-up condition** ● Idle speed **NOTE:** The pulse cycle changes depending on rpm at idle.	BATTERY VOLTAGE (11 - 14V)★  PBIB0529E
			[Engine is running] ● **Warm-up condition** ● Engine speed: 2,000 rpm	BATTERY VOLTAGE (11 - 14V)★  PBIA4943J
28	L/Y	EVAP canister vent control valve	**[Ignition switch: ON]**	BATTERY VOLTAGE (11 - 14V)
32	R/G	ECM relay (Self shut-off)	**[Engine is running]** **[Ignition switch: OFF]** ● For a few seconds after turning ignition switch OFF	0 - 1.0V
			[Ignition switch: OFF] ● More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)

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)
10 11	B B	ECM ground	**[Engine is running]** ● Idle speed	Body ground
32	R/G	ECM relay (Self shut-off)	**[Engine is running]** **[Ignition switch: OFF]** ● For a few seconds after turning ignition switch OFF	0 - 1.0V
			[Ignition switch: OFF] ● More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)
93	B/R	Ignition switch	**[Ignition switch: OFF]**	0V
			[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
105	G	Power supply for ECM	**[Ignition switch: ON]**	BATTERY VOLTAGE (11 - 14V)
108	B	ECM ground	**[Engine is running]** ● Idle speed	Body ground

Diagnostic Procedure

UBS00PKY

1. INSPECTION START

Start engine.

Is engine running?

Yes or No

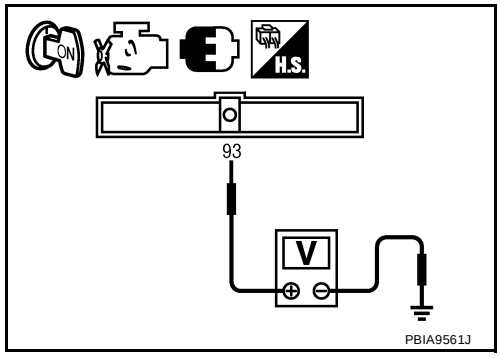
Yes >> GO TO 8.

No >> GO TO 2.

2. CHECK ECM POWER SUPPLY CIRCUIT-I

1. Turn ignition switch OFF and then ON.
2. Check voltage between ECM terminal 93 and ground with CONSULT-III or tester.

Voltage: Battery voltage



OK or NG

OK >> GO TO 4.

NG >> GO TO 3.

3. DETECT MALFUNCTIONING PART

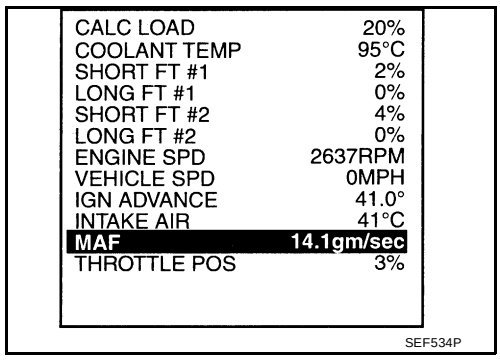
Check the following.

- Harness connectors M6, E19
- Harness for open or short between ECM and ignition switch

>> Repair open circuit or short to ground or short to power in harness or connectors.

With GST

1. Start engine and warm it up to normal operating temperature.
2. Select Service $01 with GST.
3. Check the mass air flow sensor signal with Service $01.
4. Check for linear mass air flow sensor signal value rise in response to increases to about 4,000 rpm in engine speed.
5. If NG, go to EC-173, "Diagnostic Procedure" .



4. CHECK INTERMITTENT INCIDENT

Refer to EC-137, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" .
Refer to EC-192, "Wiring Diagram" .

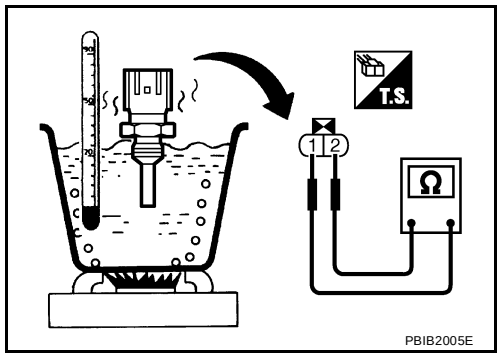
>> **INSPECTION END**

Component Inspection

UBS00QE8

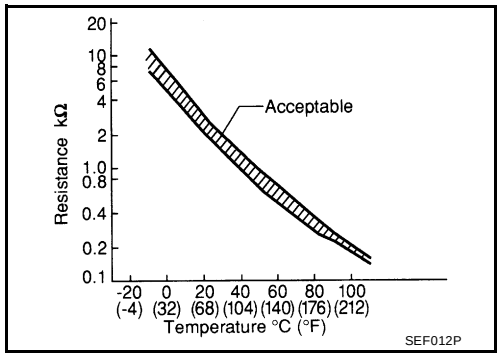
ENGINE COOLANT TEMPERATURE SENSOR

1. Check resistance between engine coolant temperature sensor terminals 1 and 2 as shown in the figure.



<Reference data>

Engine coolant temperature °C (°F)	Resistance kΩ
20 (68)	2.1 - 2.9
50 (122)	0.68 - 1.00
90 (194)	0.236 - 0.260



2. If NG, replace engine coolant temperature sensor.

Removal and Installation

UBS00QE9

ENGINE COOLANT TEMPERATURE SENSOR

Refer to CO-18, "THERMOSTAT" .

9. CHECK AIR FUEL RATIO (A/F) SENSOR 1 HEATER

Refer to EC-157, "Component Inspection" .

OK or NG

OK >> GO TO 10.
NG >> GO TO 13.

10. CHECK MASS AIR FLOW SENSOR

Refer to EC-176, "Component Inspection" .

OK or NG

OK >> GO TO 11.
NG >> Replace mass air flow sensor.

11. CHECK PCV VALVE

Refer to EC-47, "Component Inspection" .

OK or NG

OK >> GO TO 12.
NG >> Repair or replace PCV valve.

12. CHECK INTERMITTENT INCIDENT

Perform EC-137, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" .

OK or NG

OK >> GO TO 13.
NG >> Repair or replace.

13. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- **Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.**
- **Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.**

>> **INSPECTION END**

Removal and Installation

UBS00QFD

AIR FUEL RATIO SENSOR

Refer to EM-23, "EXHAUST MANIFOLD" .

DTC P0172 FUEL INJECTION SYSTEM FUNCTION

PFP:16600

On Board Diagnosis Logic

UBS00QG9

With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the air fuel ratio (A/F) sensor 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios. In case the amount of the compensation value is extremely large (The actual mixture ratio is too rich.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input Signal to ECM	ECM function	Actuator
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)	Fuel injection control	Fuel injector

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0172 0172	Fuel injection system too rich	● Fuel injection system does not operate properly. ● The amount of mixture ratio compensation is too large. (The mixture ratio is too rich.)	● Air fuel ratio (A/F) sensor 1 ● Fuel injector ● Exhaust gas leaks ● Incorrect fuel pressure ● Mass air flow sensor

DTC Confirmation Procedure

UBS00QGA

NOTE:
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

WITH CONSULT-III

1. Start engine and warm it up to normal operating temperature.
2. Turn ignition switch OFF and wait at least 10 seconds.
3. Turn ignition switch ON and select “SELF-LEARNING CONT” in “WORK SUPPORT” mode with CONSULT-III.
4. Clear the self-learning control coefficient by touching “CLEAR”.
5. Start engine again and let it idle for at least 10 minutes.
6. Check 1st trip DTC.
   The 1st trip DTC P0172 should be detected at this stage, if a malfunction exists. If so, go to EC-271, "Diagnostic Procedure" .

   NOTE:
   If 1st trip DTC is not detected during above procedure, performing the following procedure is advised.

a. Turn ignition switch OFF and wait at least 10 seconds.
b. Start engine and select “DATA MONITOR” mode with CONSULT-III.
c. Drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for 10 minutes. Refer to the table below.
   Hold the accelerator pedal as steady as possible.

   The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

Engine speed	Engine speed in the freeze frame data ± 400 rpm
Vehicle speed	Vehicle speed in the freeze frame data ± 10 km/h (6 MPH)
Engine coolant temperature (T) condition	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).
	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).

7. If it is difficult to start engine at step 6, the fuel injection system has a malfunction, too.
8. Crank engine while depressing accelerator pedal.

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)
37	W	Knock sensor	**[Engine is running]** ● Idle speed	Approximately 2.5V
40	—	Sensor ground (Knock sensor)	**[Engine is running]** ● **Warm-up condition** ● Idle speed	Approximately 0V

Diagnostic Procedure

UBS00QH6

1. CHECK KNOCK SENSOR INPUT SIGNAL CIRCUIT-I

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check resistance between ECM terminal 37 and ground. Refer to Wiring Diagram.

   NOTE:
   It is necessary to use an ohmmeter which can measure more than 10 MΩ.

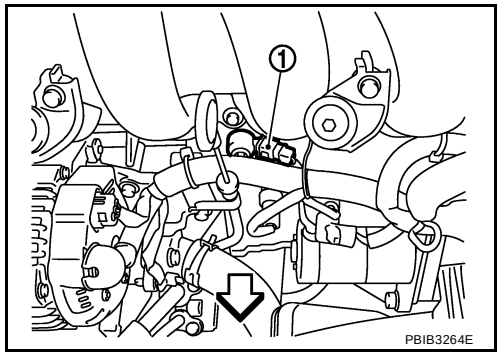
   Resistance: Approximately 532 - 588kΩ [at 20°C (68°F)]
4. Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 4.
NG >> GO TO 2.

2. CHECK KNOCK SENSOR INPUT SIGNAL CIRCUIT-II

1. Disconnect knock sensor (1) harness connector.



– ⇦: Vehicle front
2. Check harness continuity between ECM terminal 37 and knock sensor terminal 1. Refer to Wiring Diagram.

   Continuity should exist.
3. Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 3.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK KNOCK SENSOR

Refer to EC-300, "Component Inspection" .

OK or NG

OK >> GO TO 6.
NG >> Replace knock sensor.

15. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-346, "Component Inspection" .

OK or NG

OK >> GO TO 16.
NG >> Replace EVAP canister purge volume control solenoid valve.

16. CHECK FUEL TANK TEMPERATURE SENSOR

Refer to EC-279, "Component Inspection" .

OK or NG

OK >> GO TO 17.
NG >> Replace fuel level sensor unit.

17. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-370, "Component Inspection" .

OK or NG

OK >> GO TO 18.
NG >> Replace EVAP control system pressure sensor.

18. CHECK EVAP PURGE LINE

Check EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks or improper connection.
Refer to EC-35, "EVAPORATIVE EMISSION SYSTEM" .

OK or NG

OK >> GO TO 19.
NG >> Repair or reconnect the hose.

19. CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 20.

20. CHECK EVAP/ORVR LINE

Check EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, looseness and improper connection. For location, refer to EC-41, "ON BOARD REFUELING VAPOR RECOVERY (ORVR)" .

OK or NG

OK >> GO TO 21.
NG >> Repair or replace hoses and tubes.

21. CHECK RECIRCULATION LINE

Check recirculation line between filler neck tube and fuel tank for clogging, kink, cracks, looseness and improper connection.

OK or NG

OK >> GO TO 22.
NG >> Repair or replace hoses, tubes or filler neck tube.

22. CHECK REFUELING EVAP VAPOR CUT VALVE

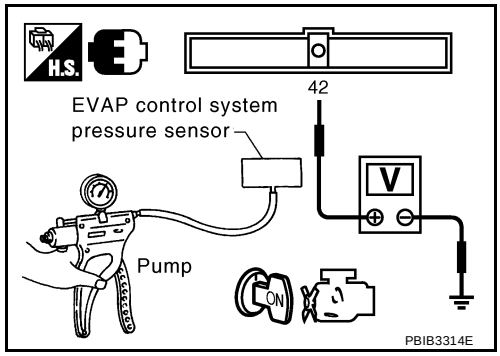
Refer to EC-45, "Component Inspection" .

OK or NG

OK >> GO TO 23.
NG >> Replace refueling EVAP vapor cut valve with fuel tank.

3. Turn ignition switch ON and check output voltage between ECM terminal 42 and ground under the following conditions.

Applied vacuum kPa (mmHg, inHg)	Voltage V
Not applied	1.8 - 4.8
-26.7 (-200, -7.87)	2.1 to 2.5V lower than above value



CAUTION:

- **Always calibrate the vacuum pump gauge when using it.**
- **Do not apply below -93.3 kPa (-700 mmHg, -27.56 inHg) or pressure over 101.3 kPa (760 mmHg, 29.92 inHg).**

4. If NG, replace EVAP control system pressure sensor.

Diagnostic Procedure

UBS00QJO

1. CHECK FUEL GAUGE OPERATION

Refer to DI-14, "Self-Diagnosis Mode of Combination Meter" .

OK or NG

OK >> GO TO 2.
NG >> Follow the instruction of DI-14, "Self-Diagnosis Mode of Combination Meter" .

2. CHECK FUEL LEVEL SENSOR AND CIRCUIT

Refer to DI-21, "Fuel Level Sensor Signal Inspection" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace malfunctioning parts.

3. CHECK INTERMITTENT INCIDENT

Refer to EC-137, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" .

>> **INSPECTION END**

Removal and Installation

UBS00QJP

FUEL LEVEL SENSOR

Refer to FL-5, "FUEL LEVEL SENSOR UNIT, FUEL FILTER AND FUEL PUMP ASSEMBLY"

Diagnostic Procedure

UBS00QKY

1. INSPECTION START

Do you have CONSULT-III?

Yes or No

Yes >> GO TO 2.
No >> GO TO 3.

2. CHECK COOLING FAN OPERATION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “COOLING FAN” in “ACTIVE TEST” mode with CONSULT-III.
3. Make sure that cooling fans-1 and -2 operates at each speed (LOW/MID/HI).

OK or NG

OK >> GO TO 4.
NG >> Check cooling fan control circuit. (Go to EC-428, "PROCEDURE A" .)

3. CHECK COOLING FAN OPERATION

Without CONSULT-III

1. Perform IPDM E/R auto active test and check cooling fan motor operation.
   Refer to PG-22, "Auto Active Test" .
2. Make sure that cooling fans-1 and -2 operates at each speed (Low/Middle/High).

OK or NG

OK >> GO TO 4.
NG >> Check cooling fan control circuit. (Go to EC-428, "PROCEDURE A" .)

4. CHECK COOLING SYSTEM FOR LEAK

Refer to CO-10, "ENGINE COOLANT" .

OK or NG

OK >> GO TO 5.
NG >> Check the following for leak.

- Hose
- Radiator
- Water pump

5. CHECK RADIATOR CAP

Refer to CO-13, "RADIATOR" .

OK or NG

OK >> GO TO 6.
NG >> Replace radiator cap.

6. CHECK COMPONENT PARTS

Check the following.

- Thermostat. (Refer to CO-16, "WATER PUMP" .)
- Water control valve. (Refer to CO-21, "WATER OUTLET AND WATER CONTROL VALVE" .)
- Engine coolant temperature sensor. (Refer to EC-194, "Component Inspection" .)

OK or NG

OK >> GO TO 7.
NG >> Replace malfunctioning component parts.

Diagnostic Procedure

UBS00RCB

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to CVT-26, "ON BOARD DIAGNOSTIC (OBD) SYSTEM" .

OK or NG

OK >> GO TO 2.
NG >> Perform trouble shooting relevant to DTC indicated.

2. REPLACE TCM

Replace TCM. Refer to CVT-29, "TROUBLE DIAGNOSIS" .

>> **INSPECTION END**

DTC Confirmation Procedure

UBS00QN4

NOTE:
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:
Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

1. Start engine and let it idle for 1 second.
2. Check DTC.
3. If DTC is detected, go to EC-493, "Diagnostic Procedure" .

8. CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check harness continuity between ECM terminal 100 and ASCD brake switch terminal 2. Refer to Wiring Diagram.

Continuity should exist.

4. Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 9.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

9. CHECK ASCD BRAKE SWITCH

Refer to EC-454, "Component Inspection" .

OK or NG

OK >> GO TO 15.
NG >> Replace ASCD brake switch.

10. CHECK ASCD CLUTCH SWITCH

Refer to EC-454, "Component Inspection"

OK or NG

OK >> GO TO 15.
NG >> Replace ASCD clutch switch.

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)
41	L	Refrigerant pressure sensor	**[Engine is running]** ● **Warm-up condition** ● Both A/C switch and blower fan switch: ON (Compressor operates)	1.0 - 4.0V
48	R/G	Sensor ground (Refrigerant pressure sensor)	**[Engine is running]** ● **Warm-up condition** ● Idle speed	Approximately 0V
74	G/W	Sensor power supply (Refrigerant pressure sensor)	**[Ignition switch: ON]**	Approximately 5V

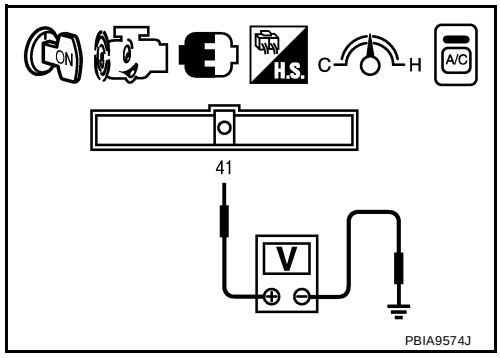
Diagnostic Procedure

UBS00PU7

1. CHECK REFRIGERANT PRESSURE SENSOR OVERALL FUNCTION

1. Start engine and warm it up to normal operating temperature.
2. Turn A/C switch and blower fan switch ON.
3. Check voltage between ECM terminal 41 and ground with CONSULT-III or tester.

Voltage: 1.0 - 4.0V



PBIA9574J

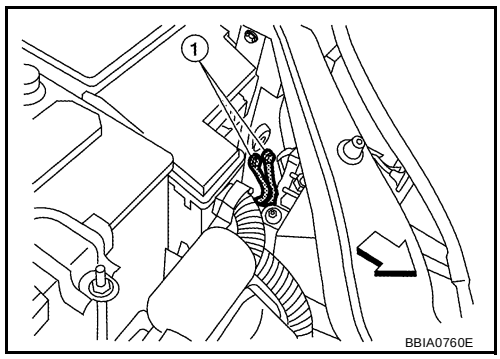
OK or NG

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

2. CHECK GROUND CONNECTIONS

1. Turn A/C switch and blower fan switch OFF.
2. Stop engine and turn ignition switch OFF.
3. Loosen and retighten ground screws on the body. Refer to EC-144, "Ground Inspection" .

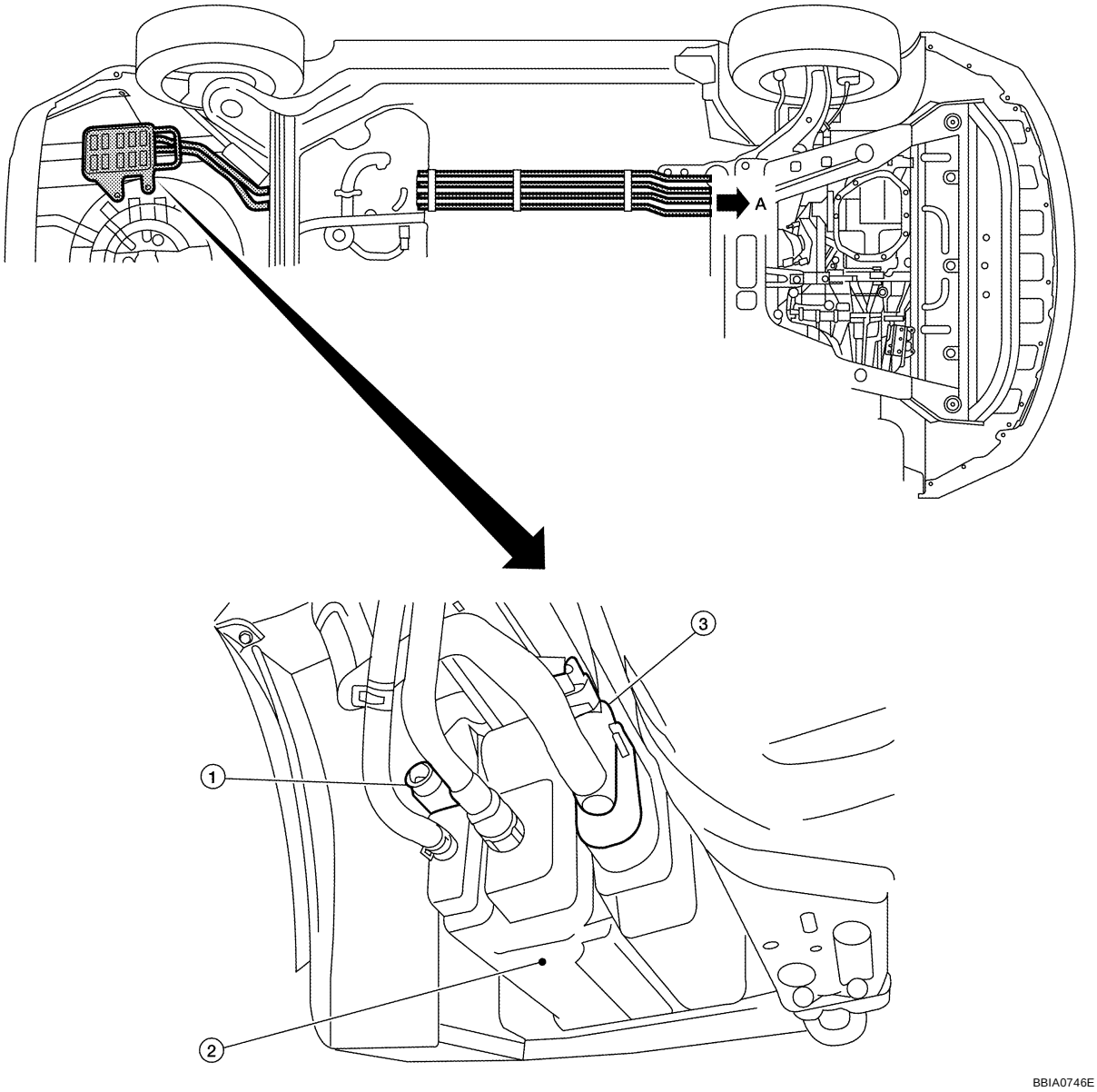
- ⇦ : Vehicle front
- Body ground (1)



BBIA0760E

OK or NG

OK >> GO TO 3.
NG >> Repair or replace ground connections.

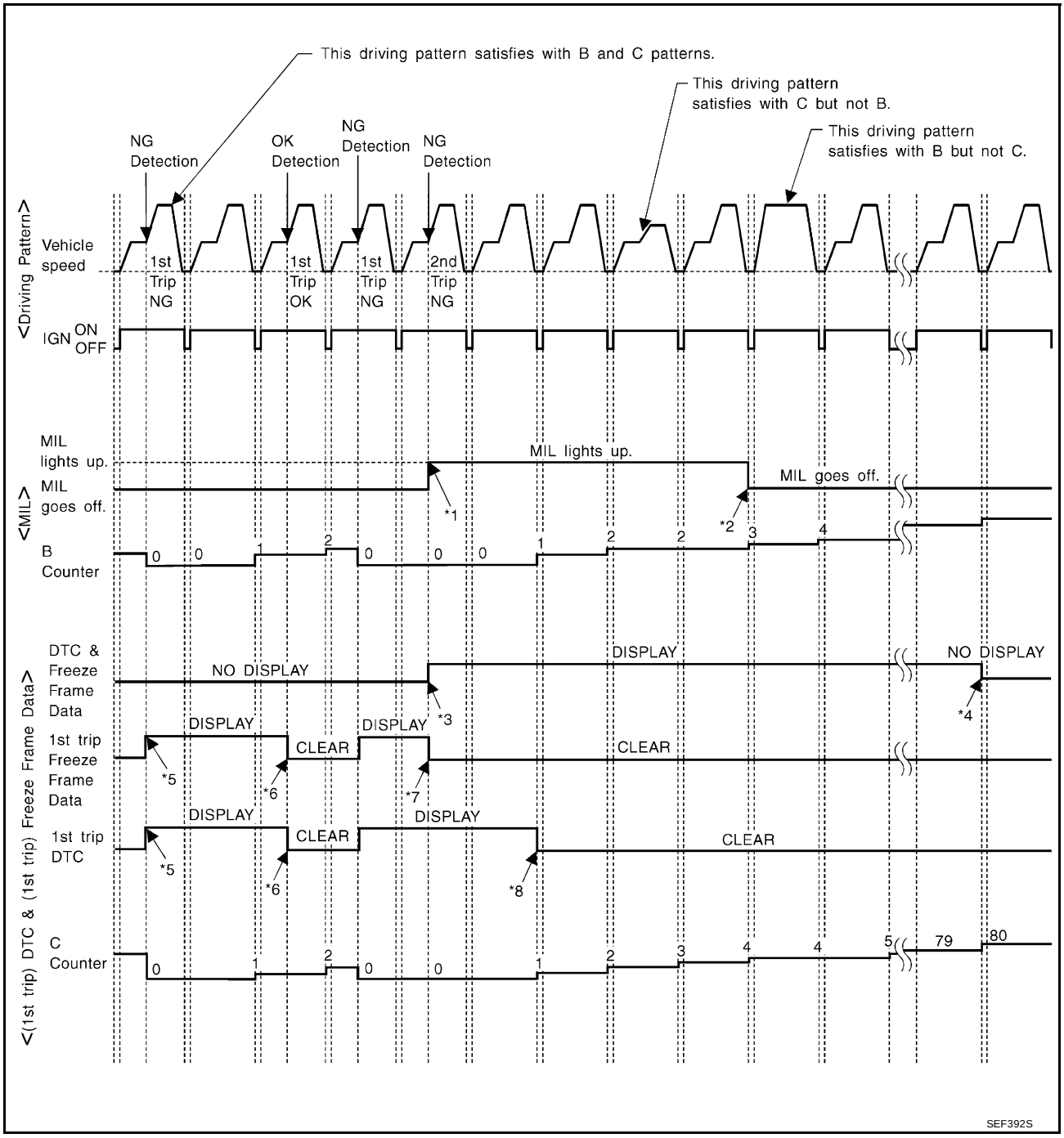


: To previous page

1. EVAP control system pressure sensor 2. EVAP canister 3. EVAP canister vent control valve

NOTE: Do not use soapy water or any type of solvent while installing vacuum hose or purge hoses.

RELATIONSHIP BETWEEN MIL, DTC, 1ST TRIP DTC AND DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM"



*1: When the same malfunction is detected in two consecutive trips, MIL will light up.

*2: MIL will go off after vehicle is driven 3 times (pattern B) without any malfunctions.

*3: When the same malfunction is detected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.

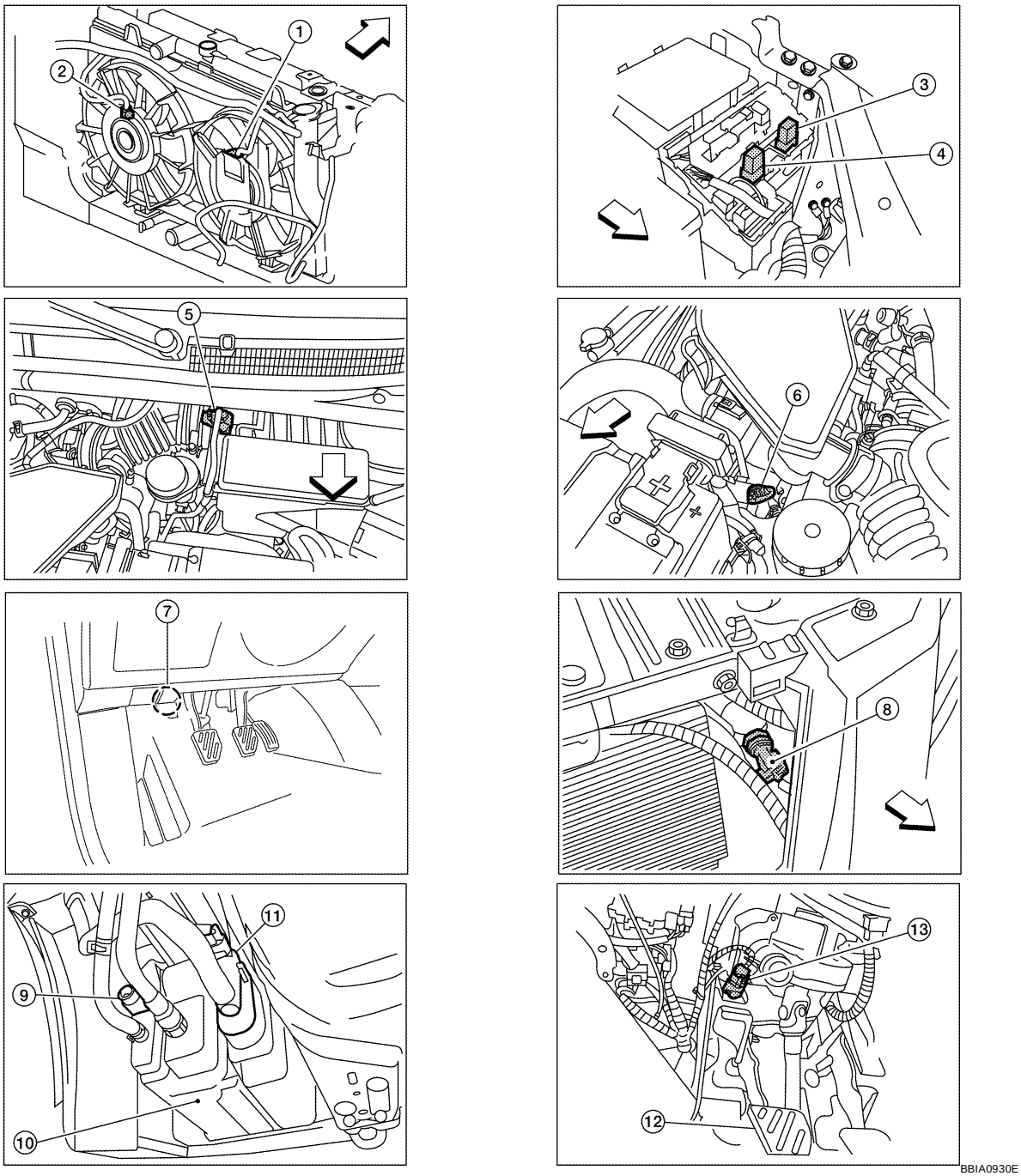
*4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 80 times (pattern C) without the same malfunction. (The DTC and the freeze frame data still remain in ECM.)

*5: When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.

*6: The 1st trip DTC and the 1st trip freeze frame data will be cleared at the moment OK is detected.

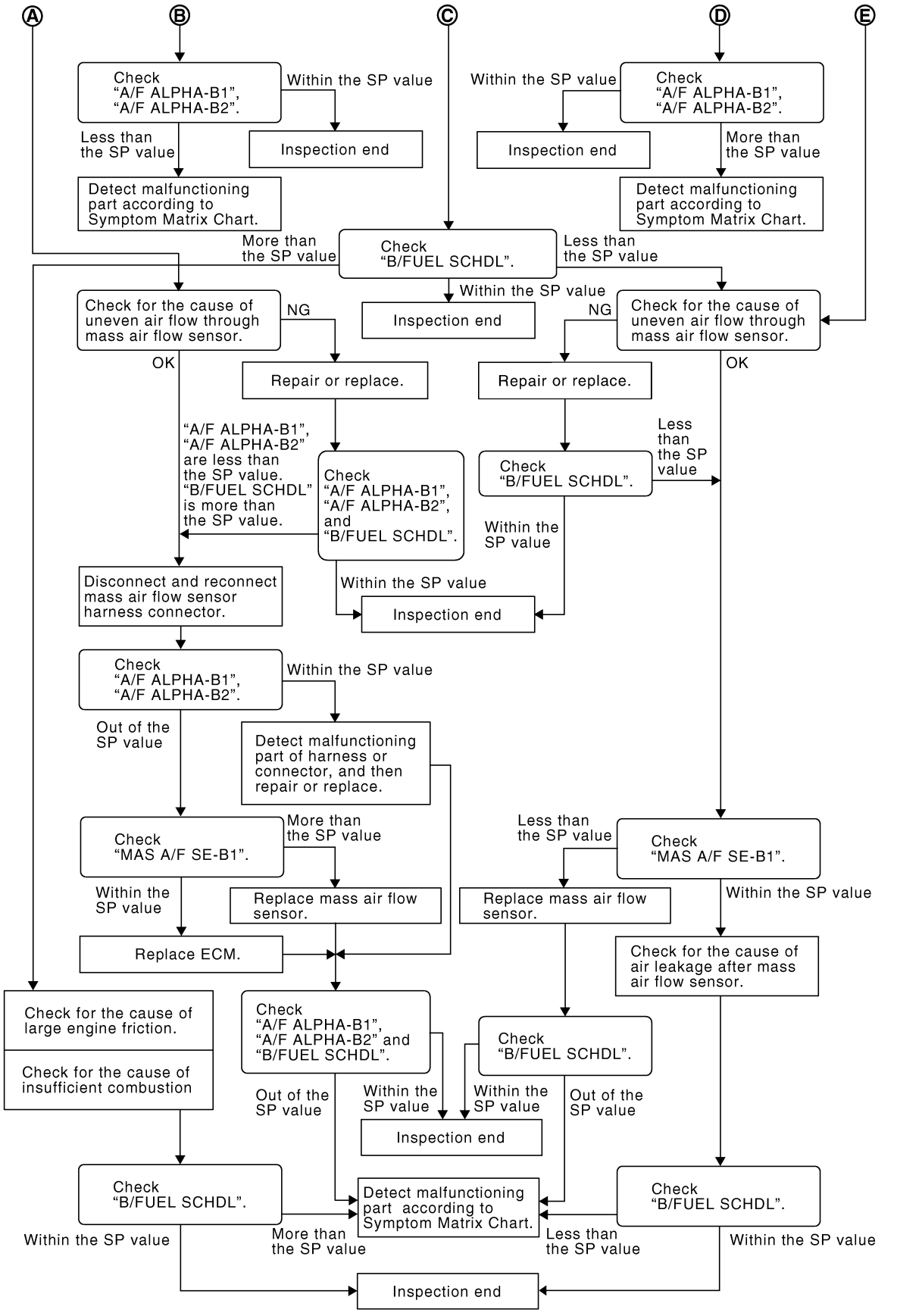
*7: When the same malfunction is detected in the 2nd trip, the 1st trip freeze frame data will be cleared.

*8: 1st trip DTC will be cleared when vehicle is driven once (pattern C) without the same malfunction after DTC is stored in ECM.



⇦: Vehicle front

1. Cooling fan motor-1
2. Cooling fan motor-2
3. Cooling fan relay-5
4. Cooling fan relay-4
5. Mass air flow sensor (with intake air temperature sensor)
6. Engine coolant temperature sensor
7. Data link connector
8. Refrigerant pressure sensor
9. EVAP control system pressure sensor
10. EVAP canister
11. EVAP canister vent control valve
12. Clutch pedal
13. ASCD clutch switch

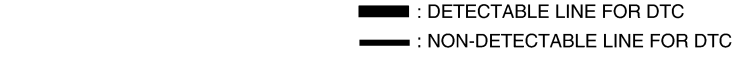

Ⓐ
Ⓑ
Ⓒ
Ⓓ
Ⓔ
Check "A/F ALPHA-B1", "A/F ALPHA-B2".
Within the SP value
Inspection end
Less than the SP value
Detect malfunctioning part according to Symptom Matrix Chart.
Within the SP value
Check "A/F ALPHA-B1", "A/F ALPHA-B2".
Inspection end
More than the SP value
Detect malfunctioning part according to Symptom Matrix Chart.
More than the SP value
Check "B/FUEL SCHDL".
Less than the SP value
Within the SP value
Inspection end
Check for the cause of uneven air flow through mass air flow sensor.
NG
OK
Repair or replace.
NG
Check for the cause of uneven air flow through mass air flow sensor.
OK
Repair or replace.
"A/F ALPHA-B1", "A/F ALPHA-B2" are less than the SP value. "B/FUEL SCHDL" is more than the SP value.
Check "A/F ALPHA-B1", "A/F ALPHA-B2", and "B/FUEL SCHDL".
Check "B/FUEL SCHDL".
Less than the SP value
Within the SP value
Within the SP value
Inspection end
Disconnect and reconnect mass air flow sensor harness connector.
Check "A/F ALPHA-B1", "A/F ALPHA-B2".
Within the SP value
Out of the SP value
Detect malfunctioning part of harness or connector, and then repair or replace.
Check "MAS A/F SE-B1".
More than the SP value
Within the SP value
Replace mass air flow sensor.
Replace ECM.
Less than the SP value
Check "MAS A/F SE-B1".
Within the SP value
Replace mass air flow sensor.
Check for the cause of air leakage after mass air flow sensor.
Check for the cause of large engine friction.
Check for the cause of insufficient combustion
Check "A/F ALPHA-B1", "A/F ALPHA-B2" and "B/FUEL SCHDL".
Out of the SP value
Within the SP value
Within the SP value
Check "B/FUEL SCHDL".
Out of the SP value
Inspection end
Check "B/FUEL SCHDL".
Within the SP value
Detect malfunctioning part according to Symptom Matrix Chart.
More than the SP value
Less than the SP value
Check "B/FUEL SCHDL".
Within the SP value
Inspection end

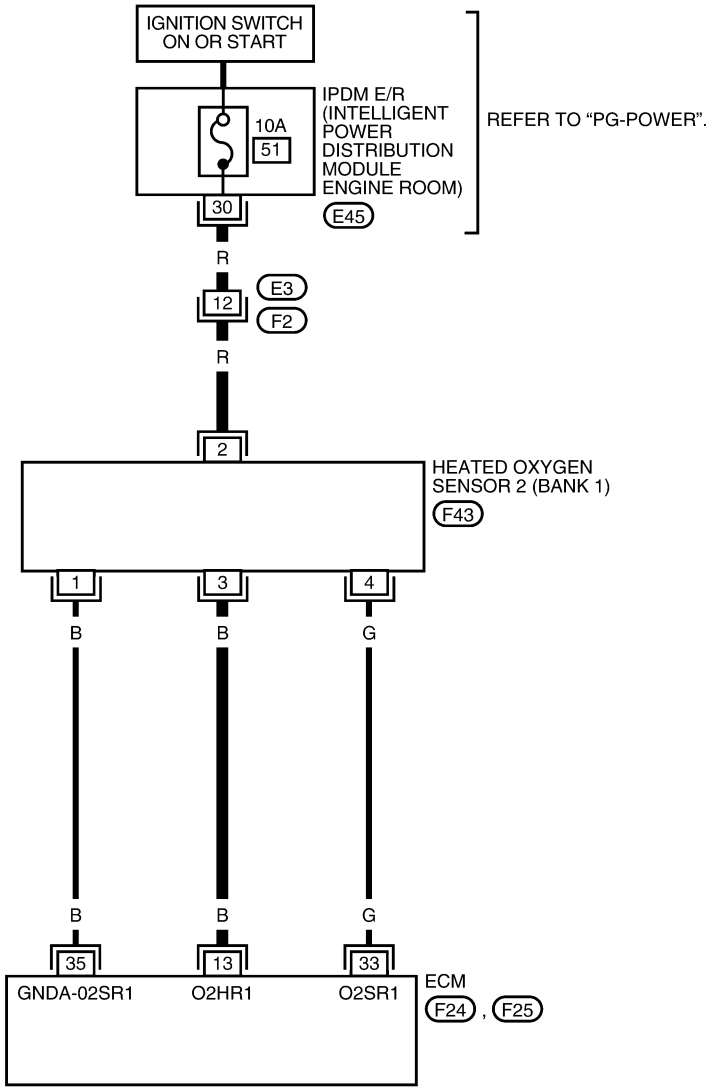
PBIB3214E

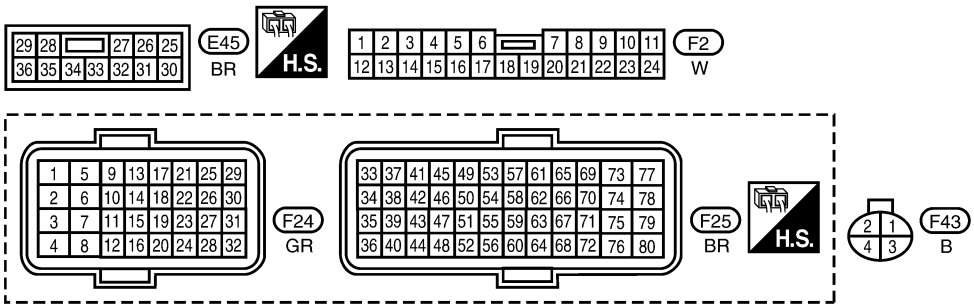
Wiring Diagram
BANK 1

EBS01N5J

EC-O2H2B1-01







BBWA3024E

3. CHECK INTAKE AIR TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check harness continuity between mass air flow sensor terminal 6 and ECM terminal 56. Refer to Wiring Diagram.

Continuity should exist.

4. Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 4.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK INTAKE AIR TEMPERATURE SENSOR

Refer to EC-747, "Component Inspection" .

OK or NG

OK >> GO TO 5.
NG >> Replace mass air flow sensor (with intake air temperature sensor).

5. CHECK INTERMITTENT INCIDENT

Refer to EC-690, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" .

>> **INSPECTION END**

Component Inspection

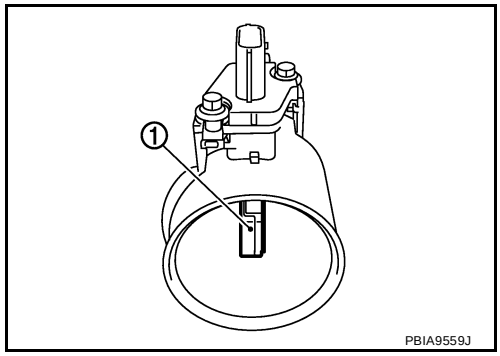
EBS01N6H

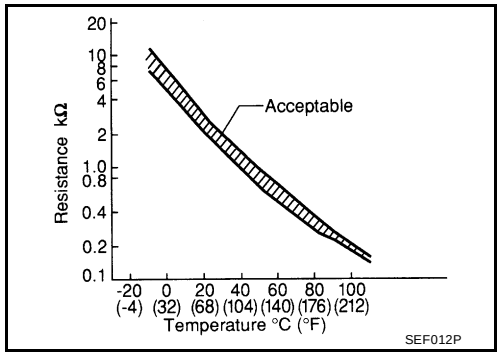
INTAKE AIR TEMPERATURE SENSOR

1. Check resistance between mass air flow sensor (1) terminals 5 and 6 under the following conditions.

Intake air temperature °C (°F)	Resistance kΩ
25 (77)	1.800 - 2.200

2. If NG, replace mass air flow sensor (with intake air temperature sensor).





Removal and Installation

EBS01N6I

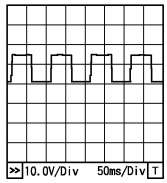
MASS AIR FLOW SENSOR

Refer to EM-130, "AIR CLEANER AND AIR DUCT" .

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

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)
4	BR/W	A/F sensor 1 heater (Bank 1)	**[Engine is running]** ● **Warm-up condition** ● Idle speed (More than 140 seconds after starting engine)	Approximately 2.9 - 8.8V★  PBIA8148J
45	B	A/F sensor 1 (Bank 1)	**[Engine is running]** ● **Warm-up condition** ● Engine speed: 2,000 rpm	Approximately 1.8V Output voltage varies with air fuel ratio.
49	W	A/F sensor 1 (Bank 1)	**[Ignition switch: ON]**	Approximately 2.2V

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

4. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check harness continuity between ECM terminals and HO2S2 terminal as follows. Refer to Wiring Diagram.

DTC	Terminal		Bank
	ECM	Sensor	
P0137	33	4	1
P0157	34	4	2

Continuity should exist.

2. Check harness continuity between the following terminals and ground. Refer to Wiring Diagram.

DTC	Terminal		Bank
	ECM	Sensor	
P0137	33	4	1
P0157	34	4	2

Continuity should not exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 5.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK HEATED OXYGEN SENSOR 2

Refer to EC-811, "Component Inspection" .

OK or NG

OK >> GO TO 6.
NG >> Replace malfunctioning heated oxygen sensor 2.

6. CHECK INTERMITTENT INCIDENT

Refer to EC-690, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" .

>> **INSPECTION END**

Component Inspection

EBS01N8F

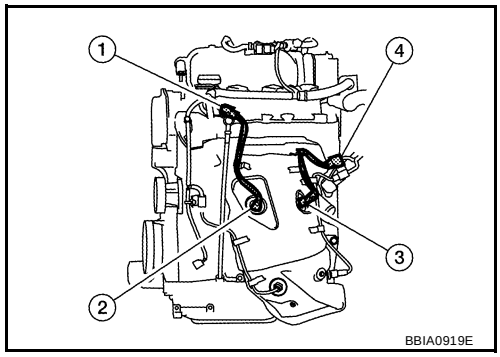
HEATED OXYGEN SENSOR 2

With CONSULT-III

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. Select “FUEL INJECTION” in “ACTIVE TEST” mode, and select “HO2S2 (B1)/(B2)” as the monitor item with CONSULT-III.

3. CHECK AIR FUEL RATIO (A/F) SENSOR 1 CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch OFF.
2. Disconnect air fuel ratio (A/F) sensor 1 harness connector.
- Air fuel ratio (A/F) sensor 1 (Bank 1) harness connector (1)
- Air fuel ratio (A/F) sensor 1 (Bank 1) (2)
- Air fuel ratio (A/F) sensor 1 (Bank 2) (3)
- Air fuel ratio (A/F) sensor 1(Bank 2) harness connector (4)
3. Disconnect ECM harness connector.
4. Check harness continuity between the following terminals. Refer to Wiring Diagram.



Bank	A/F sensor 1 terminal	ECM terminal
1	1	45
	2	49
2	1	53
	2	57

Continuity should exist.

5. Check harness continuity between the following terminals. Refer to Wiring Diagram.

Bank 1		Bank 2	
A/F sensor terminal	ECM terminal	A/F sensor terminal	ECM terminal
1	45	1	53
2	49	2	57

Continuity should not exist.

6. Also check harness for short to power.

OK or NG

OK >> GO TO 4.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK FUEL PRESSURE

1. Release fuel pressure to zero. Refer to EC-633, "FUEL PRESSURE RELEASE" .
2. Install fuel pressure gauge and check fuel pressure. Refer to EC-81, "FUEL PRESSURE CHECK" .

At idling: Approximately 350 kPa (3.57 kg/cm^2 , 51 psi)

OK or NG

OK >> GO TO 6.
NG >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Fuel pump and circuit (Refer to EC-1134, "FUEL PUMP" .)
- Fuel pressure regulator (Refer to EC-81, "FUEL PRESSURE CHECK" .)
- Fuel lines (Refer to EM-144, "FUEL INJECTOR AND FUEL TUBE" .)
- Fuel filter for clogging

>> Repair or replace.

3. PERFORM POWER BALANCE TEST

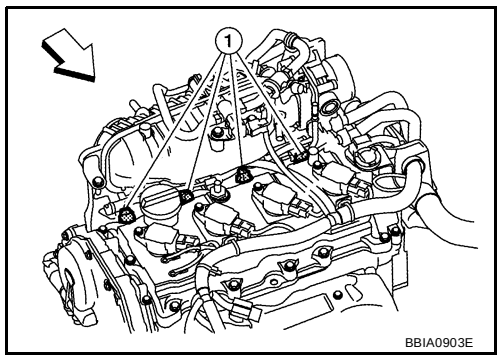
With CONSULT-III

1. Perform “POWER BALANCE” in “ACTIVE TEST” mode.
2. Is there any cylinder which does not produce a momentary engine speed drop?

Without CONSULT-III

When disconnecting each fuel injector harness connector (1) one at a time, is there any cylinder which does not produce a momentary engine speed drop?

- ⇦: Vehicle front



Yes or No

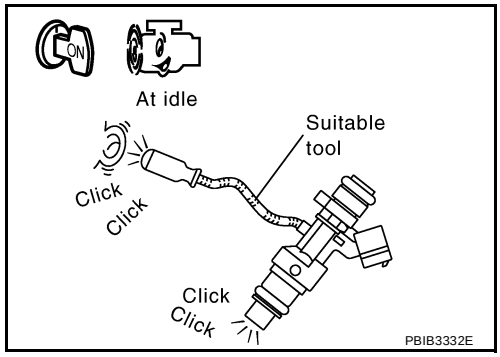
Yes >> GO TO 4.
No >> GO TO 9.

4. CHECK FUEL INJECTOR

Does each fuel injector make an operating sound at idle?

Yes or No

Yes >> GO TO 5.
No >> Check fuel injector(s) and circuit(s). Refer to EC-1129, "FUEL INJECTOR" .



DTC Confirmation Procedure

EBS01NAP

CAUTION:
Always drive vehicle at a safe speed.

NOTE:
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:
Always perform test at a temperature of 5°C (41°F) or more.

WITH CONSULT-III

1. Start engine and warm it up to normal operating temperature.
2. Turn ignition switch OFF and wait at least 10 seconds.
3. Start engine and let it idle for at least 70 seconds.
4. Select “PURG FLOW P0441” of “EVAPORATIVE SYSTEM” in “DTC & SRT CONFIRMATION” mode with CONSULT-III.
5. Touch “START”.
   If “COMPLETED” is displayed, go to step 7.
6. When the following conditions are met, “TESTING” will be displayed on the CONSULT-III screen. Maintain the conditions continuously until “TESTING” changes to “COMPLETED”. (It will take at least 35 seconds.)

Shift lever	Suitable position
VHCL SPEED SE	32 - 120 km/h (20 - 75 MPH)
ENG SPEED	500 - 3,800 rpm
B/FUEL SCHDL	1.0 - 10.0 msec
COOLAN TEMP/S	More than 0°C (32 °F)

If TESTING is not changed for a long time, retry from step 2.

7. Make sure that “OK” is displayed after touching “SELF-DIAG RESULTS”. If “NG” is displayed, refer to EC-908, "Diagnostic Procedure" .

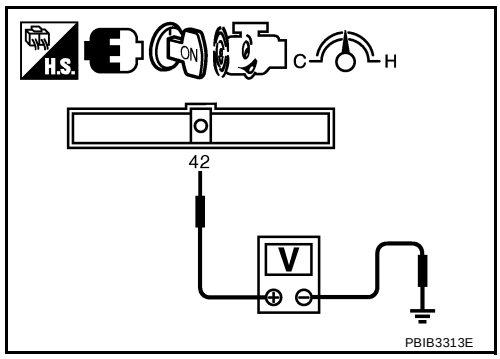
Overall Function Check

EBS01NAQ

Use this procedure to check the overall monitoring function of the EVAP control system purge flow monitoring. During this check, a 1st trip DTC might not be confirmed.

WITH GST

1. Lift up drive wheels.
2. Start engine and warm it up to normal operating temperature.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Start engine and wait at least 70 seconds.
5. Set voltmeter probes to ECM terminals 42 (EVAP control system pressure sensor signal) and ground.
6. Check EVAP control system pressure sensor value at idle speed and note it.
7. Establish and maintain the following conditions for at least 1 minute.



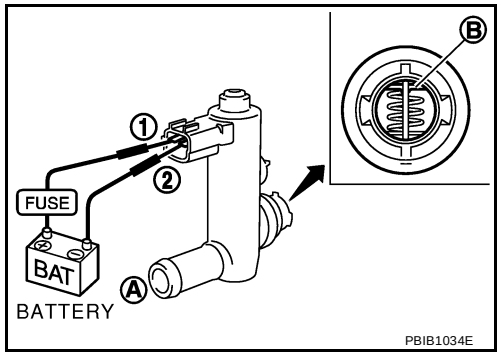
Air conditioner switch	ON
Headlamp switch	ON
Rear window defogger switch	ON
Engine speed	Approx. 3,000 rpm
Shift lever	Any position other than P, N or R

8. Verify that EVAP control system pressure sensor value stays 0.1V less than the value at idle speed (measured at step 6) for at least 1 second.
9. If NG, go to EC-908, "Diagnostic Procedure" .

3. Check air passage continuity and operation delay time under the following conditions.
   Make sure new O-ring is installed properly.

Condition	Air passage continuity between A and B
12V direct current supply between terminals 1 and 2	No
OFF	Yes

Operation takes less than 1 second.



If NG, replace EVAP canister vent control valve.
If OK, go to next step.

4. Clean the air passage (Portion **A** to **B**) of EVAP canister vent control valve using an air blower.
5. Perform step 3 again.

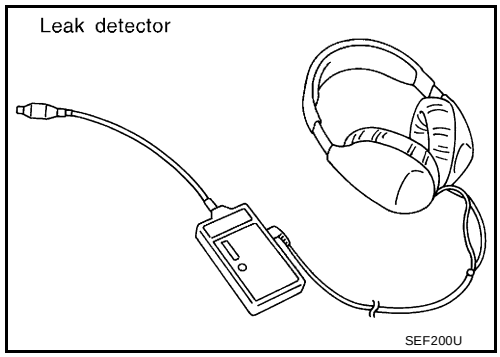
9. CHECK FOR EVAP LEAK

With CONSULT-III

1. Turn ignition switch ON.
2. Select “EVAP SYSTEM CLOSE” of “WORK SUPPORT” mode with CONSULT-III.
3. Touch “START” and apply pressure into the EVAP line until the pressure indicator reaches the middle of the bar graph.

   CAUTION:
   - **Never use compressed air or a high pressure pump.**
   - **Do not exceed 4.12 kPa (0.042 kg/cm^2 , 0.6 psi) of pressure in the system.**

4. Using EVAP leak detector, locate the EVAP leak. For the leak detector, refer to the instruction manual for more details.
   Refer to EC-586, "EVAPORATIVE EMISSION LINE DRAWING"
   .



OK or NG

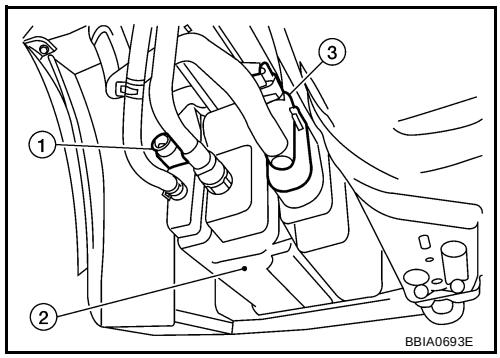
OK >> GO TO 11.
NG >> Repair or replace.

10. CHECK FOR EVAP LEAK

Without CONSULT-III

1. Turn ignition switch OFF.
2. Apply 12 volts DC to EVAP canister vent control valve (3). The valve will close. (Continue to apply 12 volts until the end of test.)

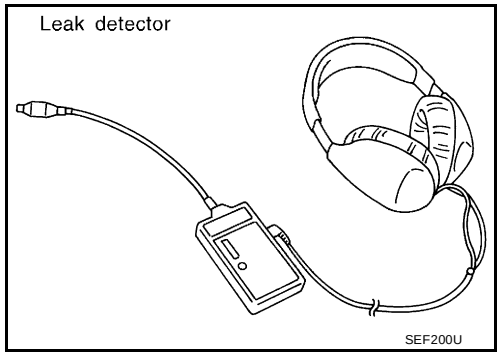
- This illustration is a view from under vehicle
- EVAP control system pressure sensor (1)
- EVAP canister (2)



3. Pressurize the EVAP line using pressure pump with 1.3 to 2.7 kPa (10 to 20 mmHg, 0.39 to 0.79 inHg), then remove pump and EVAP service port adapter.

   CAUTION:
   - **Never use compressed air or a high pressure pump.**
   - **Do not exceed 4.12 kPa (0.042 kg/cm^2 , 0.6 psi) of pressure in the system.**

4. Using EVAP leak detector, locate the EVAP leak. For the leak detector, refer to the instruction manual for more details.
   Refer to EC-586, "EVAPORATIVE EMISSION LINE DRAWING"
   .



OK or NG

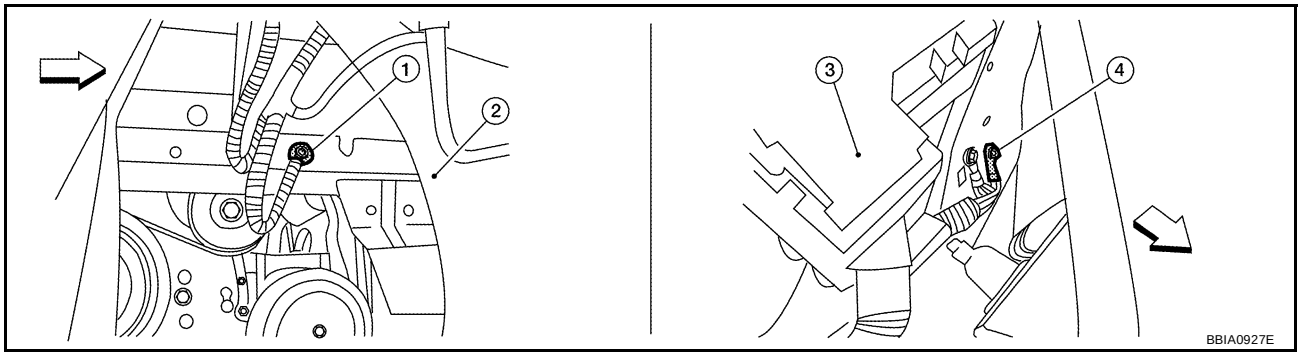
OK >> GO TO 12.
NG >> Repair or replace.

Diagnostic Procedure

EBS01NDF

1. CHECK GROUND CONNECTIONS

1. Turn ignition switch OFF.
2. Loosen and retighten ground screws on the body.
   Refer to EC-697, "Ground Inspection" .



⇦: Vehicle front

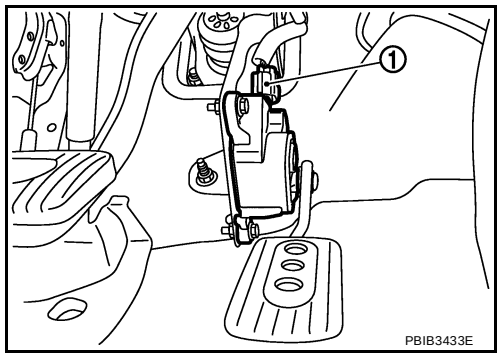
1. Body ground E9 (view with front wheel RH and fender protector RH removed.)
2. Washer tank
3. Fuse box
4. Body ground E15

OK or NG

OK >> GO TO 2.
NG >> Repair or replace ground connections.

2. CHECK ACCELERATOR PEDAL POSITION SENSOR 1 POWER SUPPLY CIRCUIT

1. Disconnect accelerator pedal position (APP) sensor (1) harness connector.
2. Turn ignition switch ON.

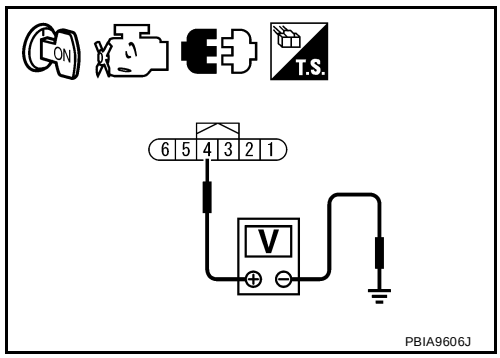


3. Check voltage between APP sensor terminal 4 and ground with CONSULT-III or tester.

Voltage: Approximately 5V

OK or NG

OK >> GO TO 8.
NG >> GO TO 3.



2. CHECK ASCD STEERING SWITCH CIRCUIT

With CONSULT-III

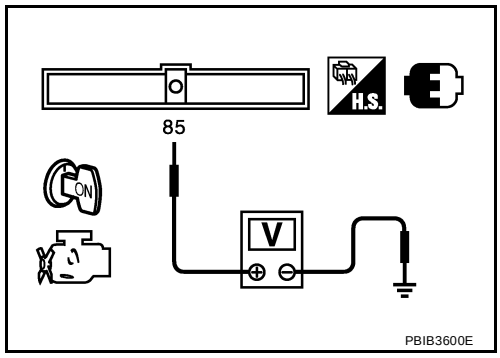
1. Turn ignition switch ON.
2. Select “MAIN SW”, “RESUME/ACC SW”, “SET SW and “CANCEL SW” in “DATA MONITOR” mode with CONSULT-III.
3. Check each item indication under the following conditions.

Switch	Monitor item	Condition	Indication
MAIN switch	MAIN SW	Pressed	ON
		Released	OFF
CANCEL switch	CANCEL SW	Pressed	ON
		Released	OFF
RESUME/ ACCELERATE switch	RESUME/ACC SW	Pressed	ON
		Released	OFF
SET/COAST switch	SET SW	Pressed	ON
		Released	OFF

Without CONSULT-III

1. Turn ignition switch ON.
2. Check voltage between ECM terminal 85 and ground with pressing each button.

Switch	Condition	Voltage [V]
MAIN switch	Pressed	Approx. 0
	Released	Approx. 4.0
CANCEL switch	Pressed	Approx. 1.0
	Released	Approx. 4.0
RESUME/ACCELERATE switch	Pressed	Approx. 3.0
	Released	Approx. 4.0
SET/COAST switch	Pressed	Approx. 2.0
	Released	Approx. 4.0



OK or NG

OK >> GO TO 8.
NG >> GO TO 3.

3. CHECK ASCD STEERING SWITCH GROUND CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch OFF.
2. Disconnect combination switch harness connector M78.
3. Disconnect ECM harness connector.
4. Check harness continuity between combination switch terminal 20 (unit side) and ECM terminal 92. Refer to Wiring Diagram.

Continuity should exist.

5. Also check harness for short to ground or short to power.

OK or NG

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

9. CHECK INTERMITTENT INCIDENT

Refer to EC-690, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" .

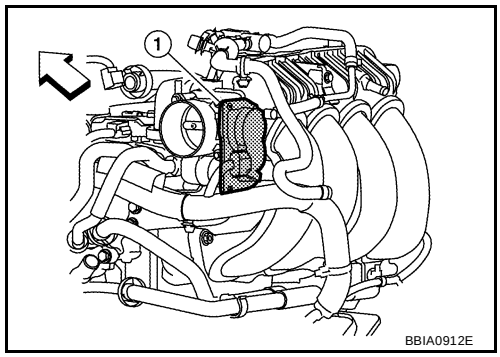
OK or NG

OK >> Replace IPDM E/R. Refer to PG-18, "IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)" .

NG >> Repair or replace harness or connectors.

10. CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT FOR OPEN OR SHORT

1. Turn ignition switch OFF.
2. Disconnect electric throttle control actuator (1) harness connector.



– ⇦: Vehicle front

3. Disconnect ECM harness connector.
4. Check harness continuity between the following terminals. Refer to Wiring Diagram.

Electric throttle control actuator terminal	ECM terminal	Continuity
5	5	Should not exist.
	6	Should exist.
6	5	Should exist.
	6	Should not exist.

5. Also check harness for short to ground and short to power.

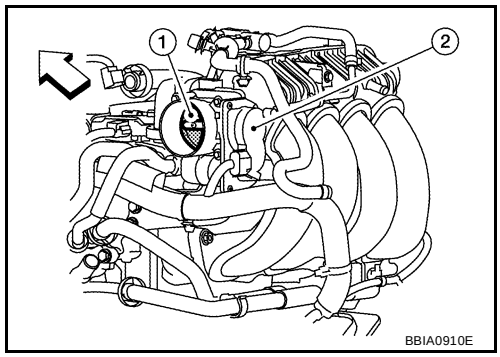
OK or NG

OK >> GO TO 11.

NG >> Repair or replace.

11. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

1. Remove the intake air duct.
2. Check if foreign matter is caught between the throttle valve (1) and the housing.



– ⇦: Vehicle front

– Electric throttle control actuator (2)

OK or NG

OK >> GO TO 12.

NG >> Remove the foreign matter and clean the electric throttle control actuator inside.

12. CHECK THROTTLE CONTROL MOTOR

Refer to EC-1068, "Component Inspection" .

OK or NG

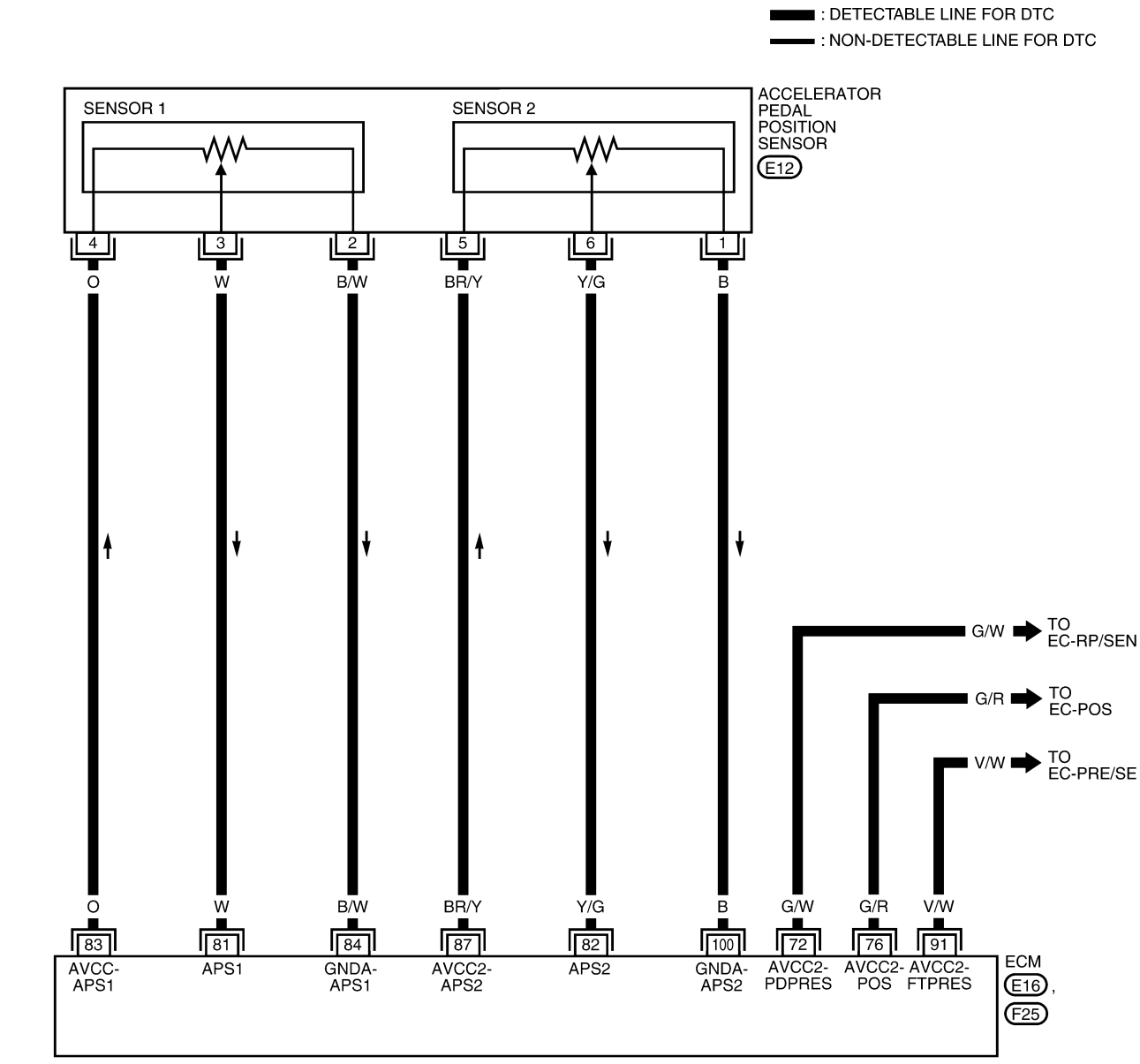
OK >> GO TO 13.

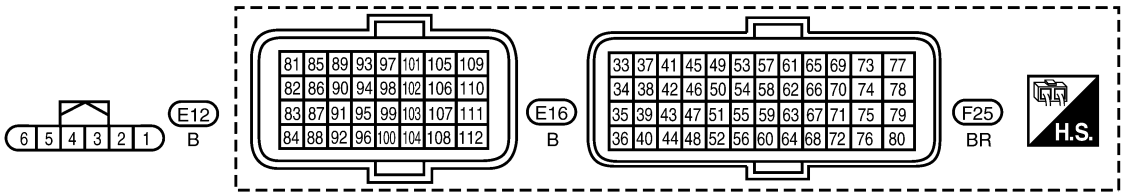
NG >> GO TO 14.

Wiring Diagram

EBS01NGK

EC-APPS3-01



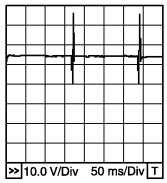
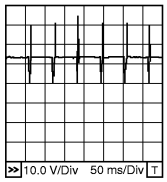


BBWA3058E

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

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)
29 30 31 32	R O GR L	Fuel injector No. 4 Fuel injector No. 3 Fuel injector No. 2 Fuel injector No. 1	**[Engine is running]** ● **Warm-up condition** ● Idle speed **NOTE:** The pulse cycle changes depending on rpm at idle	BATTERY VOLTAGE (11 - 14V)★  PBIB0529E
			[Engine is running] ● **Warm-up condition** ● Engine speed: 2,000 rpm	BATTERY VOLTAGE (11 - 14V)★  PBIA4943J

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

Diagnostic Procedure

EBS01NH9

1. INSPECTION START

Turn ignition switch to START.

Is any cylinder ignited?

Yes or No

Yes >> GO TO 2.

No >> GO TO 3.

PRECAUTIONS

PFP:00001

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

EIS00BDC

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.

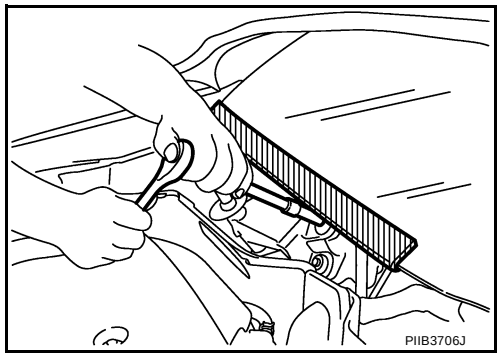
WARNING:

- **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

EIS00BDD

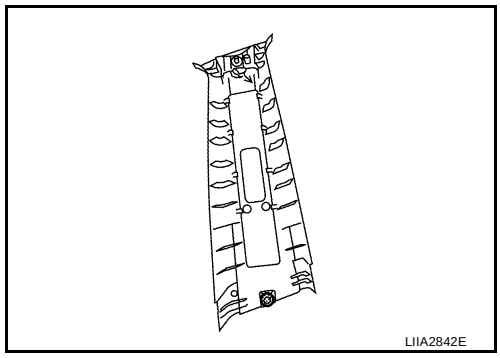
- When removing or disassembling any part, be careful not to damage or deform it. Protect parts which may get in the way with cloth.
- When removing parts with a screwdriver or other tool, protect parts by wrapping them with vinyl or tape.
- Keep removed parts protected with cloth.
- If a clip is deformed or damaged, replace it.
- If an unreusable part is removed, replace it with a new one.
- Tighten bolts and nuts firmly to the specified torque.
- After re-assembly has been completed, make sure each part functions correctly.
- Remove stains in the following way.
  - Water-soluble stains:
    Dip a cloth in warm water, and squeeze tightly. After wiping the stain, wipe with a soft dry cloth.
  - Oil stain:
    Dissolve a synthetic detergent in warm water (density of 2 to 3% or less), dip the cloth, then clean off the stain with the cloth. Next, dip the soft cloth in fresh water, and then squeeze it tightly. Then clean off the detergent completely. Then wipe the area with a soft dry cloth.
- Do not use any organic solvent, such as thinner or benzine.
- When performing procedures that require removal of the cowl top, cover the lower end of the windshield with a suitable protection material.



CENTER PILLAR UPPER FINISHER

Removal

1. Remove center pillar lower finisher. Refer to EI-34, "CENTER PILLAR LOWER FINISHER" .
2. Remove front seat belt shoulder anchor. Refer to SB-3, "Removal and Installation of Front Seat Belt" .
3. Remove the access cover, then remove the screw.
4. Partially remove front and rear body side welts.
5. Release the clip, then remove center pillar upper finisher.



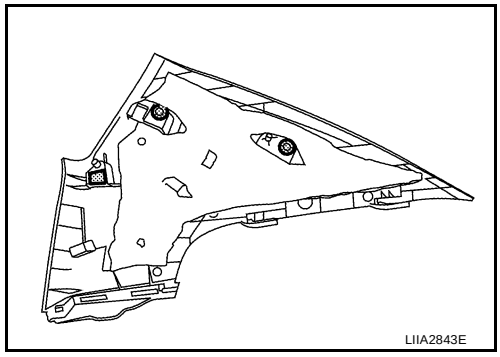
Installation

Installation is in the reverse order of removal.

REAR PILLAR FINISHER

Removal

1. Remove rear seat cushion and rear seatback. Refer to SE-16, "REAR SEAT" .
2. Partially remove rear body side welt.
3. Release the clips and remove rear pillar finisher.



Installation

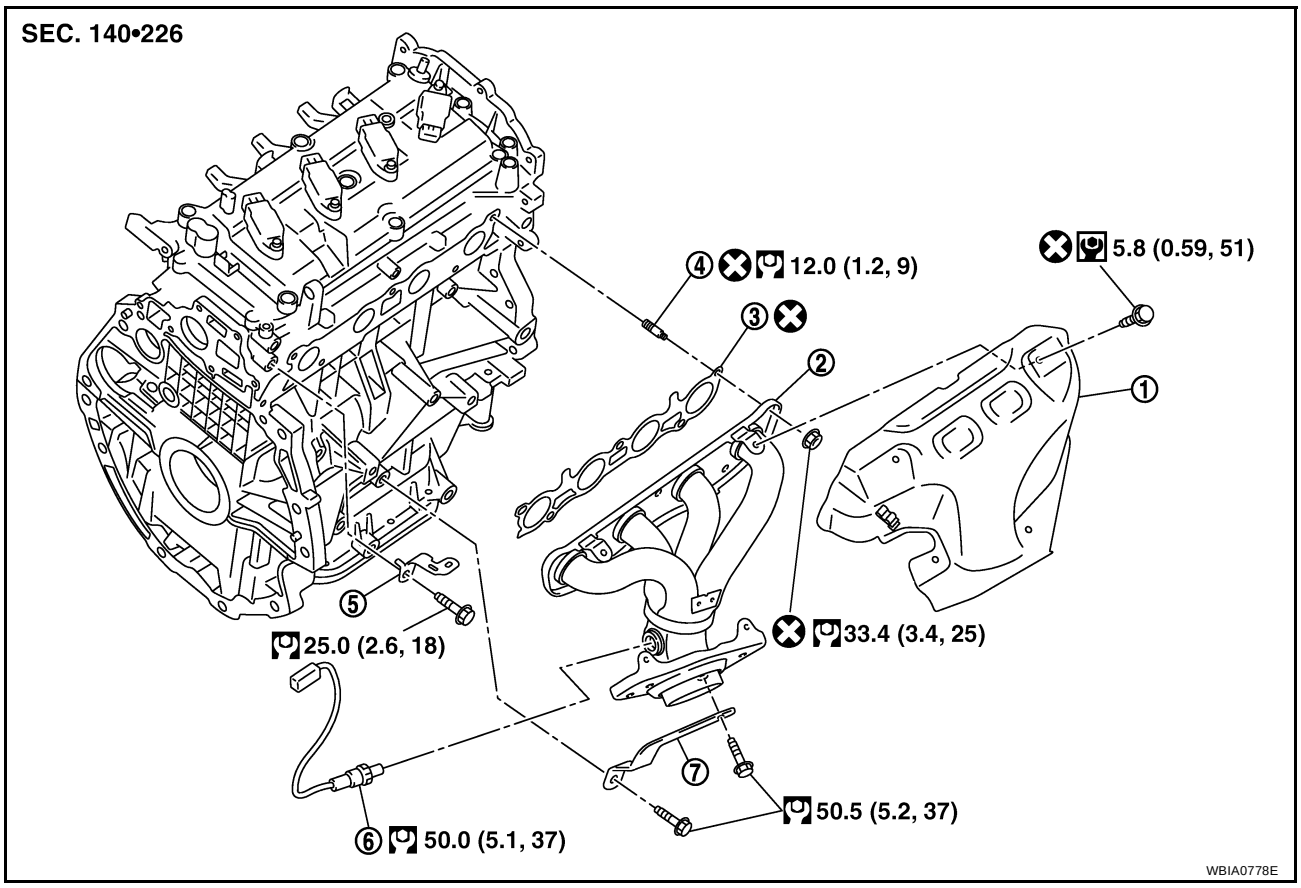
Installation is in the reverse order of removal.

EXHAUST MANIFOLD

PFP:14004

Components

EBS00Z9T



1. Exhaust manifold cover
2. Exhaust manifold
3. Gasket
4. Stud bolt
5. Bracket
6. A/F ratio sensor 1
7. Exhaust manifold stay
⇦ Engine front

Removal and Installation

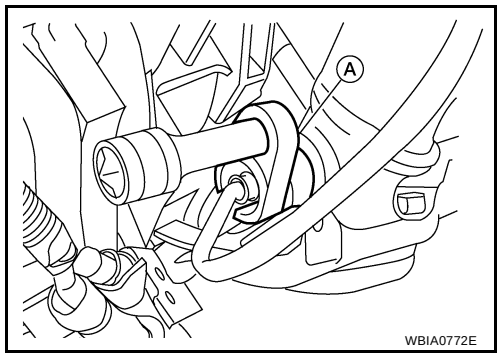
EBS00Z9U

REMOVAL

1. Remove exhaust front tube. Refer to EX-2, "Removal and Installation" .
2. Remove exhaust manifold cover.
3. Remove the A/F sensor 1, using Tool (A).

Tool number :KV991J0050 (J-44626)

CAUTION:
Handle it carefully and avoid impacts.



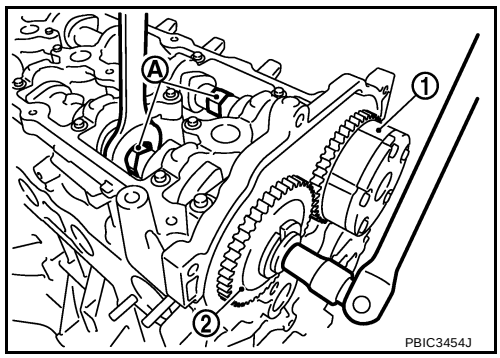
4. Remove exhaust manifold side bolt of exhaust manifold stay.

10. Install camshaft sprocket (EXH) (2).

    1 : Camshaft sprocket (INT)

    Camshaft sprocket bolt (EXH) : 88.2 N·m (9.0 kg-m, 65 ft-lb)

    NOTE:
    Secure the hexagonal part (A) of camshaft (EXH) using wrench to tighten bolt.



11. Install timing chain and related parts. Refer to EM-39, "TIMING CHAIN" .
12. Inspect and adjust valve clearance. Refer to EM-56, "Valve Clearance" .
13. Installation of the remaining components is in the reverse order of removal.

INSPECTION AFTER INSTALLATION

The following are procedures for checking fluids leak, lubricates leak.

- Before starting engine, check oil/fluid levels including engine coolant and engine oil. If less than required quantity, fill to the specified level. Refer to GI-44, "Recommended Chemical Products and Sealants" .
- Use procedure below to check for fuel leakage.
  - Turn ignition switch “ON” (with engine stopped). With fuel pressure applied to fuel piping, check for fuel leakage at connection points.
  - Start engine. With engine speed increased, check again for fuel leakage at connection points.
- Run engine to check for unusual noise and vibration.

  NOTE:
  If hydraulic pressure inside timing chain tensioner drops after removal/installation, slack in the guide may generate a pounding noise during and just after engine start. However, this is normal. Noise will stop after hydraulic pressure rises.
- Warm up engine thoroughly to make sure there is no leakage of fuel, or any oil/fluids including engine oil and engine coolant.
- Bleed air from lines and hoses of applicable lines, such as in cooling system.
- After cooling down engine, again check oil/fluid levels including engine oil and engine coolant. Refill to the specified level, if necessary.

Summary of the inspection items:

Item	Before starting engine	Engine running	After engine stopped
Engine coolant	Level	Leakage	Level
Engine oil	Level	Leakage	Level
Other oils and fluid*	Level	Leakage	Level
Fuel	Leakage	Leakage	Leakage
Exhaust gases	—	Leakage	—

* Transmission/transaxle/CVT fluid, power steering fluid, brake fluid, etc.

Inspection of Camshaft Sprocket (INT) Oil Groove

CAUTION:

- **Perform this inspection only when DTC P0011 is detected in self-diagnostic results of CONSULT-II and it is directed according to inspection procedure of EC section. Refer to EC-50, "ON BOARD DIAGNOSTIC (OBD) SYSTEM" .**
- **Check when engine is cold so as to prevent burns from the splashing engine oil.**

1. Check engine oil level. Refer to LU-5, "ENGINE OIL LEVEL" .
2. Perform the following procedure so as to prevent the engine from being unintentionally started while checking.

a. Remove intake manifold. Refer to EM-20, "Components" .

Connecting Rod Bearing Grade Table

Unit: mm (in)

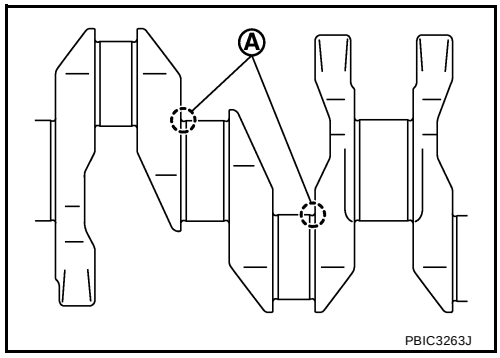
Grade number		Thickness	Identification color	Remarks
0		1.494 - 1.497 (0.0588 - 0.0589)	Black	Grade and color are the same for upper and lower bearings.
1		1.497 - 1.500 (0.0589 - 0.0591)	Brown	
2		1.500 - 1.503 (0.0591- 0.0592)	Green	
3		1.503 - 1.506 (0.0592 - 0.0593)	Yellow	
4		1.506 - 1.509 (0.0593 - 0.0594)	Blue	
01	UPR	1.494 - 1.497 (0.0588 - 0.0589)	Black	Grade and color are different between upper and lower bearings.
	LWR	1.497 - 1.500 (0.0589 - 0.0591)	Brown	
12	UPR	1.497 - 1.500 (0.0589 - 0.0591)	Brown	
	LWR	1.500 - 1.503 (0.0591 - 0.0592)	Green	
23	UPR	1.500 - 1.503 (0.0591 - 0.0592)	Green	
	LWR	1.503 - 1.506 (0.0592 - 0.0593)	Yellow	
34	UPR	1.503 - 1.506 (0.0592 - 0.0593)	Yellow	
	LWR	1.506 - 1.509 (0.0593 - 0.0594)	Blue	

Undersize Bearings Usage Guide

- When the specified connecting rod bearing oil clearance is not obtained with standard size connecting rod bearings, use undersize (US) bearings.
- When using undersize (US) bearing, measure the connecting rod bearing inner diameter with bearing installed, and grind the crankshaft pin so that the connecting rod bearing oil clearance satisfies the standard.

CAUTION:

In grinding crankshaft pin to use undersize bearings, keep the fillet R [1.5 - 1.7 mm (0.059 - 0.067 in)] (A).

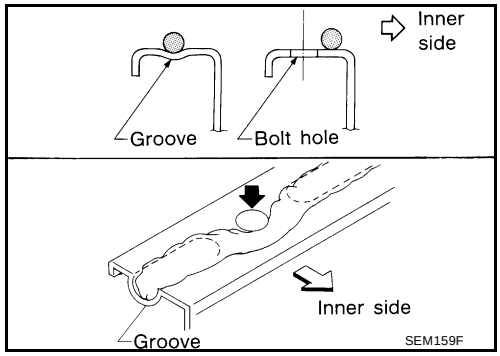


Bearing undersize table

Unit: mm (in)

Size	Thickness
US 0.25 (0.0098)	1.623 - 1.631 (0.0639 - 0.0642)

- After 30 minutes or more have passed from the installation, fill the engine with the specified oil and coolant. Refer to MA-14, "RECOMMENDED FLUIDS AND LUBRICANTS" .



CAUTION:
Follow all specific instructions in this manual.

10. Remove camshaft sprockets with the following procedure.

CAUTION:

- **Do not rotate the crankshaft or camshaft while the timing chain is removed. It causes interference between valve and piston.**

NOTE:

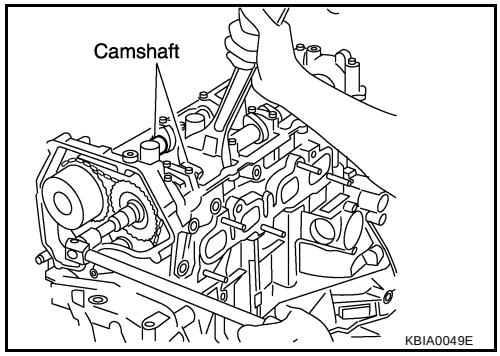
- Chain tension holding work is not necessary. Crankshaft sprocket and timing chain do not disconnect structurally while front cover is attached.

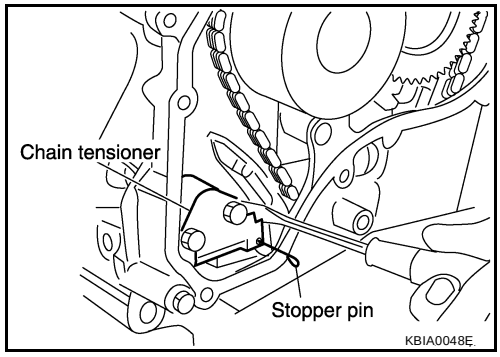
a. Line up the mating marks on camshaft sprockets with the yellow links in the timing chain, and paint an indelible mating mark on the sprocket and timing chain link plate.

b. Push in the tensioner plunger and hold. Insert a stopper pin into the hole on tensioner body to hold the chain tensioner. Remove the timing chain tensioner.

- Use a wire with 0.5 mm (0.02 in) diameter for a stopper pin.

c. Secure the hexagonal part of camshaft with a suitable tool. Loosen the camshaft sprocket mounting bolts and remove the camshaft sprockets.



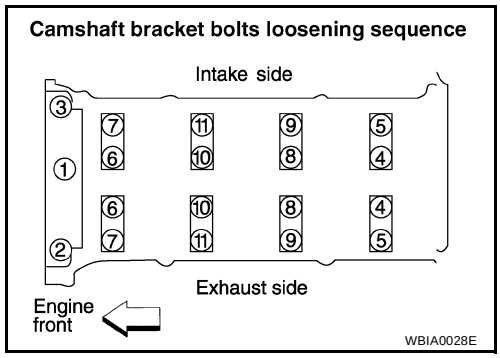


11. Loosen the camshaft bracket bolts in the order as shown, and remove the camshaft brackets and camshafts.

- Remove No.1 camshaft bracket by slightly tapping it with a rubber mallet.

12. Remove the valve lifters.

- Check mounting positions, and set them aside in the order removed.

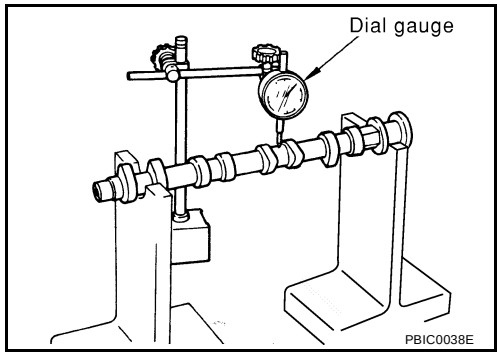


INSPECTION AFTER REMOVAL

Camshaft Runout

1. Put the camshaft on a V-block supporting the No.2 and No.5 journals.
2. Set the dial gauge vertically on the No.3 journal.
3. Turn camshaft in one direction by hand, and measure the camshaft runout on the dial gauge total indicator reading.

Standard : Less than 0.04 mm (0.0016 in)



Tool number : — (J-47242)

28. Remove the starter motor. Refer to SC-24, "REMOVAL" .
29. Separate engine and transaxle.

INSTALLATION

Combine enging and transaxle assembly. Refer to CVT-208, "INSTALLATION" CVT, MT-66, "INSTALLATION" or MT-142, "INSTALLATION" M/T.
Installation is in the reverse order of removal.

- Do not allow oil to get on mounting insulators. Be careful not to damage mounting insulators.
- If parts have a direction mark (arrow) this indicates front of the vehicle, and the parts must be installed according to the identification mark.

INSPECTION AFTER INSTALLATION

- Before starting engine, check oil/fluid levels including engine coolant and engine oil. If less than required quantity, fill to the specified level. Refer to MA-14, "RECOMMENDED FLUIDS AND LUBRICANTS" .
- Use procedure below to check for fuel leakage.
- Turn ignition switch ON (with engine stopped). With fuel pressure applied to fuel piping, check for fuel leakage at connection points.
- Start engine. With engine speed increased, check again for fuel leakage at connection points.
- Run engine to check for unusual noise and vibration.
- Warm up engine thoroughly to make sure there is no leakage of fuel, exhaust gas, or any oils/fluids including engine oil and engine coolant.
- Bleed air from passages in lines and hoses, such as in cooling system.
- After cooling down engine, again check oils/fluids including engine oil and engine coolant. Refill to specified level, if necessary.
- Summary of the inspection items:

Item	Before starting engine	Engine running	After engine stopped
Engine coolant	Level	Leakage	Level
Engine oil	Level	Leakage	Level
Other oils and fluids*	Level	Leakage	Level
Fuel	Leakage	Leakage	Leakage
Exhaust gas	—	Leakage	—

*Transmission/transaxle/CVT fluid, power steering fluid, brake fluid, etc.

Piston Ring

Unit: mm (in)

		Standard	Limit
Side clearance	Top	0.040 - 0.080 (0.0018 - 0.0031)	0.11 (0.0043)
	2nd	0.030 - 0.070 (0.0012 - 0.0028)	0.10 (0.0039)
	Oil ring	0.045 - 0.125 (0.0018 - 0.0049)	—
End gap	Top	0.21- 0.31 (0.0083 - 0.0122)	0.54 (0.0213)
	2nd	0.37 - 0.52 (0.0146 - 0.0205)	0.67 (0.0264)
	Oil (rail ring)	0.20 - 0.45 (0.0079 - 0.0177)	0.95 (0.0374)

Piston Pin

Unit: mm (in)

Piston pin outer diameter	Grade No.0	19.989 - 19.995 (0.7870 - 0.7872)
	Grade No.1	19.995 - 20.001 (0.7872 - 0.7874)
Piston to piston pin clearance (Standard)		0.002 - 0.006 (0.0001 - 0.0002)
Piston pin to connecting rod bushing clearance	Standard	0.005 - 0.017 (0.0002 - 0.0007)

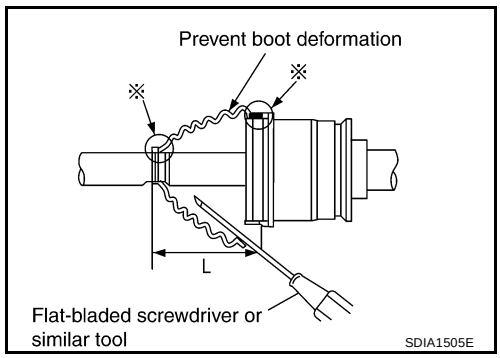
CONNECTING ROD

Unit: mm (in)

Center distance		143.00 - 143.10 (5.63 - 5.63)
Bend [per 100 (3.94)]	Limit	0.15 (0.0059)
Torsion [per 100 (3.94)]	Limit	0.30 (0.0118)
Connecting rod small end inner diameter		22.000 - 22.012 (0.7874 - 0.7879)
Connecting rod small end inner diameter*	Grade No. 0	20.000 - 20.006 (0.7874 - 0.7876)
	Grade No. 1	20.006 - 20.012 (0.7876 - 0.7879)
Connecting rod big end inner diameter		48.000 - 48.013 (1.8898 - 1.8903)
Side clearance	Standard	0.20 - 0.35 (0.0079 - 0.0138)
	Limit	0.50 (0.0197)
Connecting rod bearing housing	Grade No. 0	48.000 - 48.001 (1.8898 - 1.8898)
	Grade No. 1	48.001 - 48.002 (1.8898 - 1.8898)
	Grade No. 2	48.002 - 48.003 (1.8898 - 1.8899)
	Grade No. 3	48.003 - 48.004 (1.8899 - 1.8899)
	Grade No. 4	48.004 - 48.005 (1.8899 - 1.8899)
	Grade No. 5	48.005 - 48.006 (1.8899 - 1.8900)
	Grade No. 6	48.006 - 48.007 (1.8900 - 1.8900)
	Grade No. 7	48.007 - 48.008 (1.8900 - 1.8901)
	Grade No. 8	48.008 - 48.009 (1.8901 - 1.8901)
	Grade No. 9	48.009 - 48.010 (1.8901 - 1.8902)
	Grade No. A	48.010 - 48.011 (1.8902 - 1.8902)
	Grade No. B	48.011 - 48.012 (1.8902 - 1.8902)
	Grade No. C	48.012 - 48.013 (1.8902 - 1.8903)

*: After installing in connecting rod

6. Install boot securely into grooves (indicated by * marks) as shown.



CAUTION:
If there is grease on boot mounting surfaces (indicated by * marks) of shaft and housing, boot may come off. Remove all grease from surfaces.

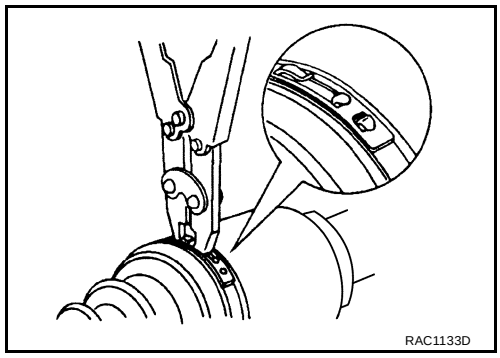
7. Make sure boot installation length “L” is the specified length indicated below. Insert a flat-bladed screwdriver or similar tool into the large end of boot. Bleed air from boot to prevent boot deformation.

Boot installation length “L” : 142 mm (5.59 in)

CAUTION:
- **Boot may break if boot installation length is outside the standard value.**
- **Be careful that screwdriver tip does not contact inside surface of boot.**

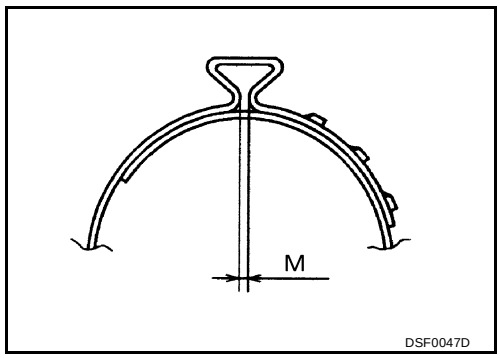
8. Install new large and small boot bands securely using Tool.

Tool number : KV40107300 (—)



CAUTION:
- **Do not reuse boot bands.**
- **Secure boot band so that dimension “M” meets specification as shown.**

Dimension “M” : 1.0 – 4.0 mm (0.039 – 0.157 in)



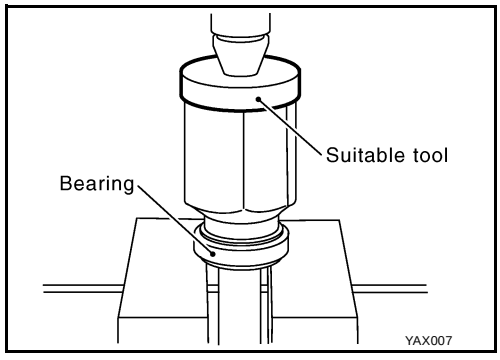
9. Rotate the joint sub assembly and confirm that the boot position is correct. If boot position is not correct, remove the boot bands, reposition the boot and install new boot bands.

Support Bearing

1. Install new dust shield on drive shaft

CAUTION:
Do not reuse dust shield.

2. Press support bearing onto drive shaft.

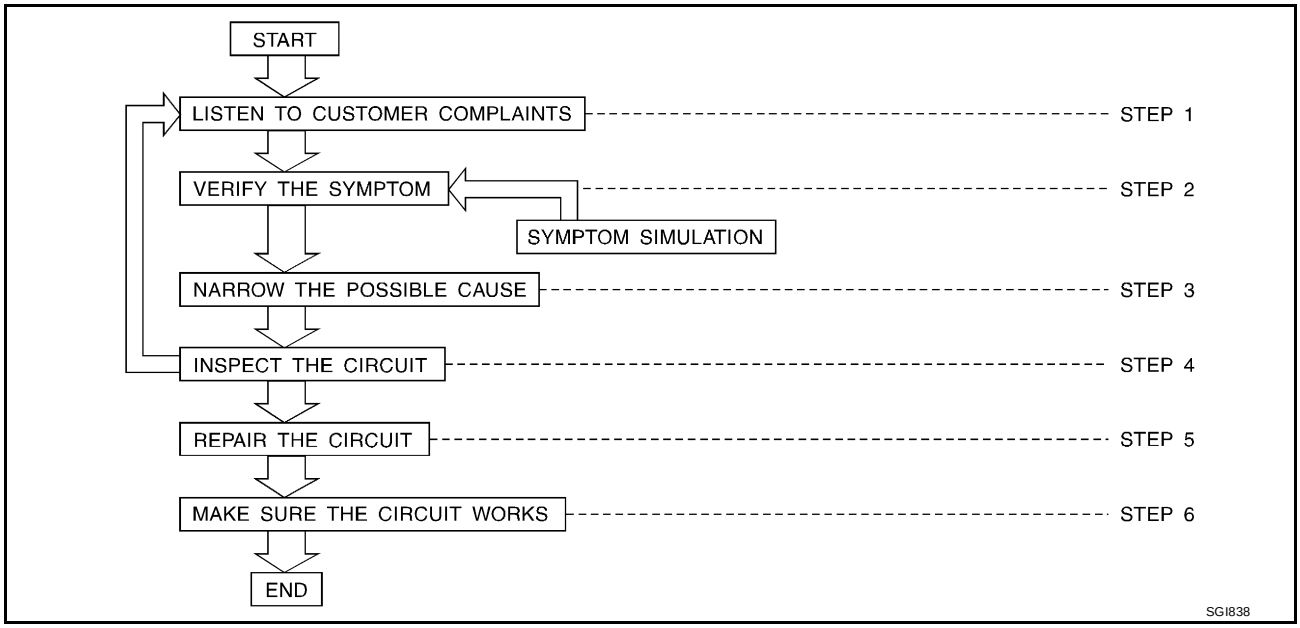


9. Remove the tool from strut.

How to Perform Efficient Diagnosis for an Electrical Incident

EAS00282

WORK FLOW



STEP	DESCRIPTION	
STEP 1	Get detailed information about the conditions and the environment when the incident occurred. The following are key pieces of information required to make a good analysis:	
	WHAT	Vehicle Model, Engine, Transmission/Transaxle and the System (i.e. Radio).
	WHEN	Date, Time of Day, Weather Conditions, Frequency.
	WHERE	Road Conditions, Altitude and Traffic Situation.
	HOW	System Symptoms, Operating Conditions (Other Components Interaction). Service History and if any After Market Accessories have been installed.
STEP 2	Operate the system, road test if necessary. Verify the parameter of the incident. If the problem cannot be duplicated, refer to “Incident Simulation Tests”.	
STEP 3	Get the proper diagnosis materials together including: ● Power Supply Routing ● System Operation Descriptions ● Applicable Service Manual Sections ● Check for any Service Bulletins Identify where to begin diagnosis based upon your knowledge of the system operation and the customer comments.	
STEP 4	Inspect the system for mechanical binding, loose connectors or wiring damage. Determine which circuits and components are involved and diagnose using the Power Supply Routing and Harness Layouts.	
STEP 5	Repair or replace the incident circuit or component.	
STEP 6	Operate the system in all modes. Verify the system works properly under all conditions. Make sure you have not inadvertently created a new incident during your diagnosis or repair steps.	

INCIDENT SIMULATION TESTS

Introduction

Sometimes the symptom is not present when the vehicle is brought in for service. If possible, re-create the conditions present at the time of the incident. Doing so may help avoid a No Trouble Found Diagnosis. The following section illustrates ways to simulate the conditions/environment under which the owner experiences an electrical incident.

The section is broken into the six following topics:

- Vehicle vibration
- Heat sensitive

80845-71L00: 30 mm (1.18 in) thick, 30×50 mm (1.18×1.97 in)
FELT CLOTH TAPE
Used to insulate where movement does not occur. Ideal for instrument panel applications.
68370-4B000: 15×25 mm (0.59×0.98 in) pad/68239-13E00: 5 mm (0.20 in) wide tape roll. The following materials not found in the kit can also be used to repair squeaks and rattles.
UHMW (TEFLON) TAPE
Insulates where slight movement is present. Ideal for instrument panel applications.
SILICONE GREASE
Used instead of UHMW tape that will be visible or not fit.
Note: Will only last a few months.
SILICONE SPRAY
Use when grease cannot be applied.
DUCT TAPE
Use to eliminate movement.

CONFIRM THE REPAIR

Confirm that the cause of a noise is repaired by test driving the vehicle. Operate the vehicle under the same conditions as when the noise originally occurred. Refer to the notes on the Diagnostic Worksheet.

Generic Squeak and Rattle Troubleshooting

EIS00AU2

Refer to Table of Contents for specific component removal and installation information.

INSTRUMENT PANEL

Most incidents are caused by contact and movement between:

1. The cluster lid A and instrument panel
2. Acrylic lens and combination meter housing
3. Instrument panel to front pillar garnish
4. Instrument panel to windshield
5. Instrument panel mounting pins
6. Wiring harnesses behind the combination meter
7. A/C defroster duct and duct joint

These incidents can usually be located by tapping or moving the components to duplicate the noise or by pressing on the components while driving to stop the noise. Most of these incidents can be repaired by applying felt cloth tape or silicone spray (in hard to reach areas). Urethane pads can be used to insulate wiring harness.

CAUTION:
Do not use silicone spray to isolate a squeak or rattle. If you saturate the area with silicone, you will not be able to recheck the repair.

CENTER CONSOLE

Components to pay attention to include:

1. Shifter assembly cover to finisher
2. A/C control unit and cluster lid C
3. Wiring harnesses behind audio and A/C control unit

The instrument panel repair and isolation procedures also apply to the center console.

DOORS

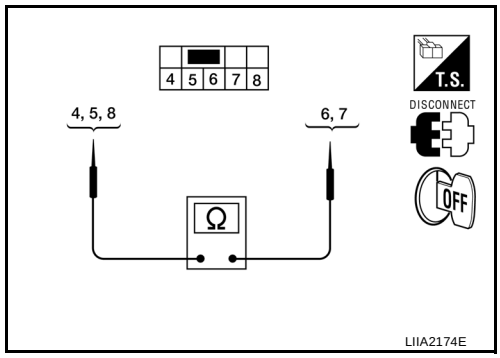
Pay attention to the:

1. Finisher and inner panel making a slapping noise
2. Inside handle escutcheon to door finisher
3. Wiring harnesses tapping
4. Door striker out of alignment causing a popping noise on starts and stops

Tapping or moving the components or pressing on them while driving to duplicate the conditions can isolate many of these incidents. You can usually insulate the areas with felt cloth tape or insulator foam blocks from the NISSAN Squeak and Rattle Kit (J-43980) to repair the noise.

4. CHECK REAR POWER WINDOW SWITCH LH

1. Turn ignition switch OFF.
2. Disconnect rear power window switch LH.
3. Check continuity between rear power window switch LH terminals.



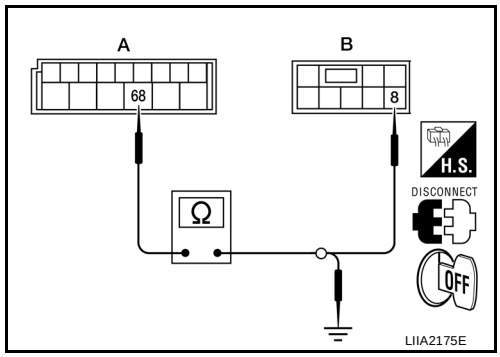
	Terminals		Condition	Continuity
Rear power window switch LH	6	5	DOWN	No
			NEUTRAL or UP	Yes
		8	NEUTRAL or UP	No
			DOWN	Yes
	7	4	UP	No
			NEUTRAL or DOWN	Yes
		8	NEUTRAL or DOWN	No
			UP	Yes

OK or NG

OK >> GO TO 6.
NG >> Replace rear power window switch LH. Refer to EI-30, "REAR DOOR" .

5. CHECK REAR POWER WINDOW SWITCH LH POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM.
3. Check continuity between BCM connector (A) and rear power window switch LH connector (B).



A		B		Continuity
Connector	Terminal	Connector	Terminal	
M20	68	D203	8	Yes

4. Check continuity between BCM connector (A) and ground.

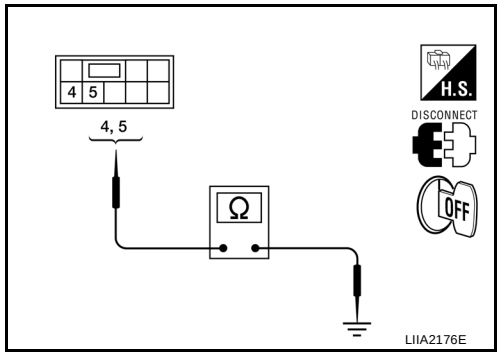
A		Ground	Continuity
Connector	Terminal		
M20	68		No

OK or NG

OK >> GO TO 6.
NG >> Repair or replace harness.

6. CHECK REAR POWER WINDOW SWITCH LH GROUND SUPPLY

Check continuity between rear power window switch LH connector and ground.



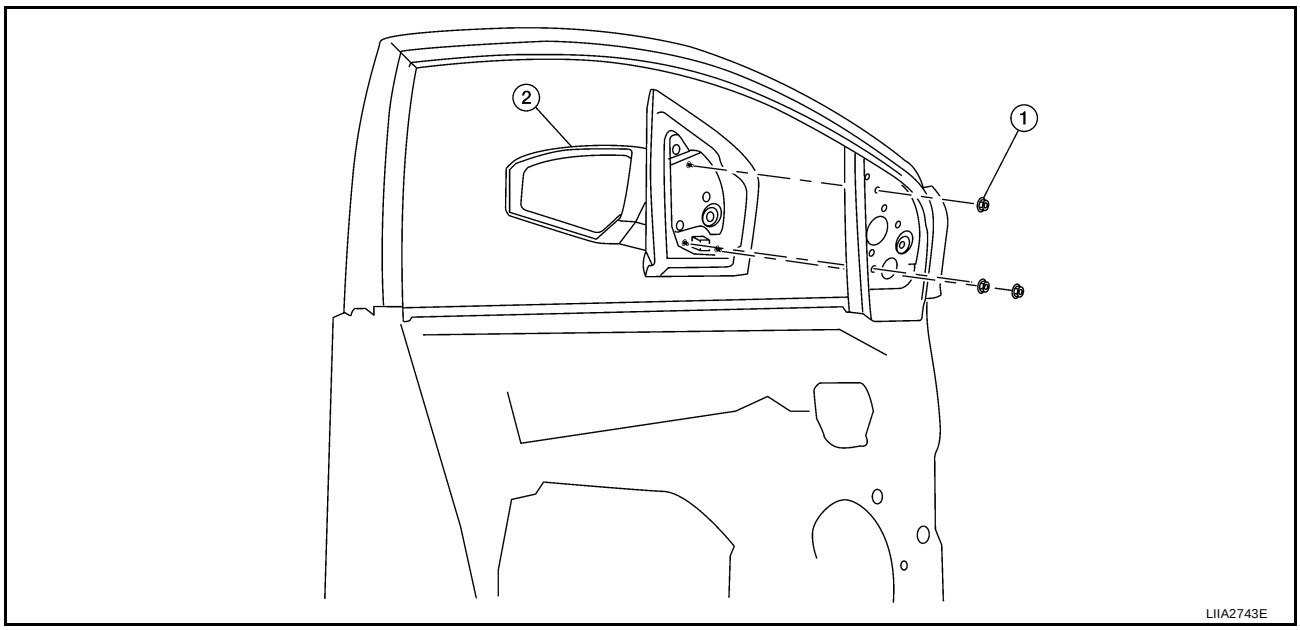
Connector	Terminals		Continuity
D203	4	Ground	Yes
	5		Yes

OK or NG

OK >> Check the condition of the harness and the connector.
NG >> GO TO 7.

Removal and Installation

EIS00AVF

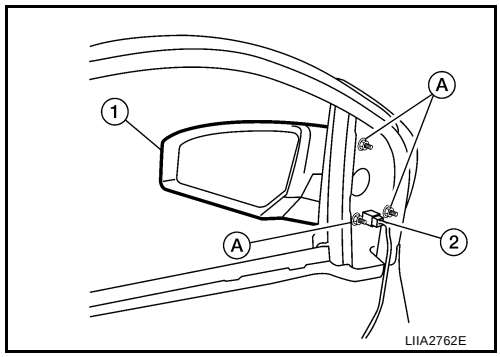


1. Nut
2. Door mirror

CAUTION:
Be careful not to damage the mirror body.

REMOVAL

1. Remove the front door finisher. Refer to EI-29, "FRONT DOOR" .
2. Disconnect the door mirror connector (2), remove the door mirror nuts (A), and remove the door mirror assembly (1).



INSTALLATION

Installation is in the reverse order of removal.

SYSTEM DESCRIPTION

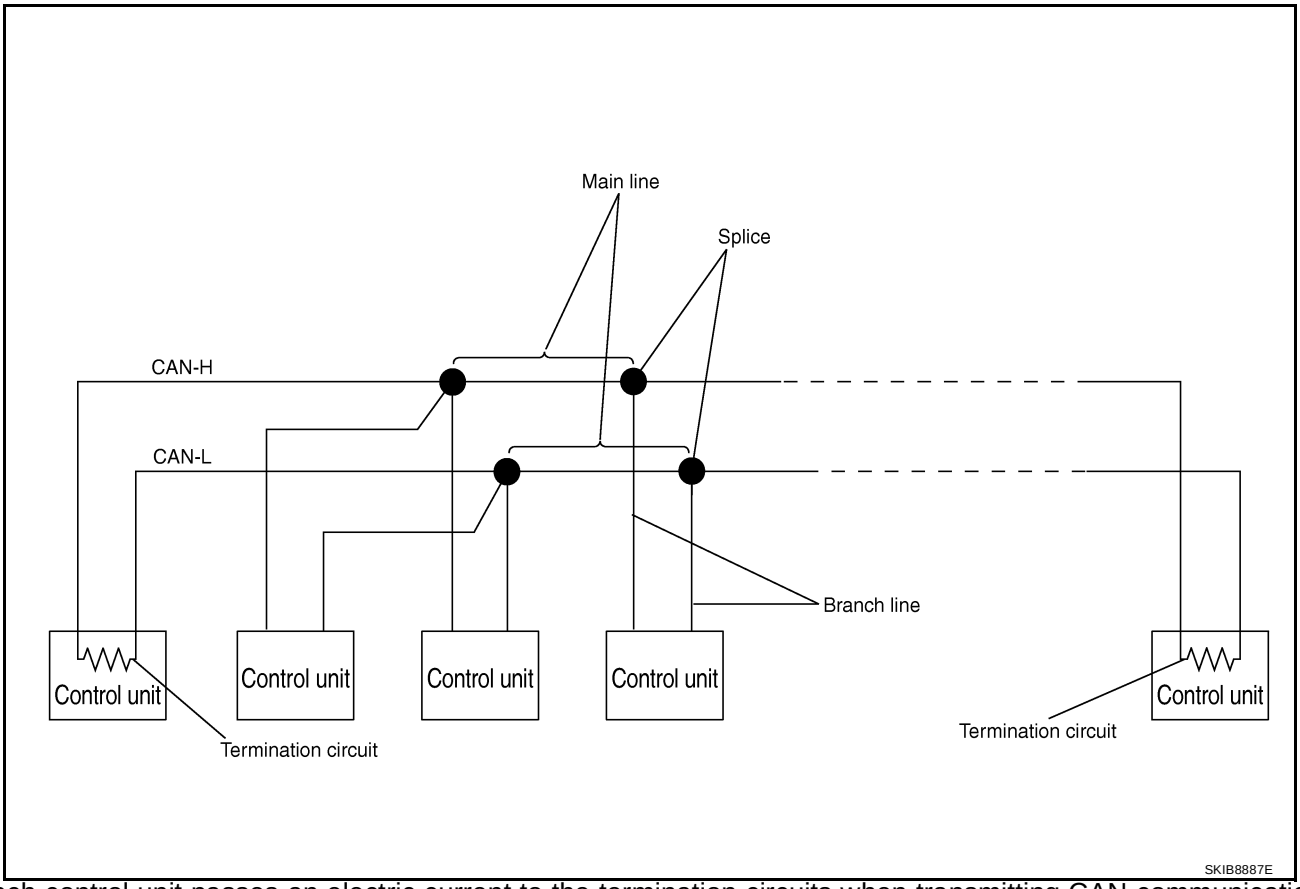
PFP:00000

CAN Communication System

UKS005Y2

- CAN communication is a multiplex communication system. This enables the system to transmit and receive large quantities of data at high speed by connecting control units with two communication lines (CAN-H and CAN-L).
- Control units on the CAN network transmit signals using the CAN communication control circuit. They receive only necessary signals from other control units to operate various functions.
- CAN communication lines adopt twisted-pair line style (two lines twisted) for noise immunity.

SYSTEM DIAGRAM



Each control unit passes an electric current to the termination circuits when transmitting CAN communication signal. The termination circuits produce an electrical potential difference between CAN-H and CAN-L. CAN communication system transmits and receives CAN communication signals by the potential difference.

Component	Description
Main line	CAN communication line between splices
Branch line	CAN communication line between splice and a control unit
Splice	A point connecting a branch line with a main line
Termination circuit	Refer to LAN-5, "CAN COMMUNICATION CONTROL CIRCUIT" .

Malfunction Area Chart

UKS006ZM

MAIN LINE

Malfunction Area	Reference
Main line between ABS actuator and electric unit (control unit) and data link connector	LAN-37, "Main Line Between ABS Actuator and Electric Unit (Control Unit) and Data Link Connector"
Main line between ABS actuator and electric unit (control unit) and TCM	LAN-38, "Main Line Between ABS Actuator and Electric Unit (Control Unit) and TCM"
Main line between TCM and data link connector	LAN-38, "Main Line Between TCM and Data Link Connector"

BRANCH LINE

Malfunction Area	Reference
ECM branch line circuit	LAN-39, "ECM Branch Line Circuit"
ABS actuator and electric unit (control unit) branch line circuit	LAN-40, "ABS Actuator and Electric Unit (Control Unit) Branch Line Circuit"
TCM branch line circuit	LAN-41, "TCM Branch Line Circuit"
Audio unit branch line circuit	LAN-41, "Audio Unit Branch Line Circuit"
BCM branch line circuit	LAN-42, "BCM Branch Line Circuit"
Data link connector branch line circuit	LAN-43, "Data Link Connector Branch Line Circuit"
EPS control unit branch line circuit	LAN-43, "EPS Control Unit Branch Line Circuit"
Intelligent Key unit branch line circuit	LAN-44, "Intelligent Key Unit Branch Line Circuit"
Combination meter branch line circuit	LAN-44, "Combination Meter Branch Line Circuit"
Double meter branch line circuit	LAN-45, "Double Meter Branch Line Circuit"
IPDM E/R branch line circuit	LAN-46, "IPDM E/R Branch Line Circuit"

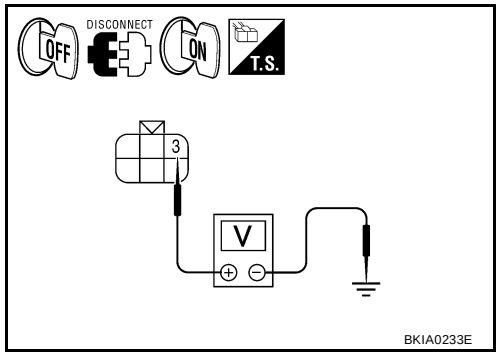
SHORT CIRCUIT

Malfunction Area	Reference
CAN communication circuit	LAN-46, "CAN Communication Circuit"

6. CHECK HEADLAMP INPUT SIGNAL

With CONSULT-III

1. Turn ignition switch OFF.
2. Disconnect headlamp connector.
3. Turn ignition switch ON.
4. Select “IPDM E/R” on CONSULT-III. Select “ACTIVE TEST”.
5. Select “LAMPS” on “SELECT TEST ITEM” screen.
6. Touch “LO” screen.
7. When headlamp low beam is operating, check voltage between headlamp harness connector and ground.



Terminal				Voltage
(+)			(–)	
Headlamp connector		Terminal		
RH	E20	3	Ground	Battery voltage
LH	E21			

Without CONSULT-III

1. Turn ignition switch OFF.
2. Disconnect headlamp connector.
3. Turn ignition switch ON.
4. Start auto active test. Refer to PG-22, "Auto Active Test" .
5. When headlamp low beam is operating, check voltage between headlamp harness connector and ground.

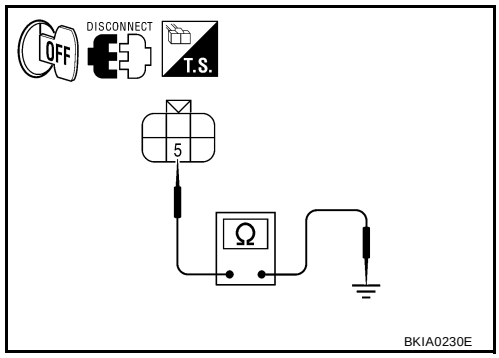
Terminal				Voltage
(+)			(–)	
Headlamp connector		Terminal		
RH	E20	3	Ground	Battery voltage
LH	E21			

OK or NG

OK >> GO TO 7.
NG >> GO TO 8.

7. CHECK HEADLAMP GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between headlamp harness connector (B) and ground.



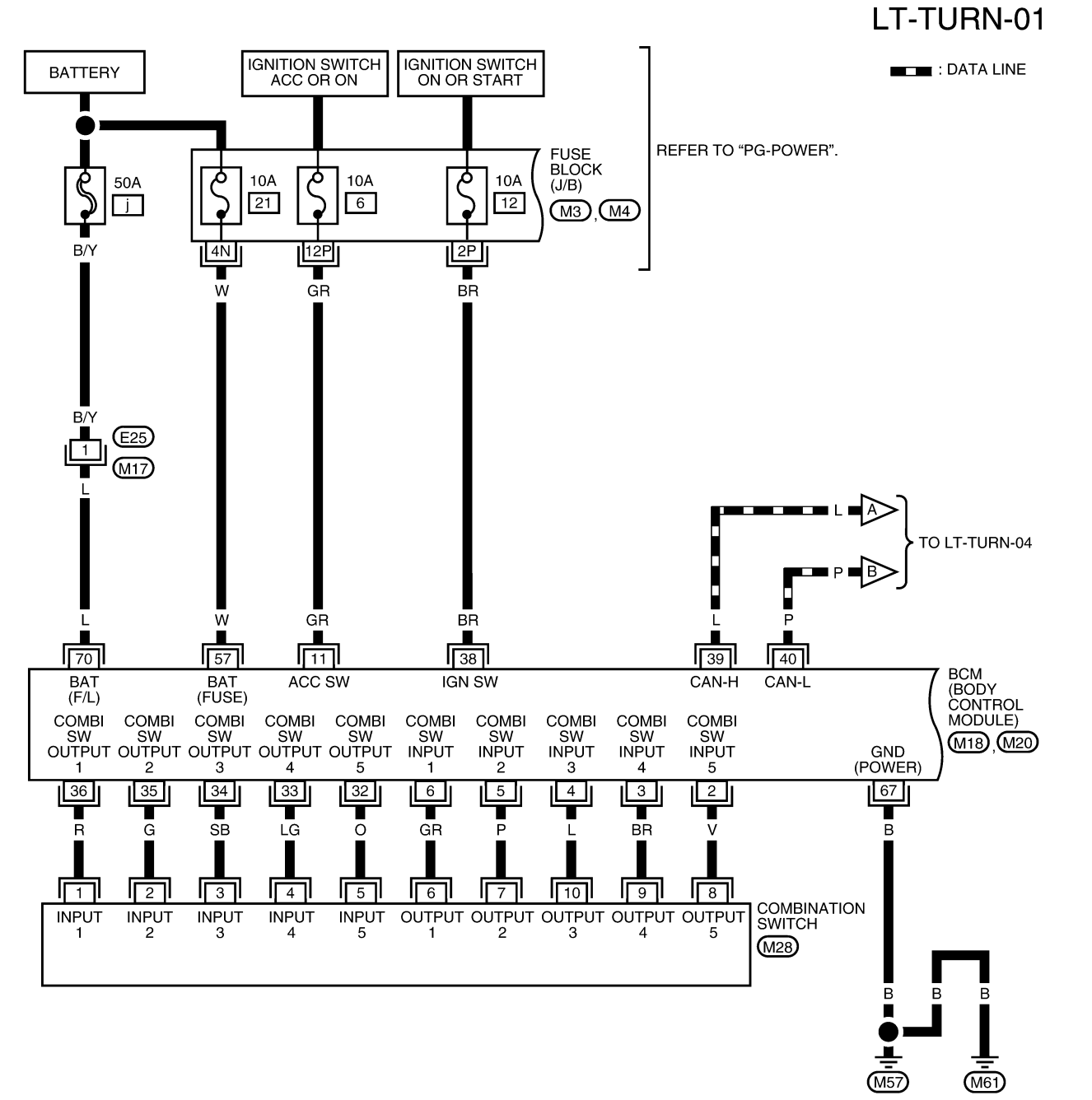
Headlamp connector		Terminal	Ground	Continuity
RH	E20	5		Yes
LH	E21			

OK or NG

OK >> Check front combination lamp connector for damage or poor connection. Repair as necessary.
NG >> Repair harness.

Wiring Diagram — TURN —

EKS00JNV



BKWA0792E

Parking, License Plate and Tail Lamps Do Not Turn OFF (After Approx. 10 Minutes)

EKS00JP1

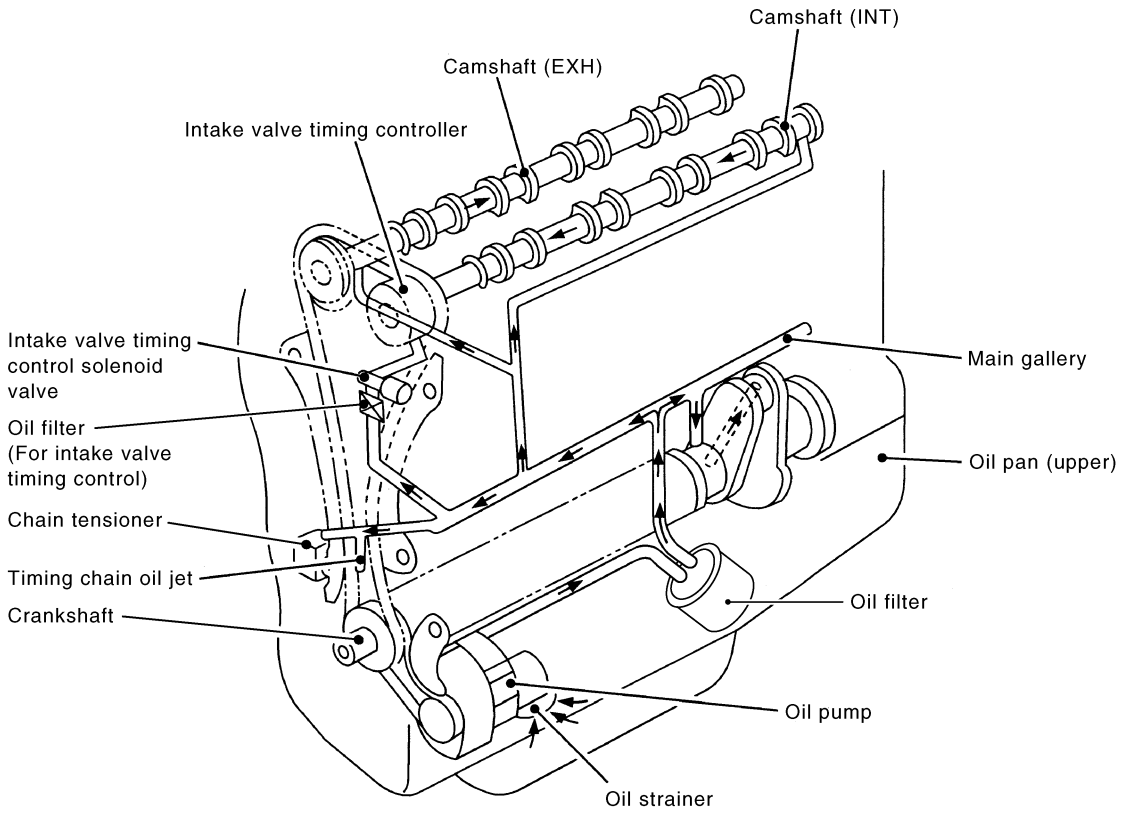
- This symptom is related to the ignition relay in IPDM E/R. Refer to PG-19, "Function of Detecting Ignition Relay Malfunction" .
- Select “BCM” on CONSULT-III. Select “HEAD LAMP” on “SELECT TEST ITEM” screen and select “DATA MONITOR”. If “LIGHT SW 1ST” is OFF when lighting switch is OFF, replace IPDM E/R.

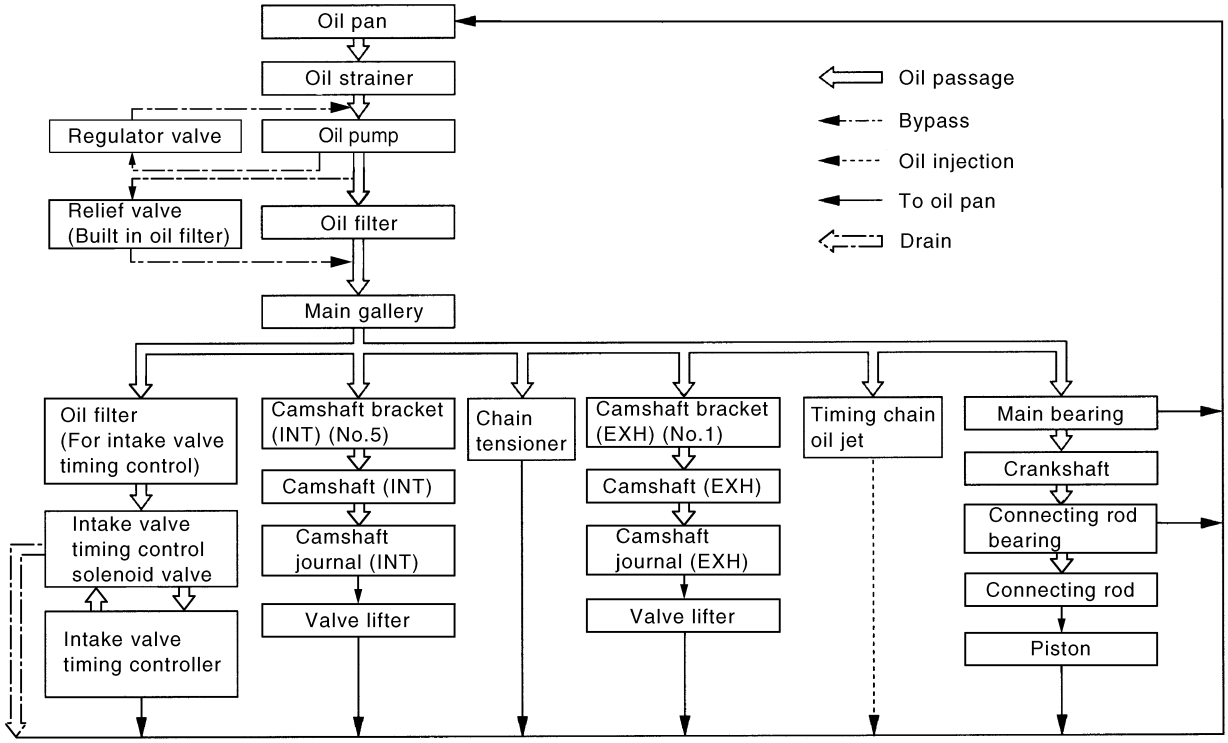
LUBRICATION SYSTEM

PFP:15010

Lubrication Circuit

EBS00ZB2





PBIC4575E

RECOMMENDED FLUIDS AND LUBRICANTS

PFP:00000

MR20DE

ELS002A9

Description		Capacity (Approximate)			Recommended Fluids/Lubricants
		Liter	US measure	Imp measure	
Fuel		55.0	14 1/2 gal	12 1/8 gal	Unleaded gasoline with an octane rating of at least 87 AKI (RON 91)
Engine oil Drain and refill	With oil filter change	3.8	4 qt	3 3/8 qt	● API Certification Mark *1
	Without oil filter change	3.6	3 7/8 qt	3 1/8 qt	
Dry engine (engine overhaul)		4.4	4 5/8 qt	3 7/8 qt	
Cooling system (with reservoir at max level)		7.0	1 7/8 gal	1 1/2 gal	Genuine NISSAN Long Life Anti-freeze Coolant or equivalent
Manual transaxle fluid (MTF)		2.0	4 1/4 pt	3 1/2 pt	ELF XT4447 M+ 75W-80 or API GL-4, Viscosity SAE 75W-80
CVT fluid		8.3	8 3/4 qt	7 1/4 qt	Genuine NISSAN CVT Fluid NS-2 *2
Brake and clutch fluid		—	—	—	Genuine NISSAN Super Heavy Duty Brake Fluid*3 or equivalent DOT 3 (US FMVSS No. 116)
Multi-purpose grease		—	—	—	NLGI No. 2 (Lithium soap base)
Windshield washer fluid		3.5	3 3/4 qt	3 1/8 qt	Genuine NISSAN Windshield Washer Concentrate Cleaner & Anti-Freeze or equivalent
Air conditioning system refrigerant		0.50 ± 0.05 kg	1.10 ± 0.11 lb	1.10 ± 0.11 lb	HFC-134a (R-134a) *4
Air conditioning system oil		120 m ℓ	5.03 fl oz	5.3 fl oz	NISSAN A/C System Lubricant Type S or equivalent *4

*1: For further details, see “SAE Viscosity Number”.
*2: **Using transaxle fluid other than Genuine NISSAN CVT Fluid NS-2 will damage the CVT, which is not covered by the NISSAN new vehicle limited warranty.**
*3: Available in mainland U.S.A. through your NISSAN dealer.
*4: For further details, see “Air conditioner specification label”.

QR25DE

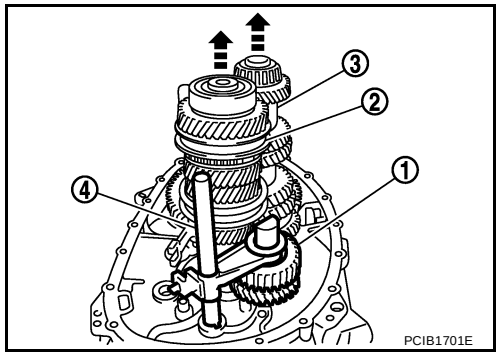
ELS002DP

Description		Capacity (Approximate)			Recommended Fluids/Lubricants
		Liter	US measure	Imp measure	
Fuel		55.0	14 1/2 gal	12 1/8 gal	Unleaded gasoline with an octane rating of at least 87 AKI (RON 91)
Engine oil Drain and refill	With oil filter change	4.9	5 1/8 qt	4 3/8 qt	● API Certification Mark *1
	Without oil filter change	4.6	4 7/8 qt	4 qt	
Dry engine (engine overhaul)		5.0	5 1/4 qt	4 3/8 qt	
Cooling system (with reservoir at max level)		7.6	2 gal	1 5/8 gal	Genuine NISSAN Long Life Anti-freeze / Coolant or equivalent
Manual transaxle fluid (MTF)		2.0	4 1/4 pt	3 1/2 pt	ELF XT4447 M+ 75W-80 or API GL-4, Viscosity SAE 75W-80
CVT fluid		8.3	8 3/4 qt	7 1/4 qt	Genuine NISSAN CVT Fluid NS-2 *2
Brake and clutch fluids		—	—	—	Genuine NISSAN Super Heavy Duty Brake Fluid or equivalent, DOT 3 (US FMVSS No. 116) *3
Multi-purpose grease		—	—	—	NLGI No. 2 (Lithium soap base)

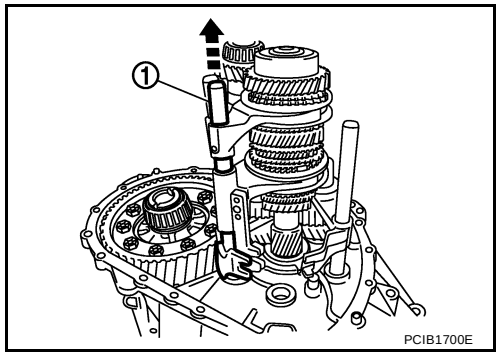
RS6F52A

RS6F52H

21. Install reverse gear assembly (1) according to the following.
a. Lift up the input shaft assembly (2) and mainshaft assembly (3).
b. Install reverse gear assembly (1) and reverse fork rod (4) to clutch housing.

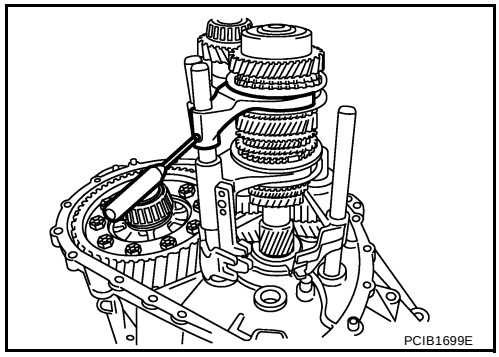


22. While lifting up fork rod (1), install 3rd-4th and 5th-6th fork rod assembly to clutch housing.

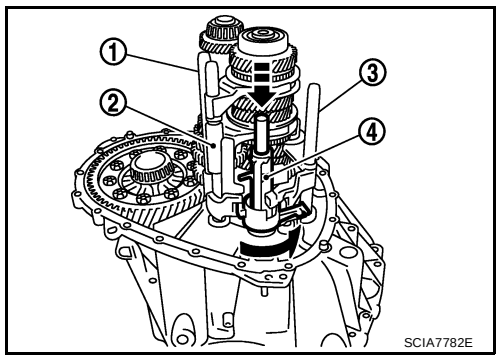


23. Install retaining pin into 5th-6th shift fork using a suitable tool.

CAUTION:
Do not reuse retaining pin.



24. Move 1st-2nd fork rod (1), 3rd-4th and 5th-6th fork rod assembly (2), and reverse fork rod (3) to neutral position.
25. Install selector (4) into clutch housing.
26. Install spring of selector into return bushing.
27. Apply recommended sealant onto the mating surface of transaxle case.
    - **Use Genuine Silicone RTV or equivalent. Refer to GI-44, "Recommended Chemical Products and Sealants" .**



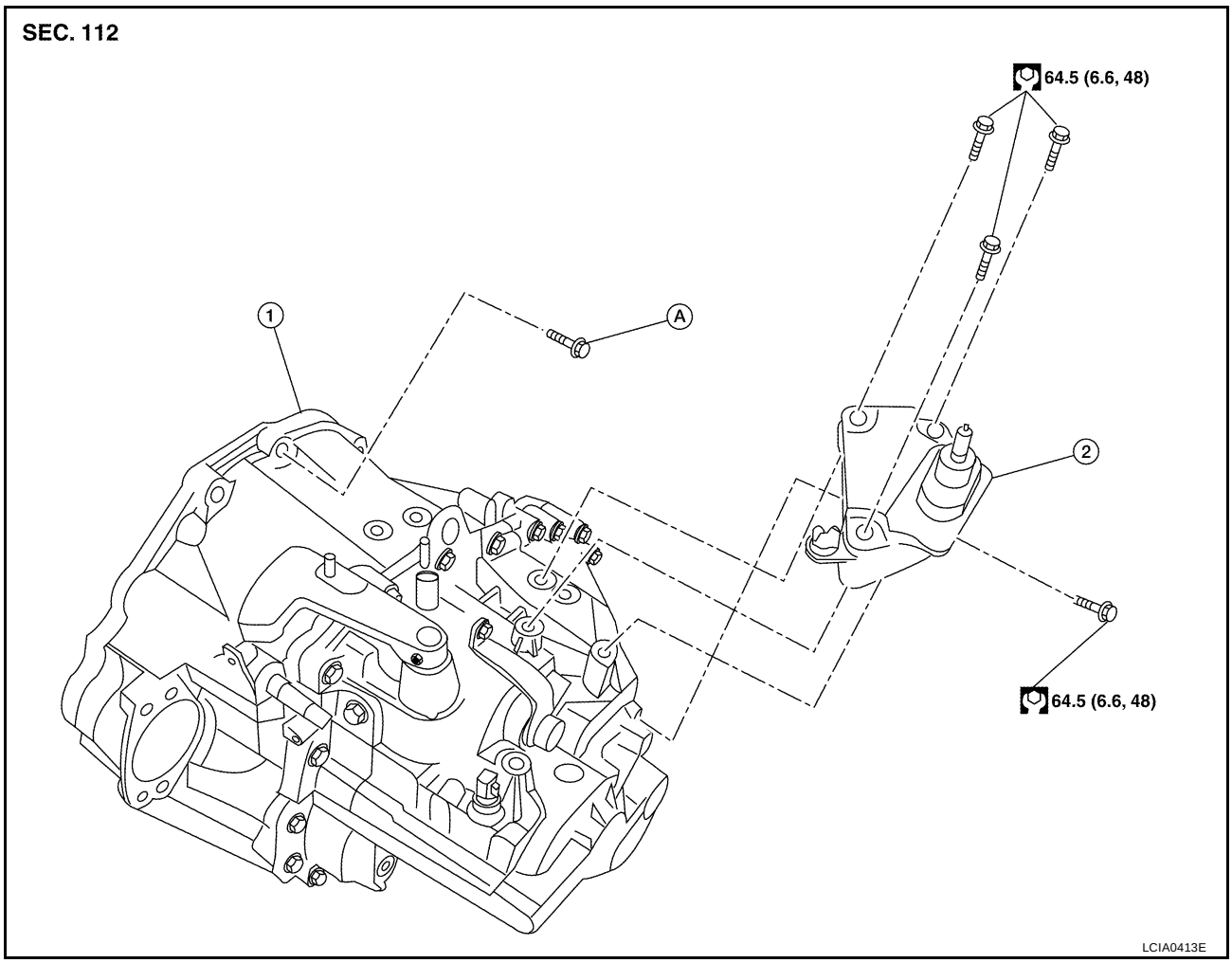
CAUTION:
- **Remove old sealant adhering to the mating surfaces. Also remove any moisture, oil, or foreign material adhering to both mating surfaces.**
- **Check for damage on the mating surface.**
- **Apply a continuous bead of liquid gasket to the mating surface.**

TRANSAXLE ASSEMBLY

PFP:32010

Components

UCS007B3



1. Transaxle assembly
2. LH engine mount bracket

A. Refer to MT-66, "INSTALLATION" for specification.

Refer to GI-10, "Components" for the symbols in the figure.

Removal and Installation

UCS0079L

CAUTION:

If transaxle assembly is removed from the vehicle, always replace CSC (Concentric Slave Cylinder). Inserted CSC returns to the original position when removing transaxle assembly. Dust on clutch disc sliding parts may damage CSC seal, and may cause clutch fluid leakage.

REMOVAL

1. Drain gear oil. Refer to MT-60, "Changing M/T Oil" .
2. Drain clutch fluid and remove clutch tube from CSC. Refer to CL-12, "Removal and Installation" .

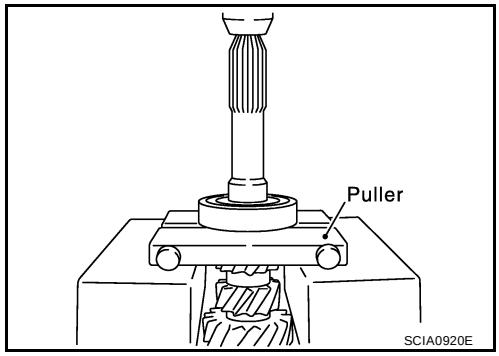
   CAUTION:

   Never depress clutch pedal during removal procedure.
3. Remove engine and transaxle assembly. Refer to EM-181, "Removal and Installation" .
4. Remove starter motor. Refer to SC-24, "Removal and Installation QR25DE" .
5. Remove transaxle assembly to engine bolts.
6. Separate transaxle assembly from engine.

INSTALLATION

Installation is in the reverse order of removal.

9. Press out input shaft front bearing using a puller.

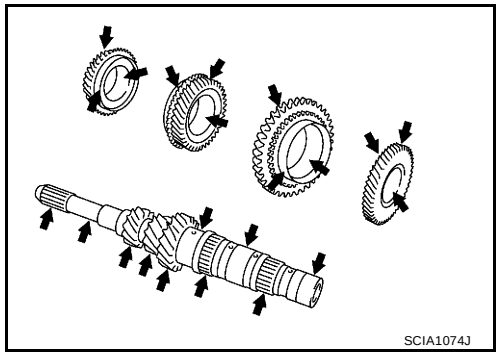


INSPECTION AFTER DISASSEMBLY

Input Shaft and Gears

Check items below. If necessary, replace them with new ones.

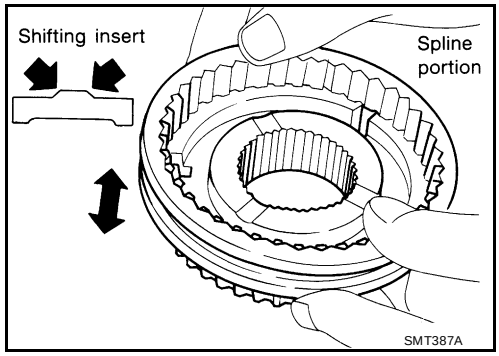
- Damage, peeling, dent, uneven wear, bending, etc. of shaft
- Excessive wear, damage, peeling, etc. of gears



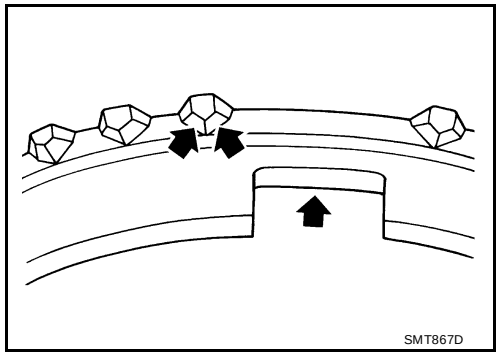
Synchronizer

Check items below. If necessary, replace them with new ones.

- Damage and excessive wear of contact surfaces of coupling sleeve, synchronizer hub and shifting insert
- Coupling sleeve and synchronizer hub must move smoothly.

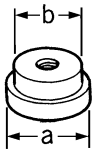
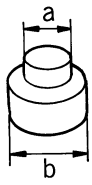
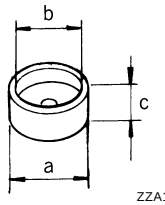
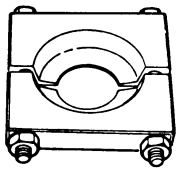
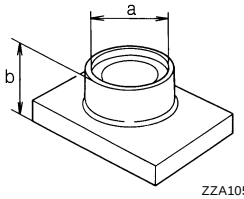
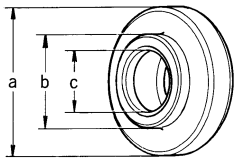


- If any crack, damage, or excessive wear is found on cam face of baulk ring or working face of insert, replace it.



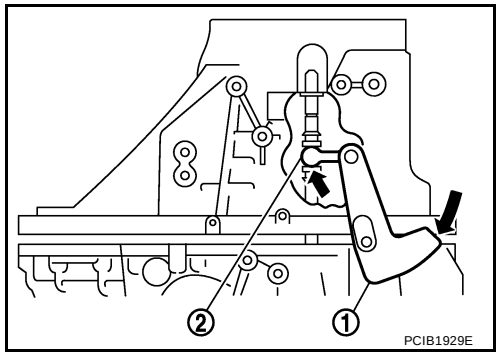
BAULK RING CLEARANCE

- **Single-cone synchronizer (4th, 5th, and 6th)**

Tool number (Kent-Moore No.) Tool name		Description
ST33061000 (J-8107-2) Drift a: 38 mm (1.50 in) dia. b: 28.5 mm (1.122 in) dia.	 ZZA1000D	● Installing bore plug ● Removing differential side bearing (transaxle case side) ● Removing differential side bearing (clutch housing side)
ST33052000 (—) Drift a: 22 mm (0.87 in) dia. b: 28 mm (1.10 in) dia.	 ZZA1023D	● Removing input shaft rear bearing ● Removing 6th input gear, 6th input gear bushing, 5th-6th synchronizer hub assembly, and 5th input gear ● Removing 5th input gear bushing, 4th input gear, 4th input gear bushing, 3rd-4th synchronizer hub assembly, and 3rd input gear ● Installing input shaft front bearing ● Removing mainshaft rear bearing ● Removing 6th main gear ● Removing 4th main gear and 5th main gear
KV40105020 (—) Drift a: 39.7 mm (1.563 in) dia. b: 35 mm (1.38 in) dia. c: 15 mm (0.59 in)	 ZZA1133D	Removing 3rd main gear, 2nd main gear, 2nd main gear bushing, 1st-2nd synchronizer hub assembly, 1st main gear, 1st main gear bushing, and reverse main gear
ST30031000 (J-22912-01) Puller	 ZZA0537D	Measuring wear of inner baulk ring
KV40105710 (—) Press stand a: 46 mm (1.81 in) dia. b: 41 mm (1.61 in)	 ZZA1058D	● Installing 3rd-4th synchronizer hub assembly ● Installing 4th input gear bushing ● Installing 5th input gear bushing ● Installing 5th-6th synchronizer hub assembly ● Installing 2nd main gear bushing ● Installing 3rd main gear
ST30901000 (J-26010-01) Drift a: 79 mm (3.11 in) dia. b: 45 mm (1.77 in) dia. c: 35.2 mm (1.386 in) dia.	 ZZA0978D	● Installing input shaft rear bearing ● Installing 4th main gear ● Installing 5th main gear ● Installing 6th main gear ● Installing mainshaft rear bearing

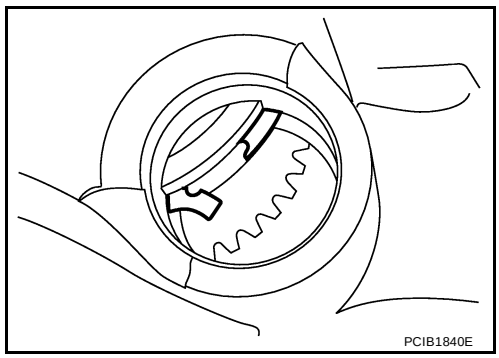
f. While rotating shifter lever A (1) in the direction of the arrow in the figure, assemble transaxle case to clutch housing.

2 : shifter lever B



g. Accessing from the bore plug hole, expand snap ring at mainshaft rear bearing so that the ring catches the periphery of mainshaft rear bearing.

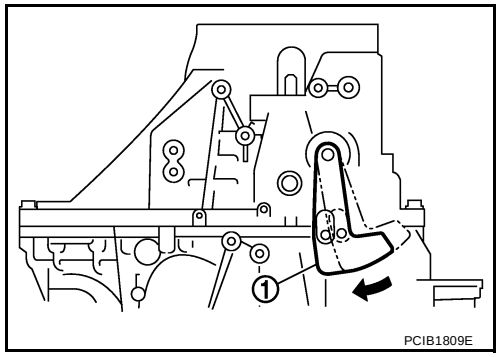
h. Temporarily tighten transaxle case mounting bolts.



i. Shift the shifter lever A (1) to 2nd gear position.

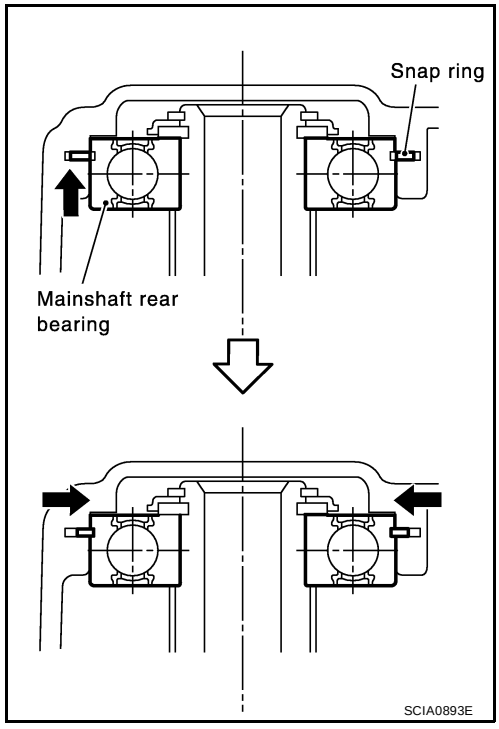
NOTE:

- The 2nd gear position is attained when shifter lever A is in the position shown in the figure.



- When transaxle is shifted to the 2nd gear position, mainshaft assembly is lifted.

j. Seat snap ring in the groove on mainshaft rear bearing. If snap ring is not seated in the groove on mainshaft rear bearing, remove transaxle case and repeat the procedure from step d.



SHIFT CONTROL

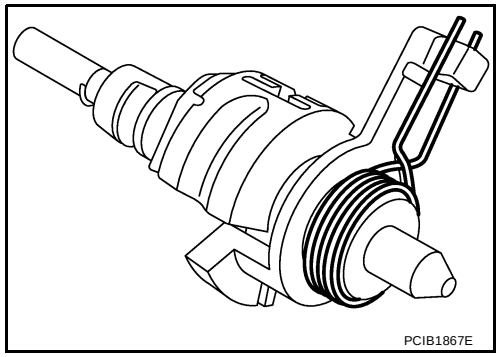
PFP:32982

Disassembly and Assembly

UCS007BI

DISASSEMBLY

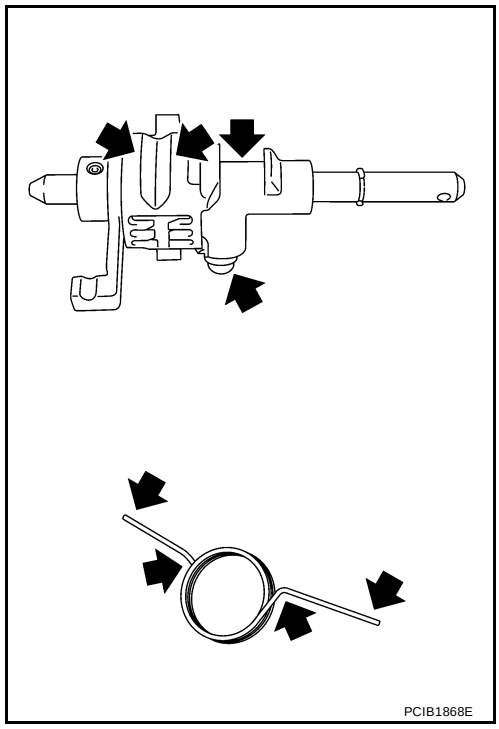
1. Remove return spring to striking rod assembly.


PCIB1867E

INSPECTION AFTER DISASSEMBLY

Striking Rod Assembly and Return Spring

- Check contact surfaces and sliding area for wear, damage, bending, etc. If necessary, replace parts.


PCIB1868E

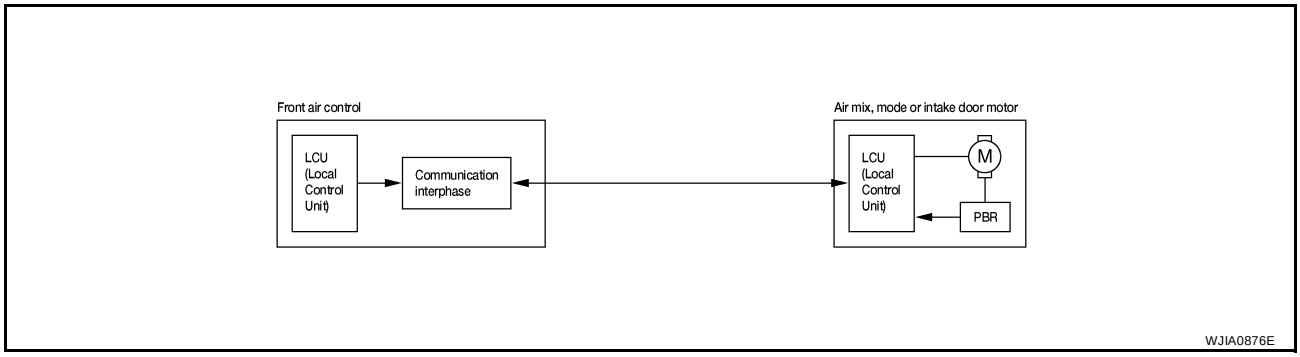
AIR CONDITIONER CONTROL

PFP:27500

Overview Air Conditioner LAN Control System

EJS005OK

The LAN (local area network) system consists of front air control, air mix door motor, intake door motor, and mode door motor.
A configuration of these components is shown in the diagram below.

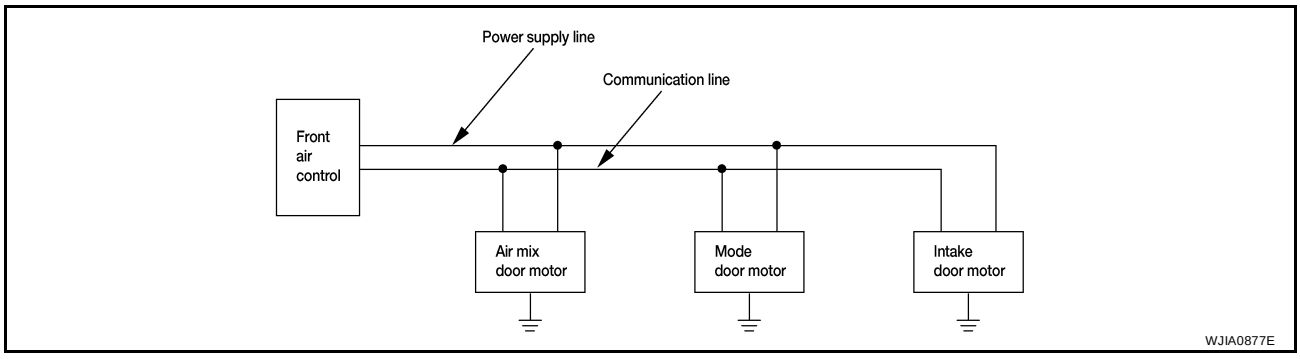


System Construction

EJS005OL

A small network is constructed between the front air control, air mix door motor, intake door motor, and mode door motor. The front air control and motors are connected by data transmission lines and motor power supply lines. The LAN network is built through the ground circuits of the two motors.
Addresses, motor opening angle signals, motor stop signals and error checking messages are all transmitted through the data transmission lines connecting the front air control and each motor.
The following functions are contained in LCUs built into the air mix door motor, intake door motor, and the mode door motor.

- Address
- Motor opening angle signals
- Data transmission
- Motor stop and drive decision
- Opening angle sensor (PBR function)
- Comparison
- Decision (front air control indicated value and motor opening angle comparison)



OPERATION

The front air control receives signals from its various dials and switches. The front air control then sends air mix door, mode door and intake door opening angle data to the air mix door motor LCU, mode door motor LCU and intake door motor LCU.
The air mix door motor, mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the front air control and each of the motor position sensors are compared by the LCUs in each motor with the existing decision and opening angles. Subse-

Blower Motor Circuit

EJS005P3

SYMPTOM:

- Blower motor operation is malfunctioning.

INSPECTION FLOW

1. CONFIRM SYMPTOM BY PERFORMING OPERATIONAL CHECK - FRONT BLOWER

1. Turn blower control dial clockwise one detent. Blower should operate on low speed.
2. Continue checking blower speed until all speeds are checked.
3. Leave blower on HI speed.

Can the symptom be duplicated?

YES >> GO TO 3.
NO >> GO TO 2.

2. PERFORM COMPLETE OPERATIONAL CHECK

Perform a complete operational check and check for any symptoms. Refer to MTC-43, "Operational Check" .

Can a symptom be duplicated?

YES >> Refer to MTC-31, "SYMPTOM TABLE" .
NO >> System OK.

3. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 4.

4. CHECK BLOWER MOTOR CIRCUIT

Perform diagnostic procedure for the blower motor circuit. Refer to MTC-58, "DIAGNOSTIC PROCEDURE" .

OK or NG

OK >> If the symptom still exists, perform a complete operational check and check for other symptoms. Refer to MTC-43, "Operational Check" . and check for other symptoms. Refer to MTC-31, "SYMPTOM TABLE" . If no other symptom exists replace front air control. Refer to MTC-77, "Removal and Installation" .
NG >> Repair as necessary.

DUCTS AND GRILLES

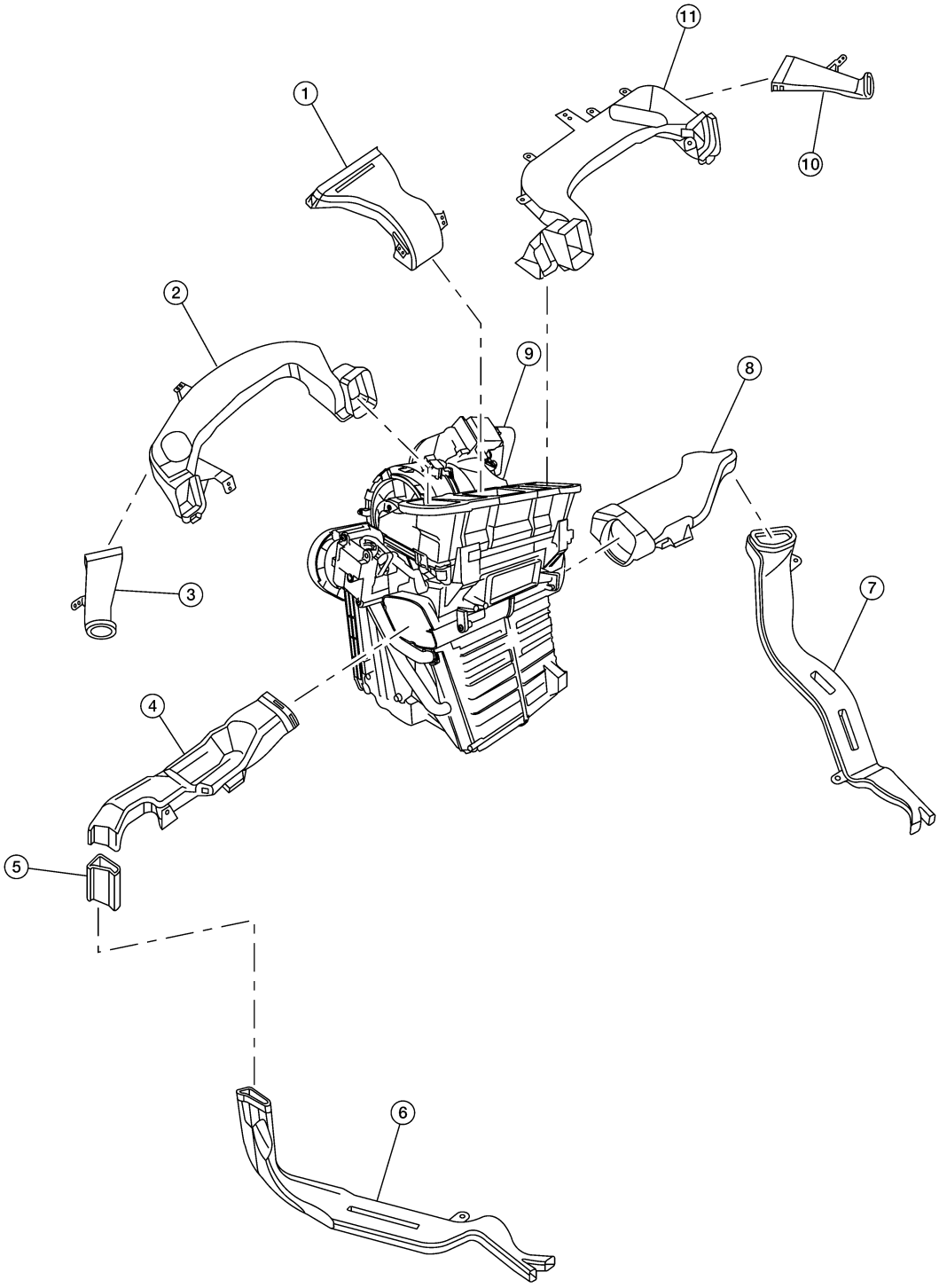
PFP:27860

Removal and Installation

EJS005PI

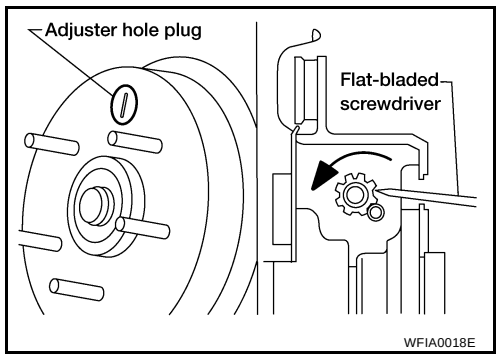
Ducts

SEC. 270 • 271 • 272 • 273



BJIA0023E

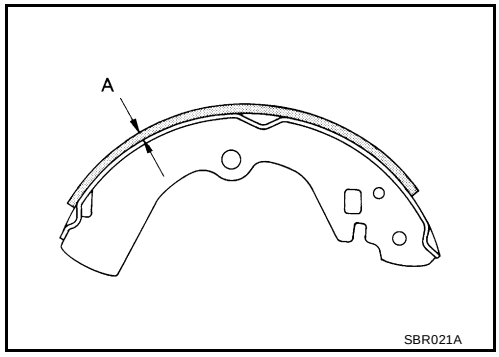
a. Secure the brake rotor with the wheel nut and remove the adjuster hole plug.
b. Insert a flat-bladed screwdriver or suitable tool through the plug opening and rotate the star wheel on the adjuster assembly in the direction as shown to retract the parking brake shoes.
3. Remove the parking brake shoe springs.
4. Remove retainer springs, parking brake shoes, strut, and adjuster. Then remove lever from brake shoe.



INSPECTION AFTER REMOVAL

- Visually inspect the lining for abnormal wear, damage and peeling.
- Using a micrometer, measure the thickness "A" of the lining.

Standard lining thickness : 3.2 mm (0.126 in)
Lining wear limit "A" : 1.5 mm (0.059 in)



- Visually inspect the inside of the drum for abnormal wear, damage and cracks. Using a pair of vernier calipers, measure the inside diameter of the drum.

Standard inner diameter : 172 mm (6.77 in)
Maximum inner diameter : 173 mm (6.81 in)

CAUTION:
If necessary, remove the parking brake shoe and check as follows.

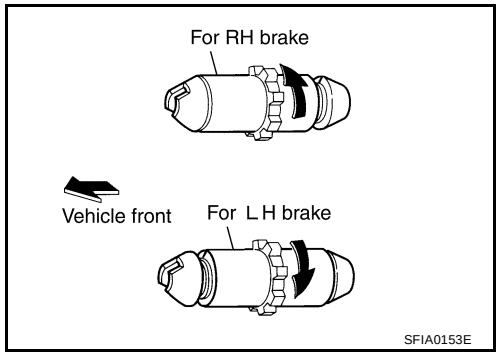
- Check the shoe sliding surface for abnormal wear and damage.
- Check the anchor pin for abnormal wear and corrosion.
- Check the return springs for sagging.
- Check the adjuster for rough operation.

INSTALLATION

Installation is in the reverse order of removal.

- Apply brake grease to the contact areas on baffle plate. Refer to MA-14, "RECOMMENDED FLUIDS AND LUBRICANTS" .

- The orientation of the adjuster is different from LH to RH brakes. Assemble the adjuster so that the threaded part is expanded when rotating it in the direction as shown. Completely retract the adjuster to assemble. When disassembling the adjuster, apply brake grease to the threads. Refer to MA-14, "RECOMMENDED FLUIDS AND LUBRICANTS" .
- After installing parking brake shoes and rotor, adjust the parking brake. Refer to PB-8, "SHOE CLEARANCE ADJUSTMENT" .



SHOE CLEARANCE ADJUSTMENT

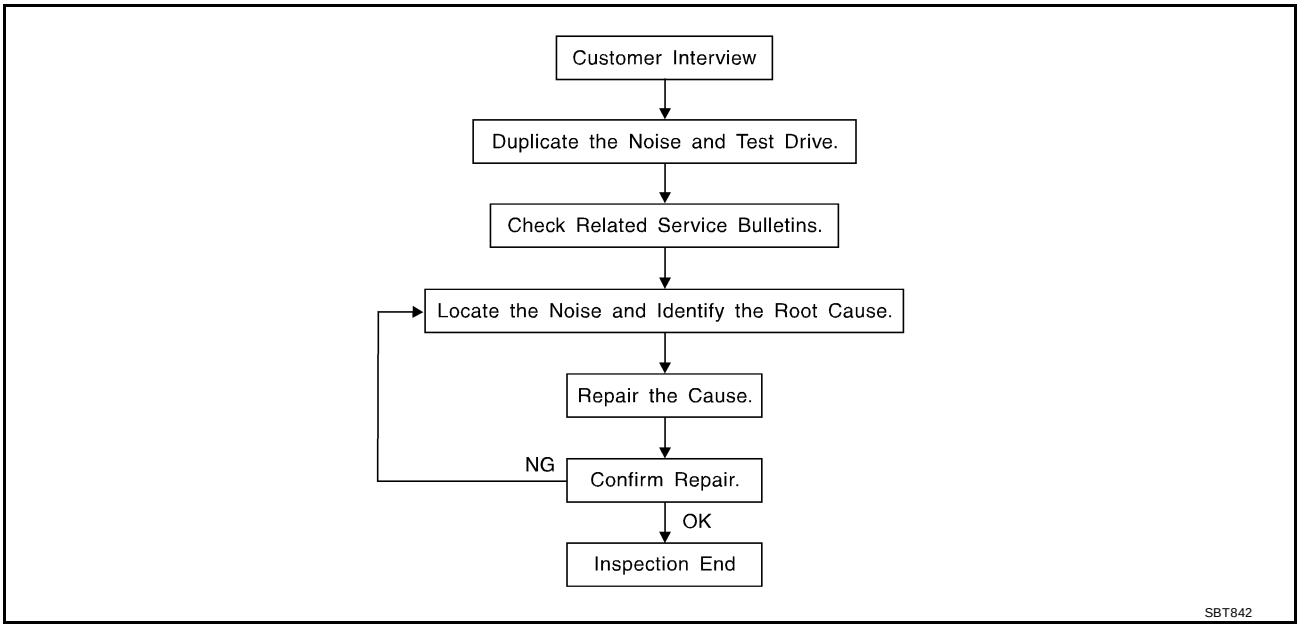
1. Make sure the parking brake control lever is fully released and parking brake cable adjusting nut is loosened.

SQUEAK AND RATTLE TROUBLE DIAGNOSES

PFP:00000

Work Flow

EIS00BE3



CUSTOMER INTERVIEW

Interview the customer if possible, to determine the conditions that exist when the noise occurs. Use the Diagnostic Worksheet during the interview to document the facts and conditions when the noise occurs and any customer's comments; refer to RF-8, "Diagnostic Worksheet" . This information is necessary to duplicate the conditions that exist when the noise occurs.

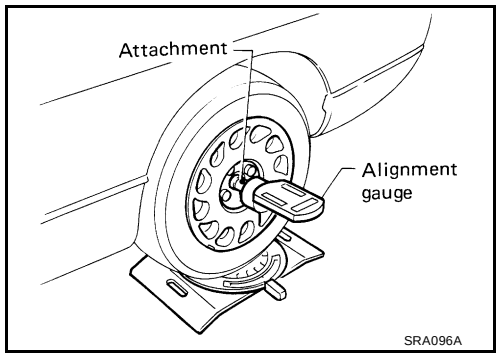
- The customer may not be able to provide a detailed description or the location of the noise. Attempt to obtain all the facts and conditions that exist when the noise occurs (or does not occur).
- If there is more than one noise in the vehicle, be sure to diagnose and repair the noise that the customer is concerned about. This can be accomplished by test driving the vehicle with the customer.
- After identifying the type of noise, isolate the noise in terms of its characteristics. The noise characteristics are provided so the customer, service adviser and technician are all speaking the same language when defining the noise.
- Squeak —(Like tennis shoes on a clean floor)
  Squeak characteristics include the light contact/fast movement/brought on by road conditions/hard surfaces = higher pitch noise/softer surfaces = lower pitch noises/edge to surface = chirping
- Creak—(Like walking on an old wooden floor)
  Creak characteristics include firm contact/slow movement/twisting with a rotational movement/pitch dependent on materials/often brought on by activity.
- Rattle—(Like shaking a baby rattle)
  Rattle characteristics include the fast repeated contact/vibration or similar movement/loose parts/missing clip or fastener/incorrect clearance.
- Knock —(Like a knock on a door)
  Knock characteristics include hollow sounding/sometimes repeating/often brought on by driver action.
- Tick—(Like a clock second hand)
  Tick characteristics include gentle contacting of light materials/loose components/can be caused by driver action or road conditions.
- Thump—(Heavy, muffled knock noise)
  Thump characteristics include softer knock/dead sound often brought on by activity.
- Buzz—(Like a bumble bee)
  Buzz characteristics include high frequency rattle/firm contact.
- Often the degree of acceptable noise level will vary depending upon the person. A noise that you may judge as acceptable may be very irritating to the customer.
- Weather conditions, especially humidity and temperature, may have a great effect on noise level.

CAMBER INSPECTION

- Measure camber of both right and left wheels with a suitable alignment gauge.

  Camber : Refer to RSU-12, "Wheel Alignment (Unladen*)" .

- If it is out of the specification value, inspect and replace any damaged or worn rear suspension parts.



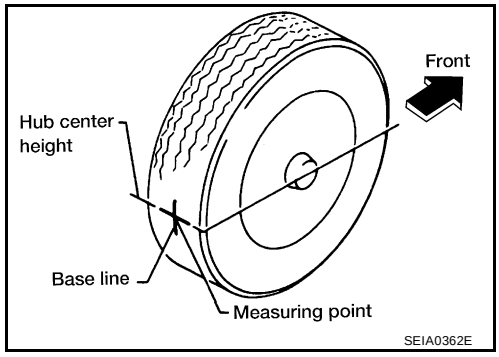
TOE-IN INSPECTION

Measure toe-in using following procedure. If it is out of the specification, inspect and replace any damaged or worn rear suspension parts.

WARNING:

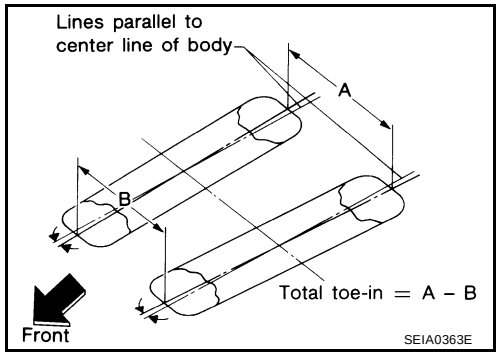
- **Always perform the following procedure on a flat surface.**
- **Make sure that no person is in front of vehicle before pushing it.**

1. Bounce the rear of vehicle up and down to stabilize the vehicle height (posture).
2. Push vehicle straight ahead about 5 m (16 ft).
3. Put a mark on base line of the tread (rear side) of both tires at the same height of hub center. These are measuring points.

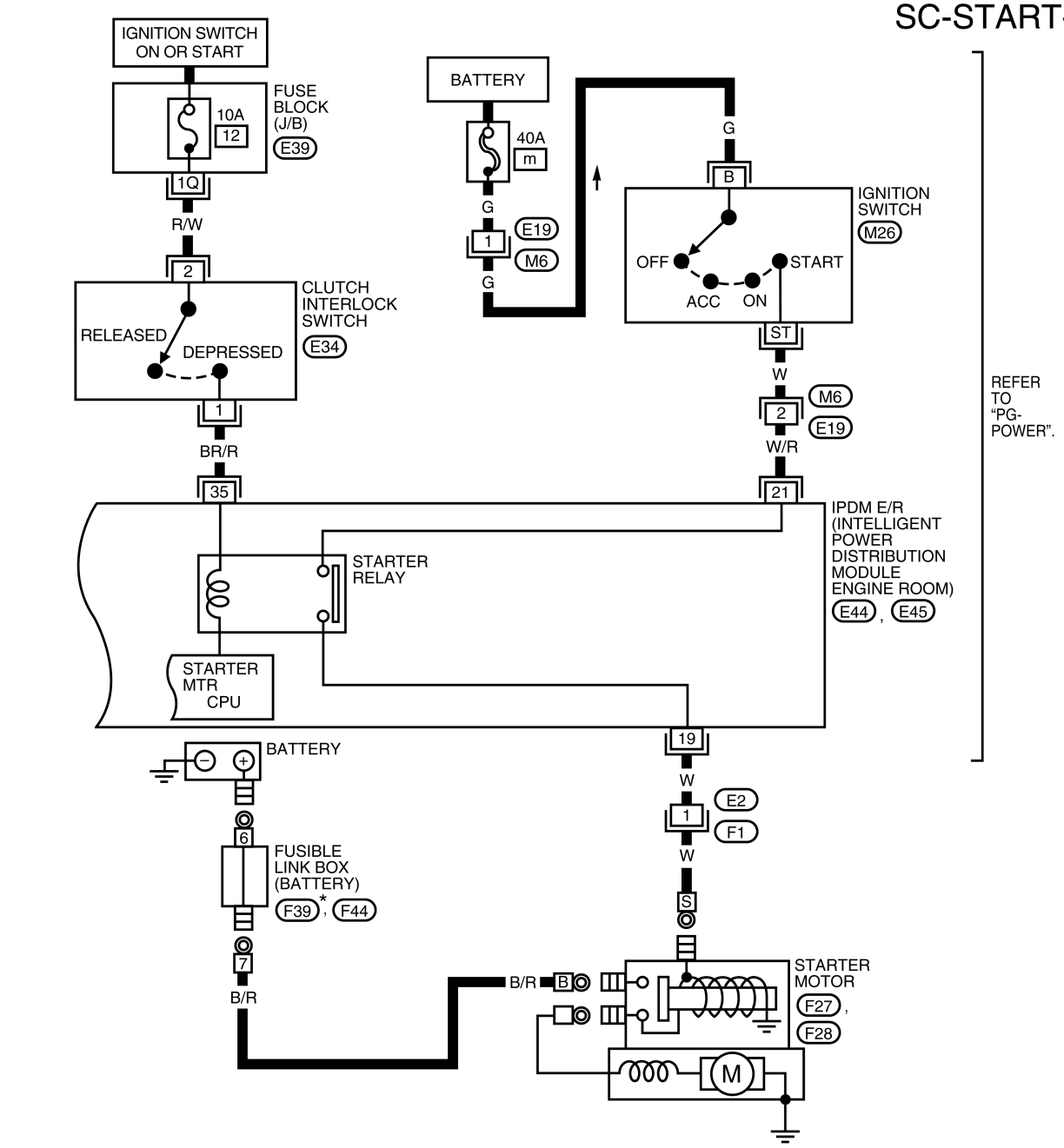


4. Measure distance “A” (rear side).
5. Push vehicle slowly ahead to rotate wheels 180 degrees (1/2 turn). If wheels have rotated more than 180 degrees (1/2 turn), try the above procedure again from the beginning. Never push vehicle backward.
6. Measure distance “B” (front side).

   Total toe-in : Refer to RSU-12, "Wheel Alignment (Unladen*)" .



SC-START-04



* : F39 IS AN INTEGRAL PART OF FUSIBLE LINK BOX (BATTERY) ASSEMBLY

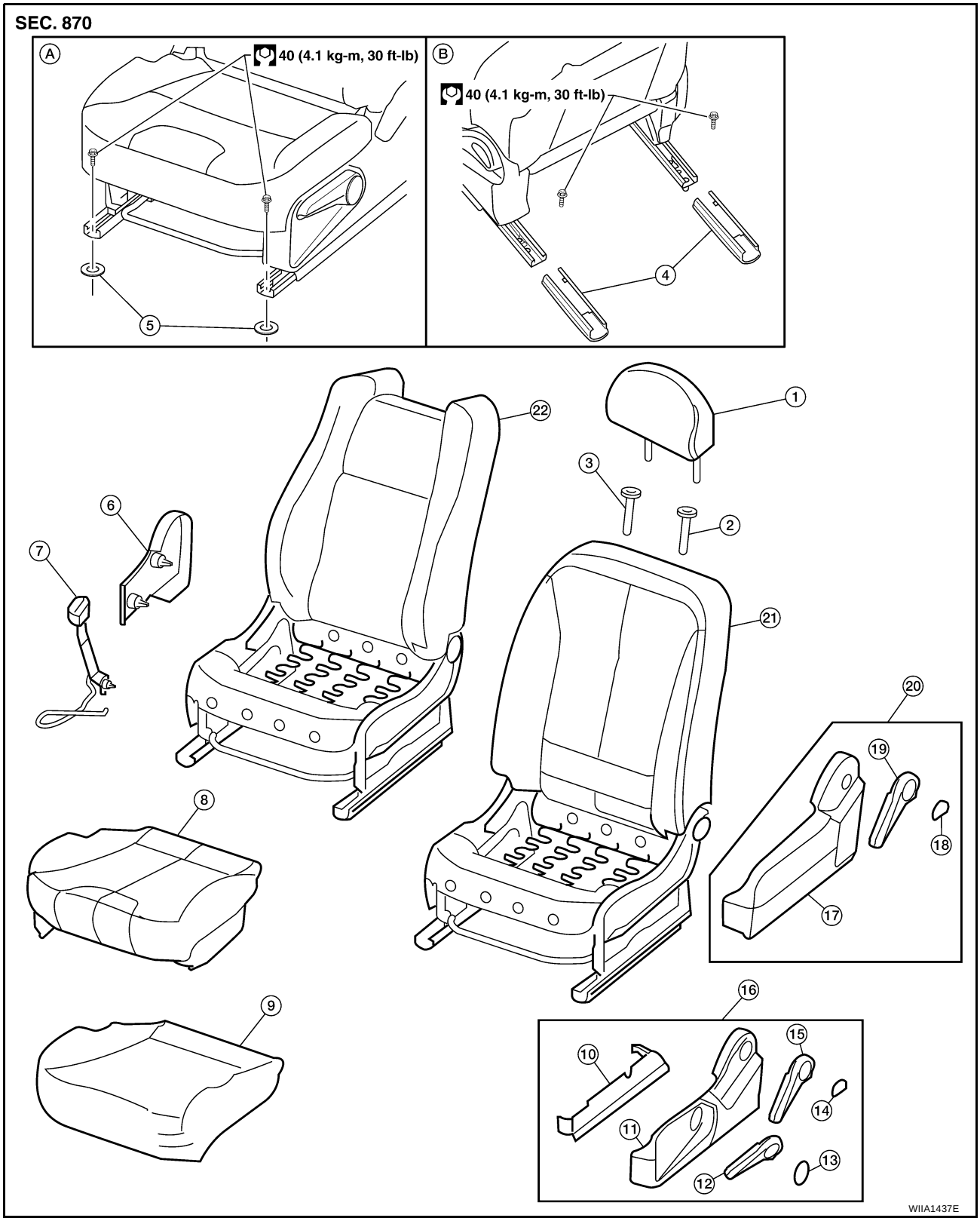
WKWA5774E

FRONT SEAT

PFP:87000

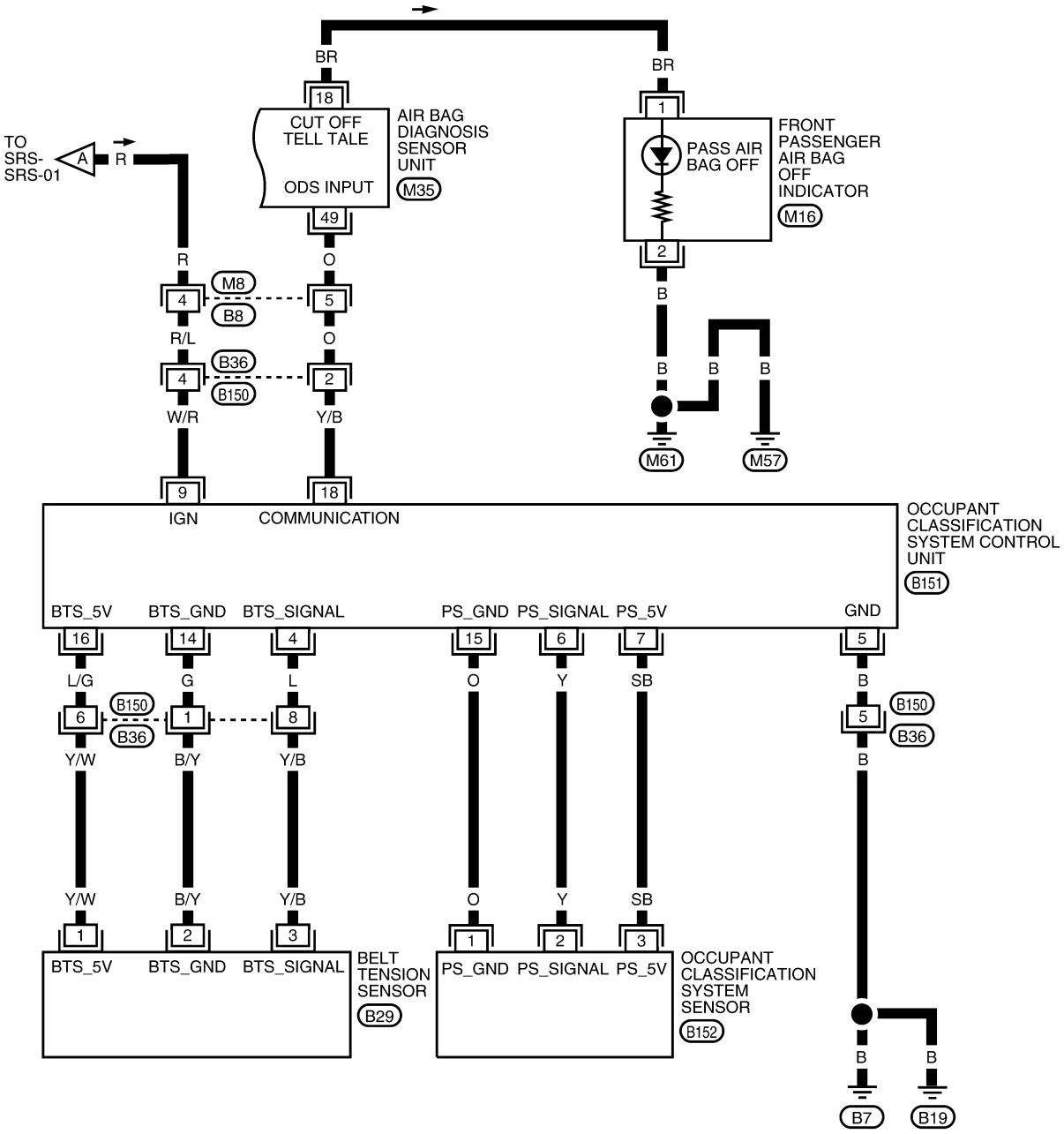
Driver Seat

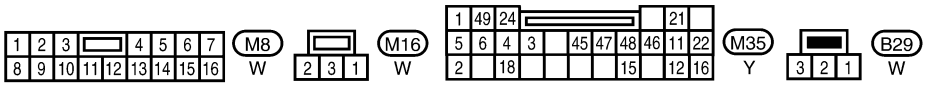
EIS00AK0

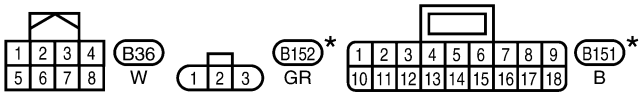


1. Headrest
2. Headrest holder (lock)
3. Headrest holder (free)
4. Rear leg cover
5. Front mount washers
6. LH seat cushion inner finisher
7. Seat belt buckle
8. Seat cushion trim
9. Seat cushion pad
10. LH seat cushion lower outer finisher
11. LH seat cushion outer finisher
12. Lifter lever

SRS-SRS-06







*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

WHWA0323E