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NISSAN PATHFINDER

MODEL R51 SERIES

QUICK REFERENCE INDEX

PRECAUTIONS

PFP:00001

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

ECS00EEC

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

WARNING:

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

Precautions for On Board Diagnostic (OBD) System of A/T and Engine

ECS00EED

The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

CAUTION:

- **Be sure to turn the ignition switch “OFF” and disconnect the negative battery cable before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. Will cause the MIL to light up.**
- **Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MIL to light up due to an open circuit. (Be sure the connector is free from water, grease, dirt, bent terminals, etc.)**
- **Be sure to route and secure the harnesses properly after work. Interference of the harness with a bracket, etc. May cause the MIL to light up due to a short circuit.**
- **Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MIL to light up due to a malfunction of the EGR system or fuel injection system, etc.**
- **Be sure to erase the unnecessary malfunction information (repairs completed) from the TCM and ECM before returning the vehicle to the customer.**

HOW TO ERASE DTC (NO TOOLS)

1. Disconnect battery for 24 hours.
2. Reconnect battery.

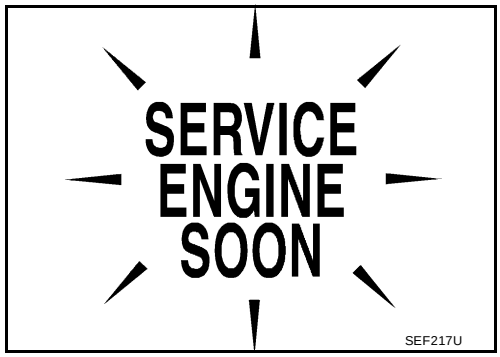
Malfunction Indicator Lamp (MIL)

ECS00EF0

DESCRIPTION

The MIL is located on the instrument panel.

1. The MIL will light up when the ignition switch is turned “ON” without the engine running. This is a bulb check.
- If the MIL does not light up, refer to DI-33, "WARNING LAMPS" .
2. When the engine is started, the MIL should go off.
   If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.



No.	Items	Symptom	Condition	Diagnostic Item	Reference page
41	Slips/Will Not Engage	While accelerating in 5th, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	AT-53
				2. Line pressure test	AT-54
				3. Accelerator pedal position sensor	AT-130
				4. CAN communication line	AT-103
				5. ATF pressure switch 1 and front brake solenoid valve	AT-165, AT-149
				6. Control valve with TCM	AT-233
			OFF vehicle	7. Torque converter	AT-264
				8. Oil pump assembly	AT-281
				9. Front brake (brake band)	AT-264
				10. Input clutch	AT-286
				11. Gear system	AT-252
				12. High and low reverse clutch	AT-297
42		Slips at lock-up.	ON vehicle	1. Fluid level and state	AT-53
				2. Line pressure test	AT-54
				3. Engine speed signal	AT-122
				4. Turbine revolution sensor	AT-115
				5. Torque converter clutch solenoid valve	AT-124
				6. CAN communication line	AT-103
				7. Control valve with TCM	AT-233
			OFF vehicle	8. Torque converter	AT-264
				9. Oil pump assembly	AT-281
43		No creep at all. Refer to AT-189, "Vehicle Does Not Creep Backward In “R” Position" , AT-192, "Vehicle Does Not Creep Forward In “D” Position"	ON vehicle	1. Fluid level and state	AT-53
				2. Line pressure test	AT-54
				3. Accelerator pedal position sensor	AT-130
				4. ATF pressure switch 5 and direct clutch solenoid valve	AT-169, AT-153
				5. PNP switch	AT-111
				6. CAN communication line	AT-103
				7. Control cable adjustment	AT-222
				8. Control valve with TCM	AT-233
			OFF vehicle	9. Torque converter	AT-264
				10. Oil pump assembly	AT-281
				11. 1st one-way clutch	AT-292
				12. Gear system	AT-252
				13. Reverse brake	AT-264
				14. Direct clutch	AT-299
				15. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-19 .)	AT-264
				16. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-19 .)	AT-264

DTC P0717 TURBINE REVOLUTION SENSOR

PFP:31935

Description

ECS00EHQ

The turbine revolution sensor detects input shaft rpm (revolutions per minute). It is located on the input side of the automatic transmission. Monitors revolution of sensor 1 and sensor 2 for non-standard conditions.

CONSULT-II Reference Value

ECS00EHR

Item name	Condition	Display value (rpm)
TURBINE REV	During driving (lock-up ON)	Approximately matches the engine speed.

On Board Diagnosis Logic

ECS00EHS

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0717 TURBINE REV S/CIRC” with CONSULT-II or 11th judgement flicker without CONSULT-II is detected under the following conditions.
  - When TCM does not receive the proper voltage signal from the sensor.
  - When TCM detects an irregularity only at position of 4th gear for turbine revolution sensor 2.

Possible Cause

ECS00EHT

- Harness or connectors
  (The sensor circuit is open or shorted.)
- Turbine revolution sensor 1, 2

DTC Confirmation Procedure

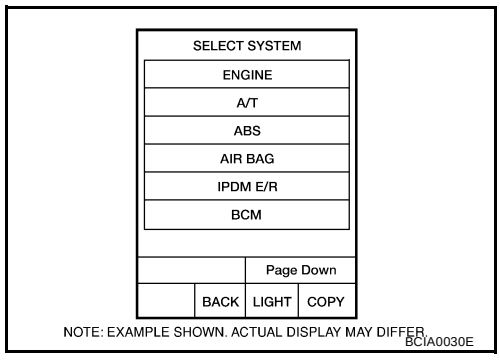
ECS00EHU

CAUTION:
Always drive vehicle at a safe speed.

NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “A/T” with CONSULT-II.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   VHCL SPEED SE: 40 km/h (25 MPH) or more
   ENGINE SPEED: 1,500 rpm or more
   ACCELE POS: 0.5/8 or more
   Selector lever: “D” position
   Gear position (Turbine revolution sensor 1): 4th or 5th position
   Gear position (Turbine revolution sensor 2): All position
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.



4. If DTC is detected, go to AT-116, "Diagnostic Procedure" .

WITH GST

Follow the procedure “WITH CONSULT-II”.

DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

PFP:31940

Description

ECS00EIW

- Front brake solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation.

CONSULT-II Reference Value

ECS00EIX

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to AT-22 .	0.6 - 0.8 A
	Front brake disengaged. Refer to AT-22 .	0 - 0.05 A
ATF PRES SW 1	Front brake engaged. Refer to AT-22 .	ON
	Front brake disengaged. Refer to AT-22 .	OFF

On Board Diagnosis Logic

ECS00EIY

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1759 FR/B SOLENOID FNCT” with CONSULT-II is detected under the following conditions.

– When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change)

– When TCM detects that relation between gear position and condition of ATF pressure switch 1 is irregular during releasing accelerator pedal. (Other than during shift change)

Possible Cause

ECS00EIZ

- Harness or connectors
  (The solenoid and switch circuits are open or shorted.)
- Front brake solenoid valve
- ATF pressure switch 1

DTC Confirmation Procedure

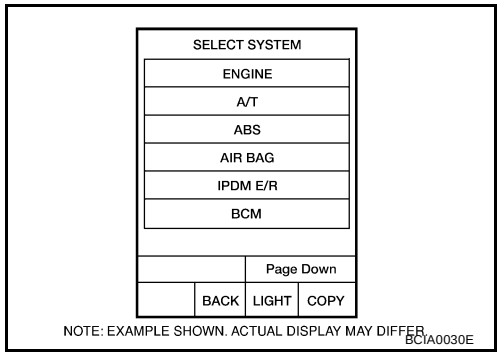
ECS00EJ0

CAUTION:
Always drive vehicle at a safe speed.

NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.
   ACCELE POS: 1.5/8 - 2.0/8
   Selector lever: “D” position
   Gear position: 3rd ⇒ 4th Gear (FR/B ON/OFF)
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. Perform step “2” again.
4. Turn ignition switch “OFF”, then perform step “1” to “3” again.
5. Check “SELF-DIAG RESULTS” mode for “A/T” with CONSULT-II. If DTC (P1759) is detected, refer to AT-152, "Diagnostic Procedure" .
   If DTC (P1757) is detected, go to AT-150, "Diagnostic Procedure" .
   If DTC (P1841) is detected, go to AT-166, "Diagnostic Procedure" .



NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.
BCIA0030E

Large Shock (“N” to “D” Position)

ECS00EL3

SYMPTOM:

A noticeable shock occurs when the selector lever is shifted from the “N” to “D” position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to AT-90, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-90, "SELF-DIAGNOSTIC RESULT MODE" .
NO >> GO TO 2.

2. ENGINE IDLE SPEED

Check the engine idle speed. Refer to EC-75, "Idle Speed and Ignition Timing Check" .

OK or NG

OK >> GO TO 3.
NG >> Repair.

3. CHECK CONTROL CABLE

Check the control cable.

- Refer to AT-222, "Checking of A/T Position" .

OK or NG

OK >> GO TO 4.
NG >> Adjust control cable. Refer to AT-222, "Adjustment of A/T Position" .

4. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to AT-13, "Checking the Automatic Transmission Fluid (ATF)" .

OK or NG

OK >> GO TO 5.
NG >> Refill ATF.

5. CHECK LINE PRESSURE

Check line pressure at idle with selector lever in “D” position. Refer to AT-54, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 8.
NG - 1 >> Line pressure high: GO TO 6.
NG - 2 >> Line pressure low: GO TO 7.

6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to AT-233, "Control Valve With TCM and A/T Fluid Temperature Sensor 2" .
2. Disassemble A/T. Refer to AT-264, "DISASSEMBLY" .
3. Check the following.

- Oil pump assembly. Refer to AT-281, "Oil Pump" .

OK or NG

OK >> GO TO 8.
NG >> Repair or replace damaged parts.

A/T SHIFT LOCK SYSTEM

PFP:34950

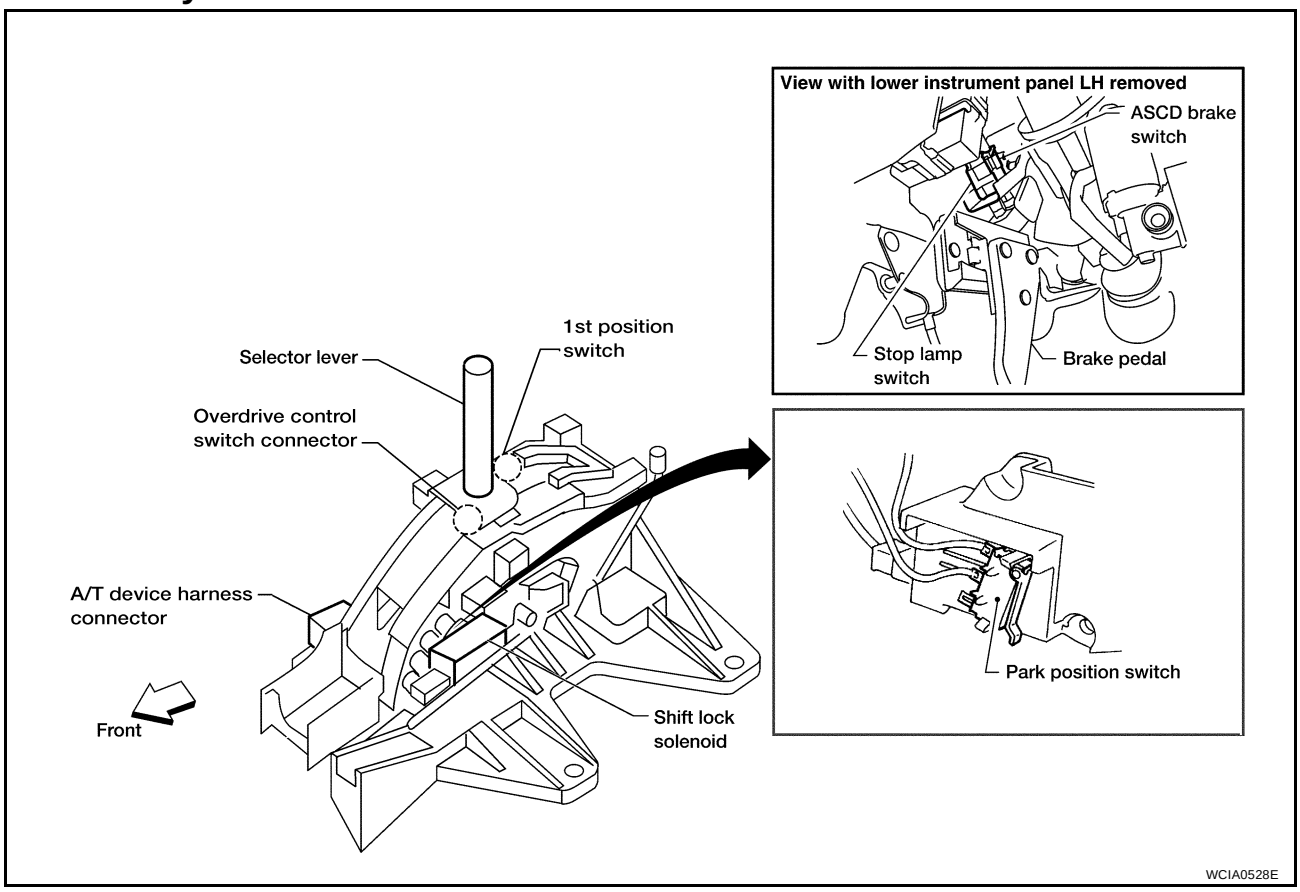
Description

ECS00ELN

- The mechanical key interlock mechanism also operates as a shift lock:
  With the ignition switch turned to ON, the selector lever cannot be shifted from “P” (parking) to any other position unless the brake pedal is depressed.
  With the key removed, the selector lever cannot be shifted from “P” to any other position.
  The key cannot be removed unless the selector lever is placed in “P” position.
- The shift lock and key interlock mechanisms are controlled by the ON-OFF operation of the shift lock solenoid and by the operation of the rotator and slider located inside the key cylinder, respectively.

Shift Lock System Electrical Parts Location

ECS00ELO

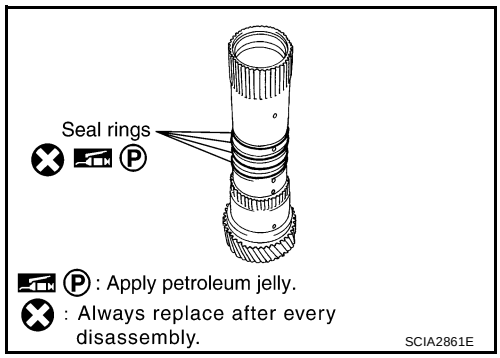


7. Pawl shaft
8. Self-sealing bolt
9. Seal ring
10. Needle bearing
11. Gasket
12. Revolution sensor
13. Parking gear
14. Output shaft
15. Bearing race
16. Needle bearing
17. Manual plate
18. Parking rod
19. Manual shaft oil seal
20. Manual shaft
21. O-ring
22. Band servo anchor end pin
23. Detent spring
24. Spacer
25. Seal ring
26. Snap ring
27. Return spring
28. O-ring
29. Servo assembly
30. Snap ring
31. Sub-harness
32. Control valve with TCM
33. Bracket
34. A/T fluid temperature sensor 2
35. Oil pan
36. Magnet
37. Drain plug
38. Drain plug gasket
39. Oil pan bolt
40. Oil pan gasket
41. Terminal cord assembly
42. O-ring
43. Retaining pin
44. Transmission case

ASSEMBLY

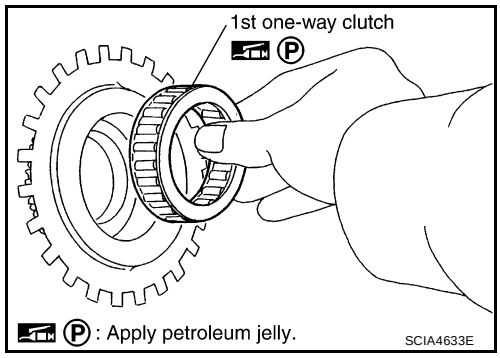
1. Install seal rings to mid sun gear.

CAUTION:
- **Do not reuse seal rings.**
- **Apply petroleum jelly to seal rings.**

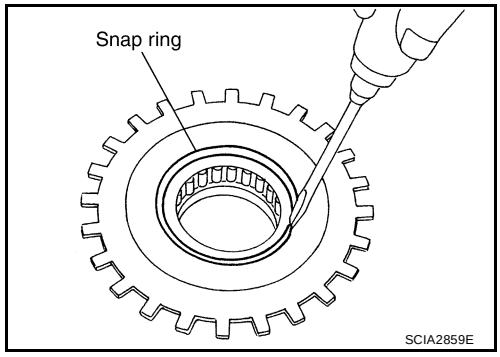


2. Install 1st one-way clutch to rear sun gear.

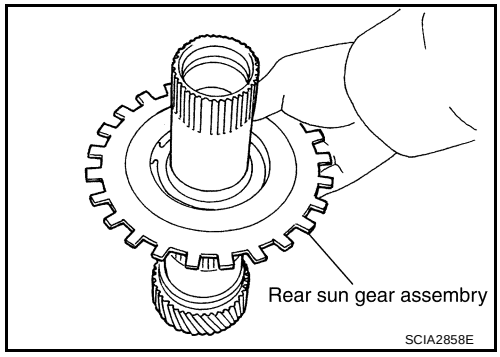
CAUTION:
Apply petroleum jelly to 1st one-way clutch.



3. Install snap ring to rear sun gear using suitable tool.



4. Install rear sun gear assembly to mid sun gear assembly.



PRECAUTIONS

PFP:00001

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

EJS004O6

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WARNING:

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- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

Precautions for Working with HFC-134a (R-134a)

EJS004O7

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer ATC-5, "Contaminated Refrigerant" . To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use refrigerant recovery/recycling equipment and refrigerant identifier.**
- **Use only specified oil for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If oil other than that specified is used, compressor failure is likely to occur.**
- **The specified HFC-134a (R-134a) oil rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**
  - **When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.**
  - **When installing refrigerant components to a vehicle, do not remove the caps (unseal) until just before connecting the components. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.**
  - **Only use the specified oil from a sealed container. Immediately reseal containers of oil. Without proper sealing, oil will become moisture saturated and should not be used.**
  - **Avoid breathing A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) from the A/C system using certified service equipment meeting requirements of SAE J2210 [HFC-134a (R-134a) recycling equipment], or SAE J2209 [HFC-134a (R-134a) recovery equipment]. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.**
  - **Do not allow the refrigerant oil to come in contact with styrofoam parts. Damage may result.**

Contaminated Refrigerant

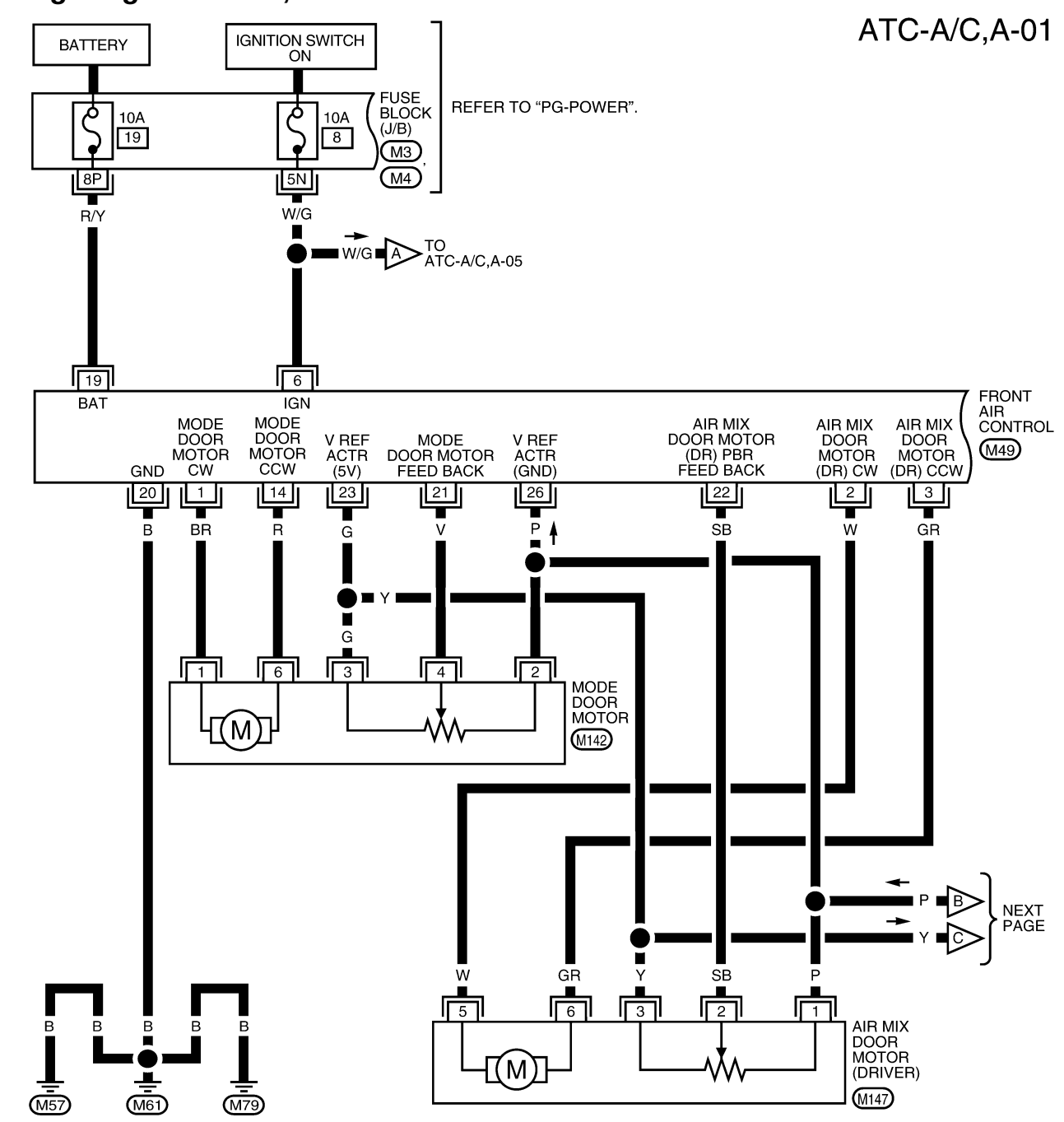
EJS004O8

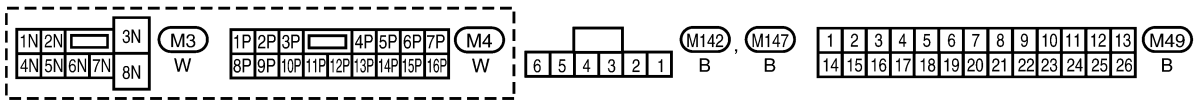
If a refrigerant other than pure HFC-134a (R-134a) is identified in a vehicle, your options are:

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- If you choose to perform the repair, recover the refrigerant using only **dedicated equipment and containers. Do not recover contaminated refrigerant into your existing service equipment.** If your facility

Wiring Diagram —A/C,A—

EJS004OZ



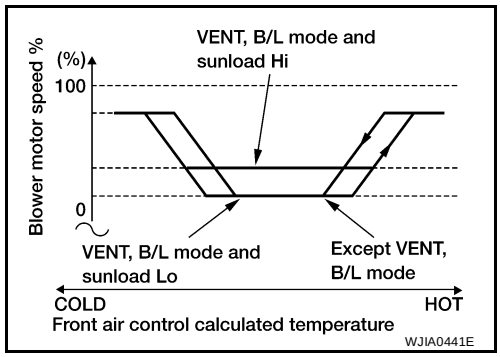


WJWA0390E

Blower Speed Compensation - Sunload

When the in-vehicle temperature and the set temperature are very close, the blower will be operating at low speed. The speed will vary depending on the sunload. During conditions of low or no sunload, the blower operates at low speed. During high sunload conditions, the front air control causes the blower speed to increase.

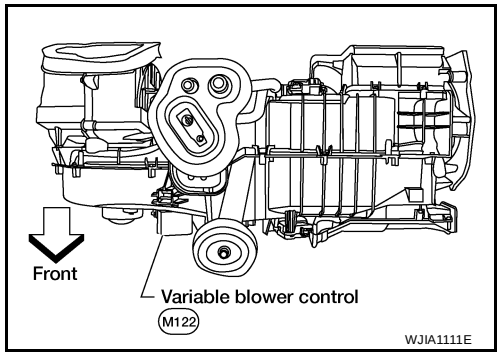
Blower Speed Control Specification



COMPONENT DESCRIPTION

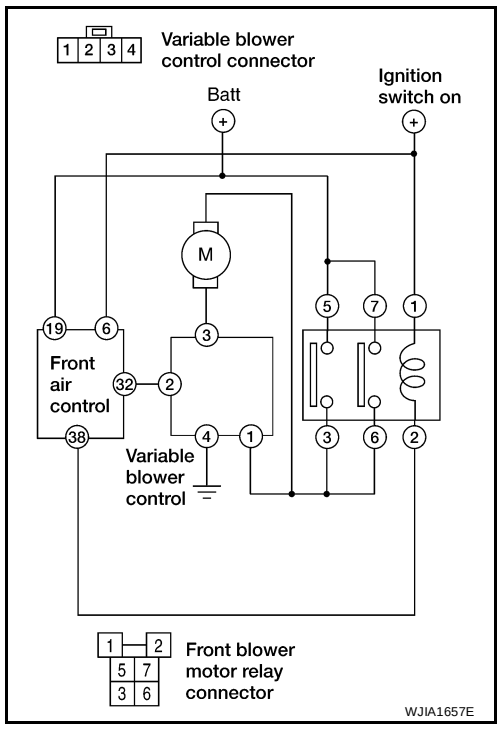
Variable Blower Control

The variable blower control is located on the cooling unit. The variable blower control receives a gate voltage from the front air control to steplessly maintain the blower motor voltage in the 0 to 5 volt range (approx.).



DIAGNOSTIC PROCEDURE FOR BLOWER MOTOR

SYMPTOM: Blower motor operation is malfunctioning under starting blower speed control.

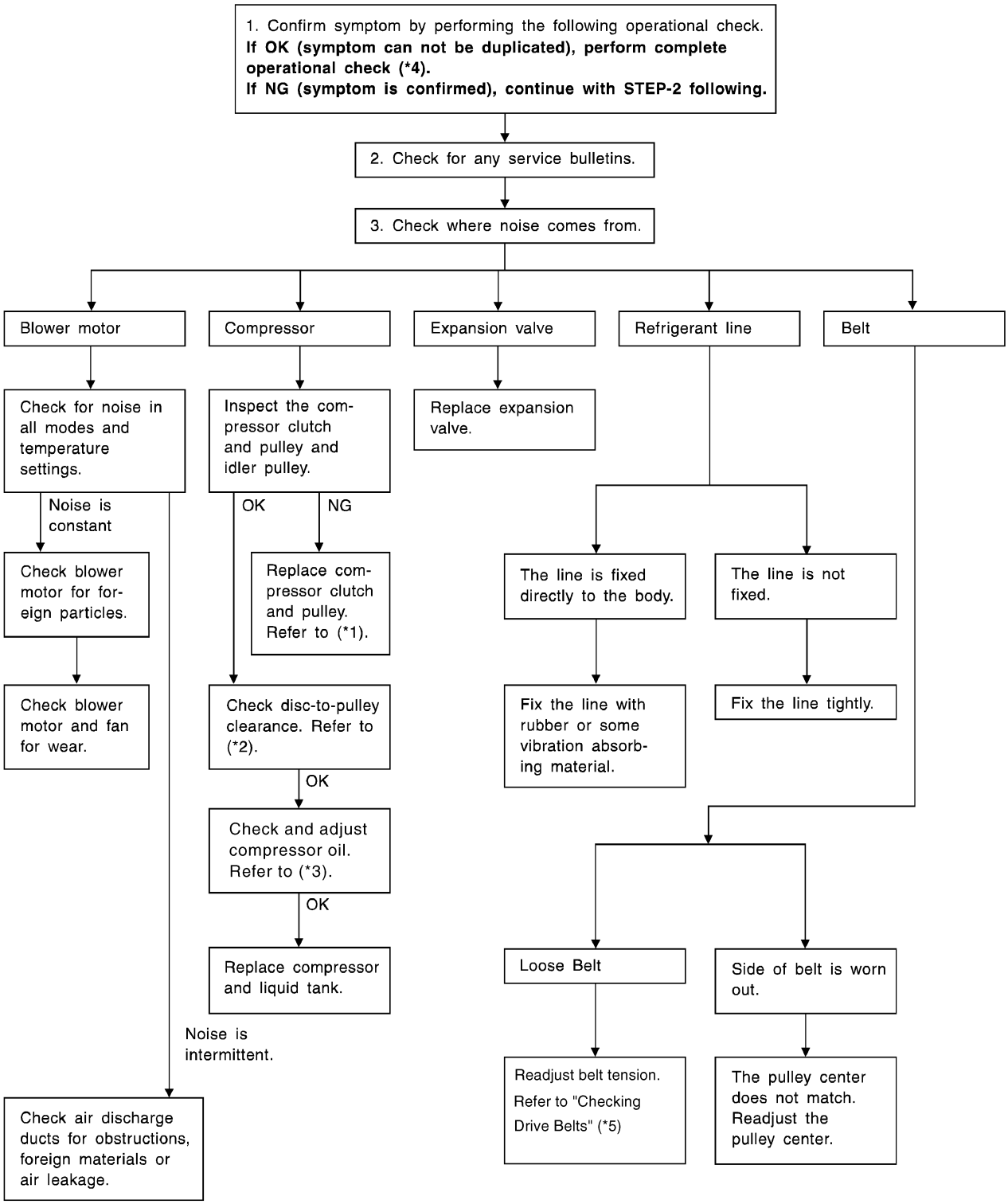


Noise

EJS004PE

SYMPTOM: Noise

INSPECTION FLOW



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DUCTS AND GRILLES

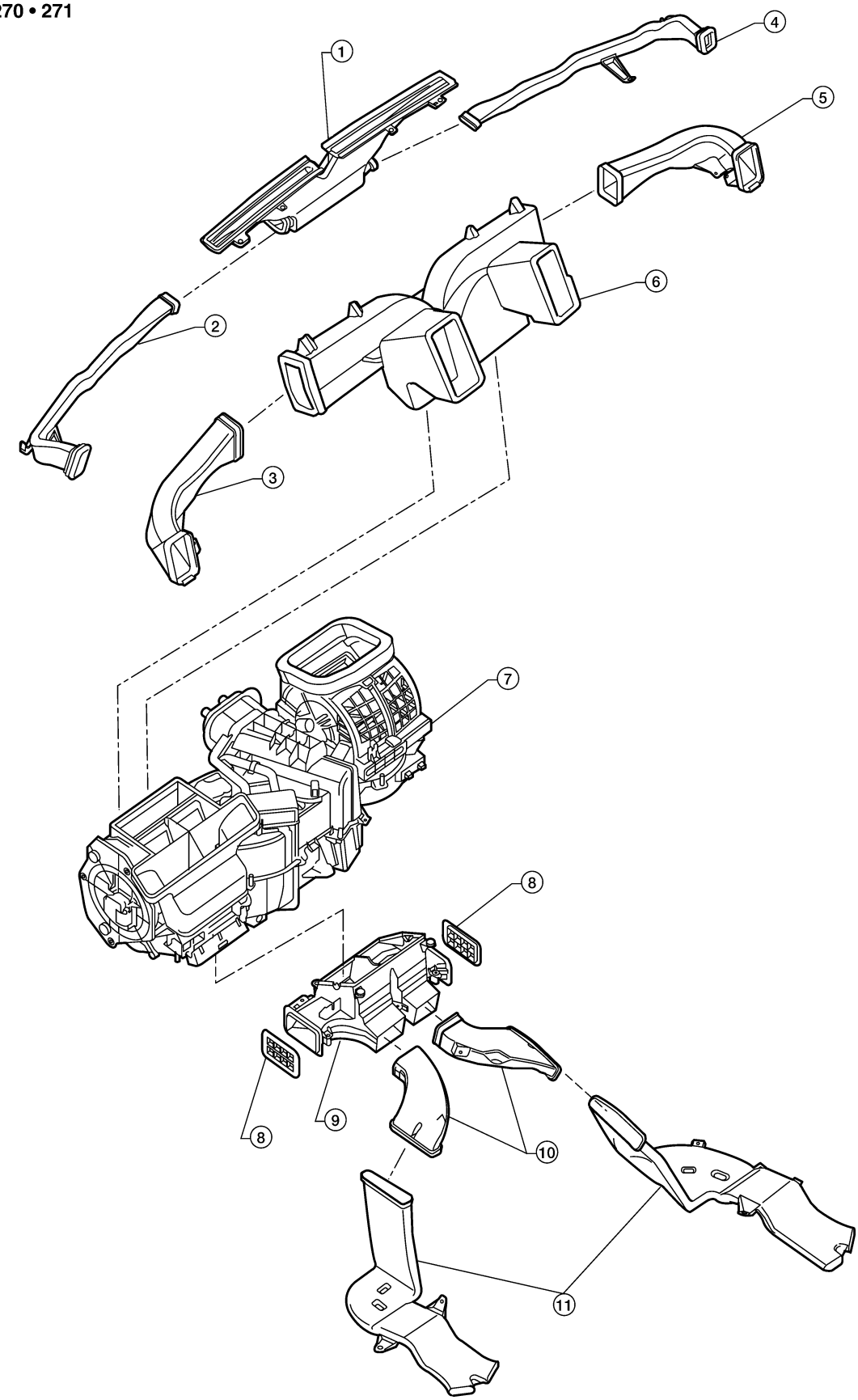
PFP:27860

Components

EJS004Q4

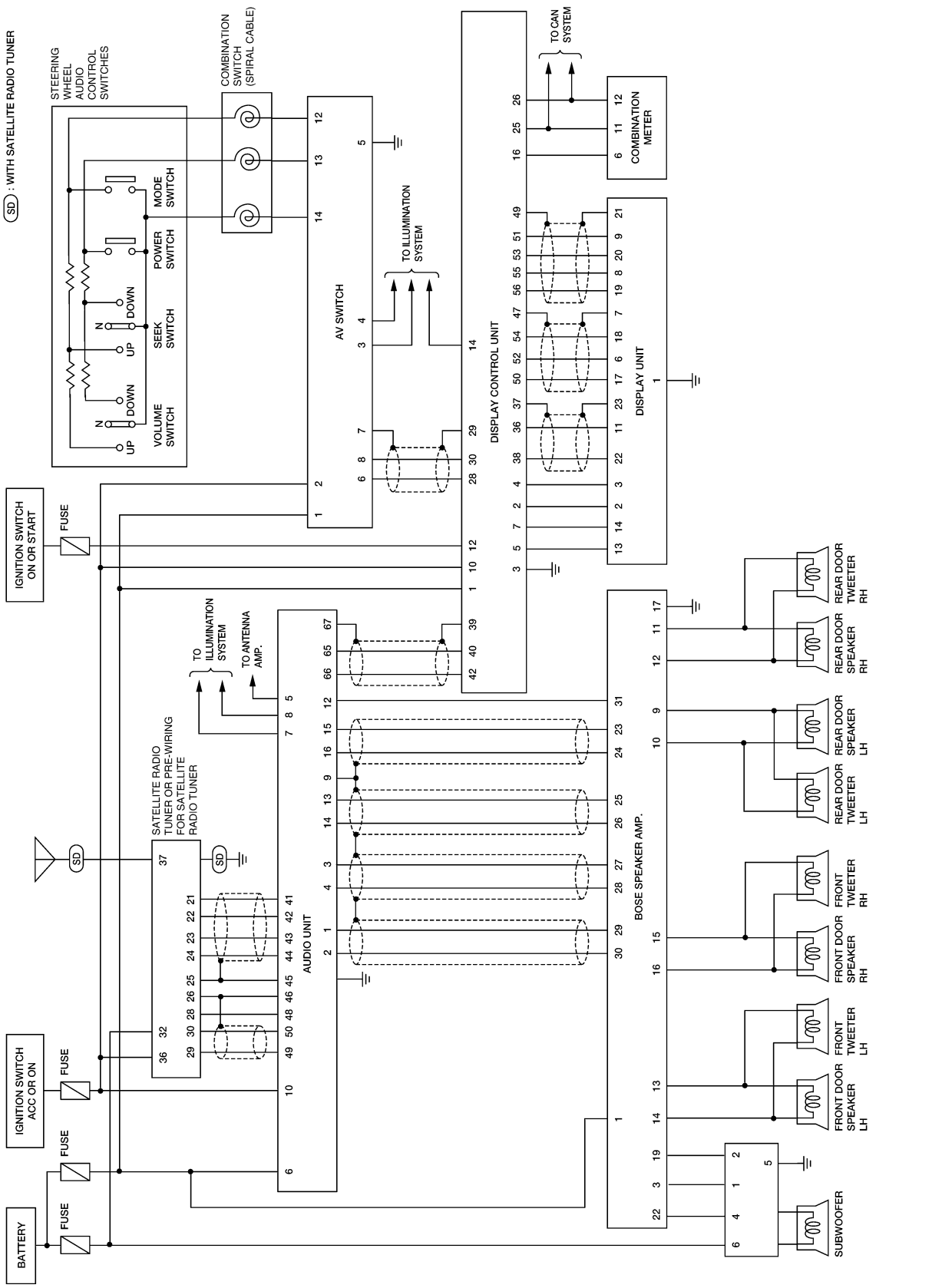
Ducts - Front Heater and Cooling Unit Assembly

SEC. 270 • 271



WJIA1260E

BOSE SYSTEM (WITH NAVI)



WKWA4194E

Audio Communication Line Check (With Navigation System)

EKS00G5Q

1. CHECK AUDIO COMMUNICATION LINE

Start audio communication line check. Refer to AV-128, "Audio Communication Line Check (Between Display Control Unit and Audio Unit)" .

OK or NG

OK >> Inspection End.
NG >> Replace malfunctioning part.

Sound Is Not Heard From Front Door Speaker or Front Tweeter (Base and Mid Level System)

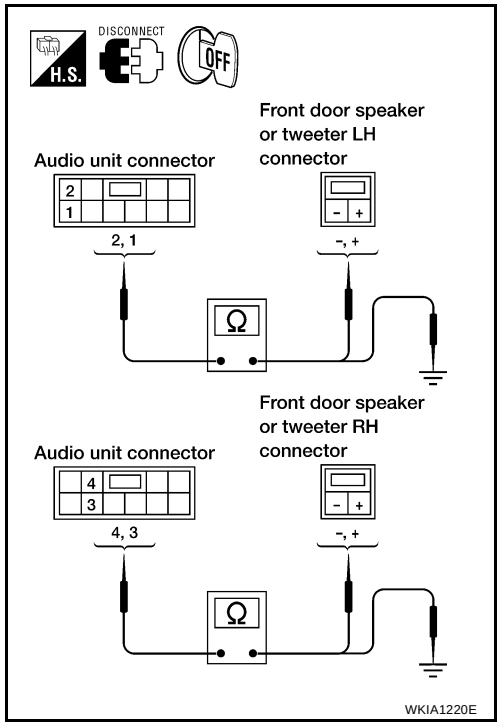
EKS00G5R

1. HARNESS CHECK

1. Disconnect audio unit connector M43 and suspect speaker or tweeter connector.
2. Check continuity between audio unit harness connector M43 terminal and suspect speaker or tweeter harness connector terminal.

Terminals				Continuity
Audio unit		Speaker or tweeter		
Connector	Terminal	Connector	Terminal	
M43	2	D12	+	Yes
	1		-	
	4	D112	+	
	3		-	
	2	M109	+	
	1		-	
	4	M111	+	
	3		-	

*: With mid-level system



3. Check continuity between audio unit harness connector M43 terminal and ground.

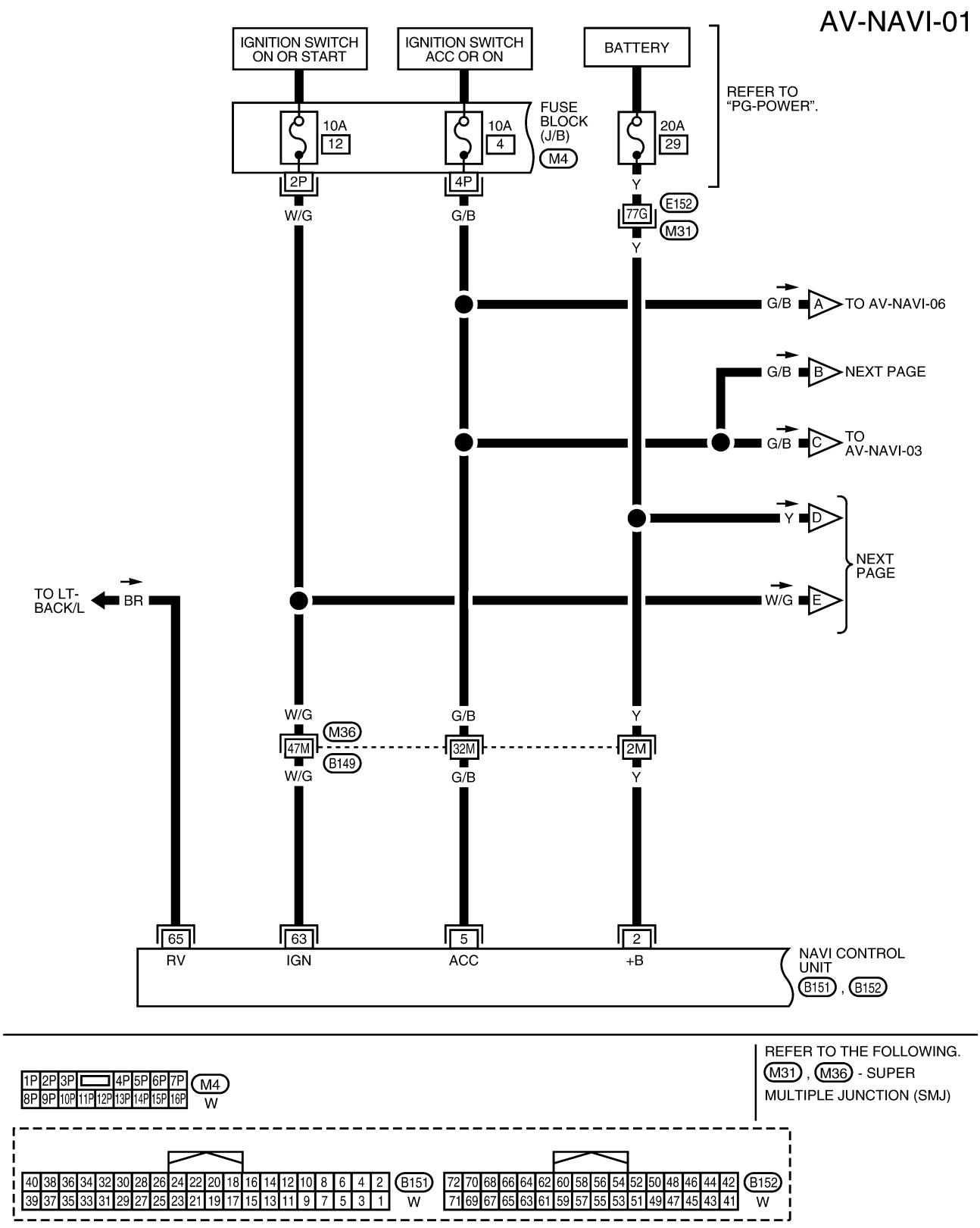
Terminals		—	Continuity
Audio unit			
Connector	Terminal		
M43	2	Ground	No
	1		
	4		
	3		

OK or NG

OK >> GO TO 2.
NG >> ● Check connector housings for disconnected or loose terminals.
● Repair harness or connector.

Wiring Diagram — NAVI —

EKS00G6H



WKWA4195E

Power Supply and Ground Circuit Check for Display Control Unit

EKS00HKF

1. CHECK FUSE

Make sure the following fuses of the display control unit are not blown.

Terminals		Power source	Fuse No.
Connector	Terminal		
M94	1	Battery power	29
	10	ACC power	4

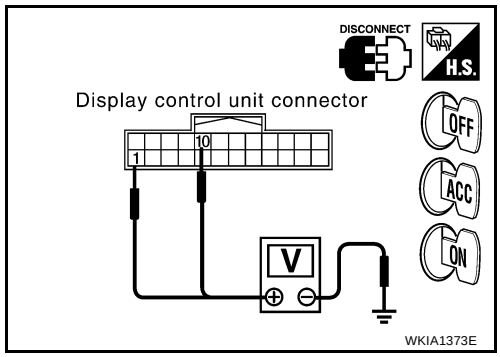
OK or NG

OK >> GO TO 2.
NG >> If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect display control unit connector M94.
2. Check voltage between connector terminals and ground as follows.

Terminals			Ignition switch position		
(+)		(–)	OFF	ACC	ON
Connector	Terminal				
M94	1	Ground	Battery voltage	Battery voltage	Battery voltage
	10		0V	Battery voltage	Battery voltage



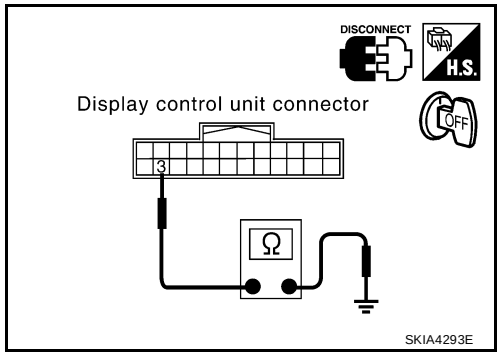
OK or NG

OK >> GO TO 3.
NG >> Check harness for open between display control unit and fuse.

3. CHECK GROUND CIRCUIT

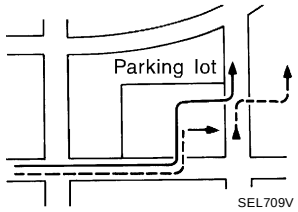
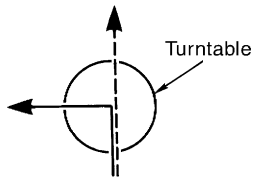
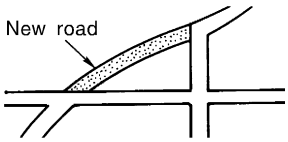
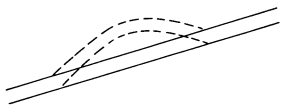
Check continuity between the following display control unit connector terminals and ground.

Terminals			Ignition switch	Continuity
Connector	Terminal	—		
M94	3	Ground	OFF	Yes



OK or NG

OK >> Inspection End.
NG >> Repair or replace harness.

Cause (condition) –: While driving ooo: Display		Driving condition	Remarks (correction, etc.)
Place	In a parking lot  SEL709V	When driving in a parking lot, or other location where there are no roads on the map, matching may place the vehicle mark on a nearby road. When the vehicle returns to the road, the vehicle mark may have deviated from the correct location. When driving in circle or turning the steering wheel repeatedly, direction errors accumulate, and the vehicle mark may deviate from the correct location.	If after travelling about 10 km (6 miles) the correct location has not been restored, perform location correction and, if necessary, direction correction.
	Turntable  SEL710V	When the ignition switch is OFF, the navigation system cannot get the signal from the gyroscope (angular speed sensor). Therefore, the displayed direction may be wrong and the correct road may not be easily returned to after rotating the vehicle on a turntable with the ignition OFF.	
	Slippery roads	On snow, wet roads, gravel, or other roads where tires may slip easily, accumulated mileage errors may cause the vehicle mark to deviate from the correct road.	
	Slopes	When parking in sloped garages, when travelling on banked roads, or in other cases where the vehicle turns when tilted, an error in the turning angle will occur, and the vehicle mark may deviate from the road.	
Map data	Road not displayed on the map screen  SEL699V	When driving on new roads or other roads not displayed on the map screen, map matching does not function correctly and matches the location to a nearby road. When the vehicle returns to a road which is on the map, the vehicle mark may deviate from the correct road.	
	Different road pattern (Changed due to repair)  ELK0201D	If the road pattern stored in the map data and the actual road pattern are different, map matching does not function correctly and matches the location to a nearby road. The vehicle mark may deviate from the correct road.	
Vehicle	Use of tire chains	When tire chains are used, the mileage is not correctly detected, and the vehicle mark may deviate from the correct road.	Drive the vehicle for a while. If the distance still deviates, adjust it by using the distance adjustment function. (If the tire chain is removed, recover the original value.)

SECTION BL

BODY, LOCK & SECURITY SYSTEM

CONTENTS

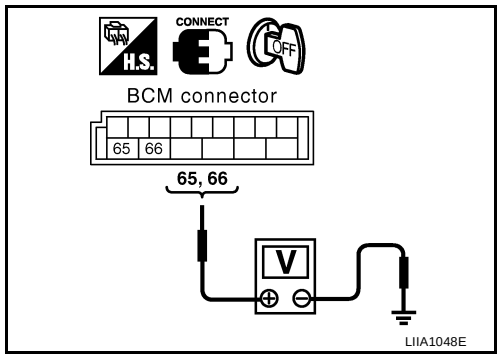
Back Door Lock Actuator and Rear Door Lock Actuator LH/RH Check

EIS007OS

1. CHECK DOOR LOCK ACTUATOR SIGNAL

1. Turn ignition switch OFF.
2. Check voltage between BCM connector M20 terminals 65, 66 and ground.

Connector	Terminals (+)	Terminals (-)	Condition	Voltage (V) (Approx.)
M20	65	Ground	Door lock/unlock switch is turned to LOCK	0 → Battery voltage
	66		Door lock/unlock switch is turned to UNLOCK	0 → Battery voltage



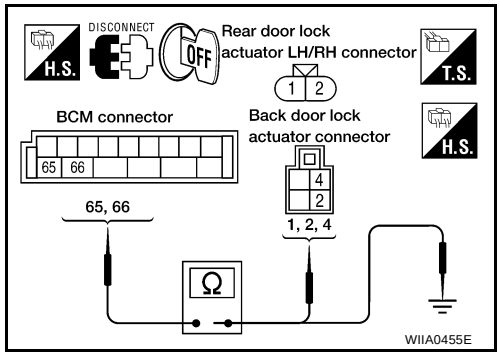
OK or NG

OK >> GO TO 2.
NG >> Replace BCM. Refer to BCS-27, "Removal and Installation" .

2. CHECK DOOR LOCK ACTUATOR HARNESS

1. Disconnect BCM and each door lock actuator.
2. Check continuity between BCM connector M20 terminals 65, 66 and rear door lock actuator LH/RH connectors D205, D305 terminals 1, 2 and back door lock actuator connector D508 terminals 2, 4.

Terminal		Continuity
65	4	Yes
66	1	Yes
66	2	Yes



3. Check continuity between BCM connector M20 terminals 65, 66 and ground.

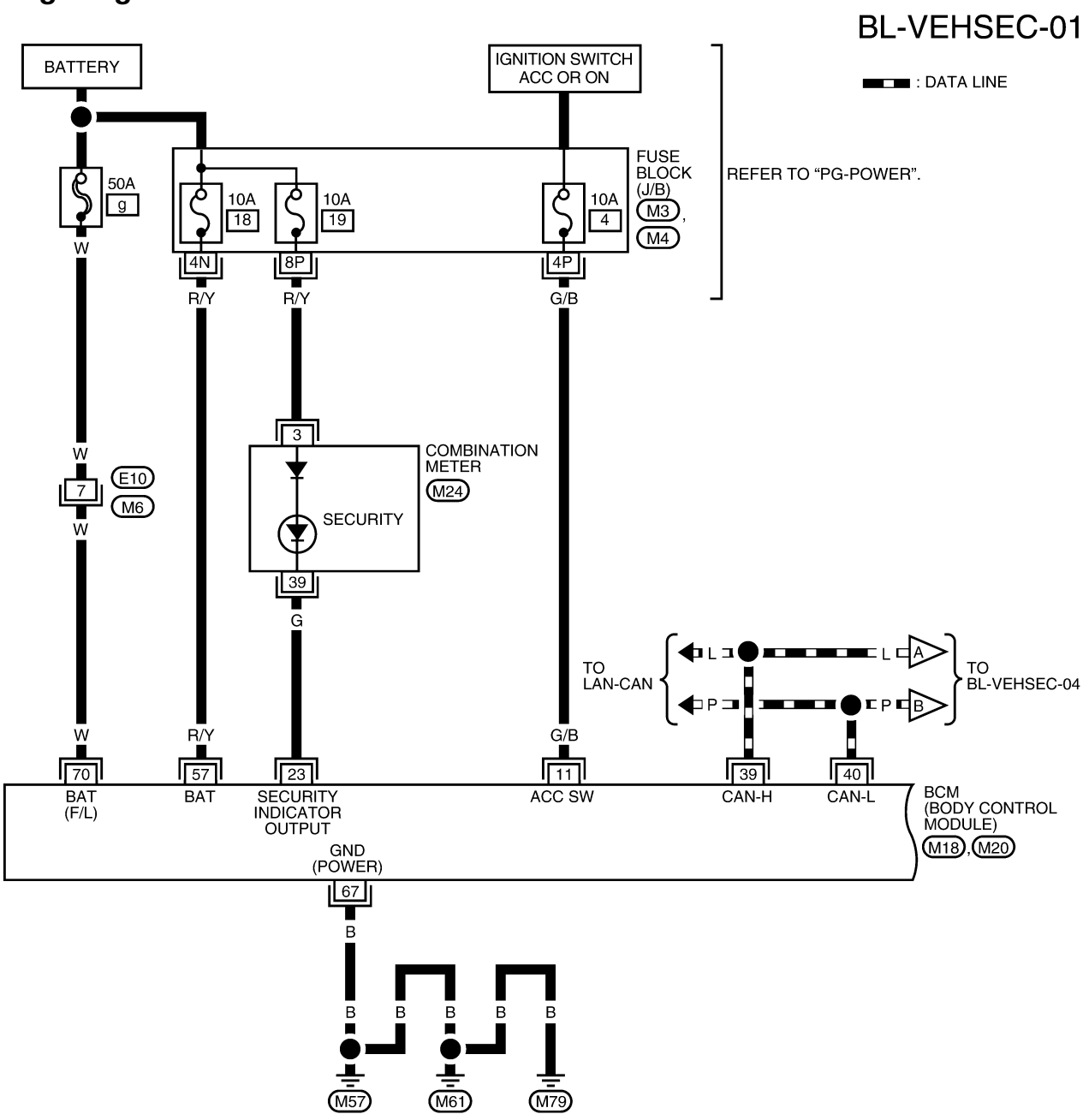
Terminals		Continuity
65	Ground	No
66		No

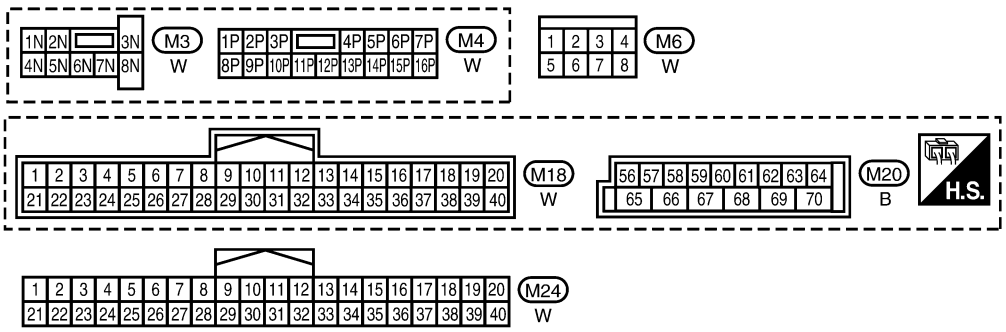
OK or NG

OK >> Replace door lock actuator. Refer to BL-99, "Component Structure" (back door lock) or BL-98, "Removal and Installation" (rear door LH/RH).
NG >> Repair or replace harness.

Wiring Diagram — VEHSEC —

EIS007PO





WIWA1616E

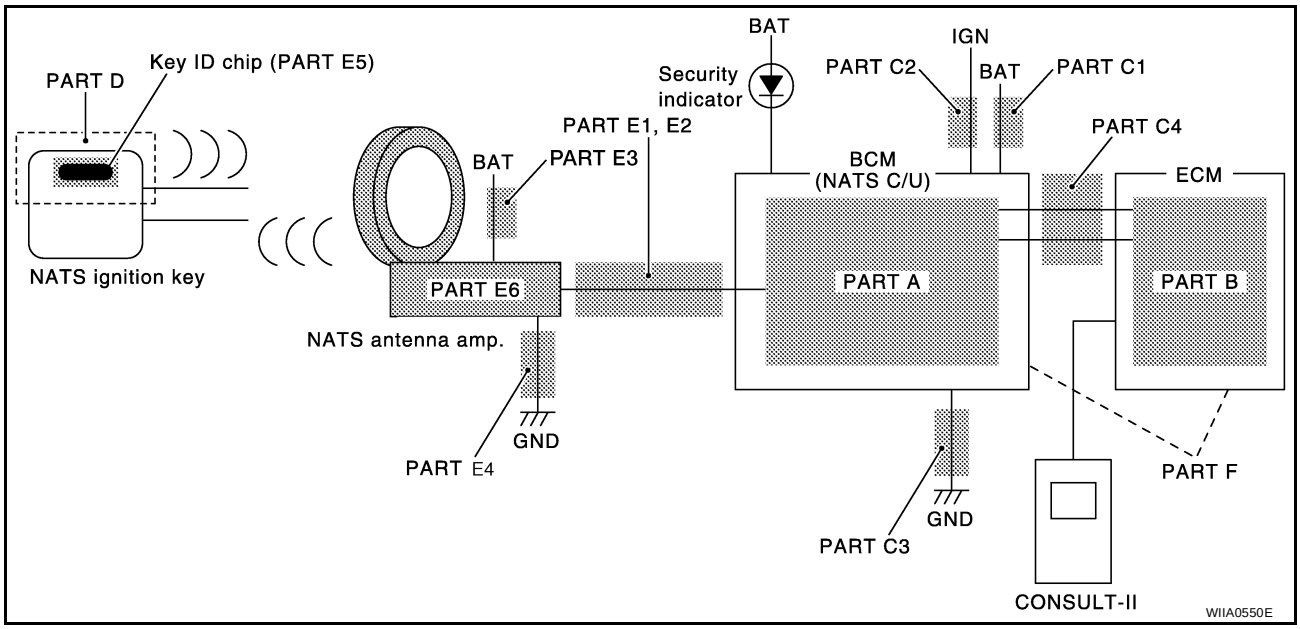
SYMPTOM MATRIX CHART 2

Non self-diagnosis related item

Symptom	Diagnostic Procedure (Reference page)	System (Malfunctioning part or mode)	Reference Part No. Of Illustration On System Diagram
Security indicator does not light up*.	PROCEDURE 6 (BL-117)	Combination meter (security indictor lamp)	—
		Open circuit between Fuse and BCM	—
		BCM	A

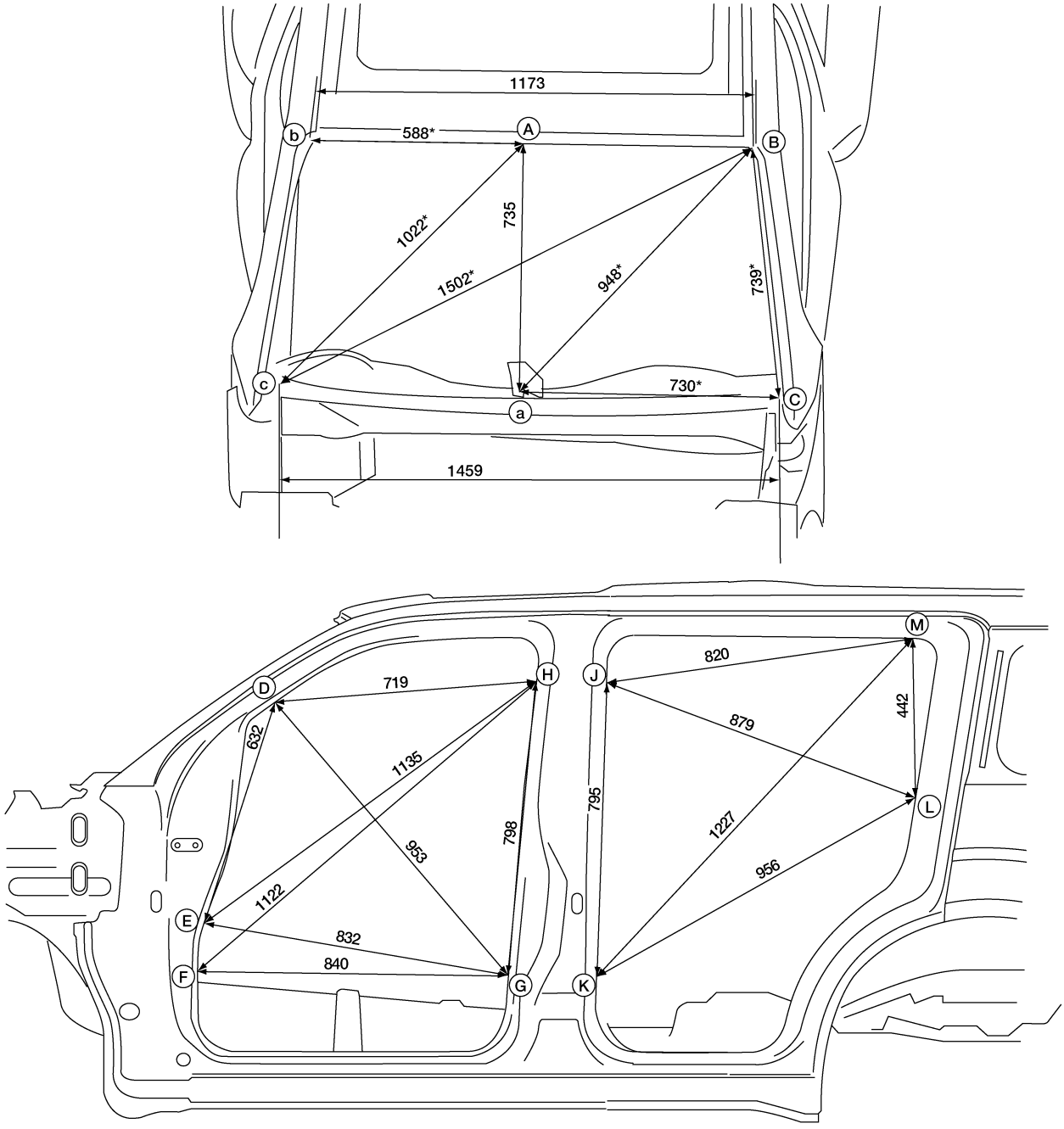
*: CONSULT-II self-diagnostic results display screen “no malfunction is detected”.

DIAGNOSTIC SYSTEM DIAGRAM



PASSENGER COMPARTMENT MEASUREMENT

Figures marked with a (*) indicate symmeterically identical dimensions on both right and left hand sides of the vehicle.



Unit: mm

LIIA1798E

PRECAUTIONS

PFP:00001

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

EFS00639

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

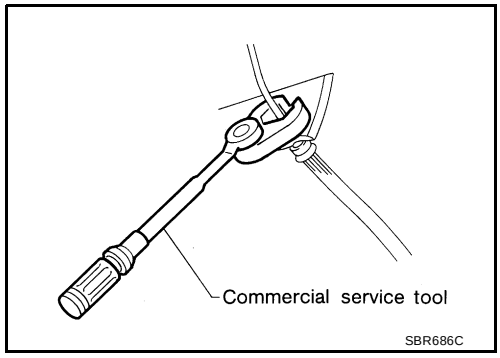
WARNING:

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

Precautions for Brake System

EFS0063A

- Recommended fluid is Genuine NISSAN Super Heavy Duty Brake Fluid or equivalent. Refer to MA-11, "Fluids and Lubricants" .
- Do not reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas.
- To clean or wash all parts of master cylinder, disc brake caliper and wheel cylinder, use clean brake fluid.
- Do not use mineral oils such as gasoline or kerosene. They will ruin rubber parts of the hydraulic system.
- Use flare nut wrench when removing and installing brake tube.
- Always check tightening torque when installing brake lines.
- Before working, turn ignition switch to OFF and disconnect connectors for ABS actuator and electric unit (control unit) or battery terminals.
- Burnish the brake contact surfaces after refinishing or replacing drums or rotors, after replacing pads or linings, or if a soft pedal occurs at very low mileage.
  Refer to BR-29, "Brake Burnishing" .



WARNING:

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

SECTION BRC
BRAKE CONTROL SYSTEM

CONTENTS

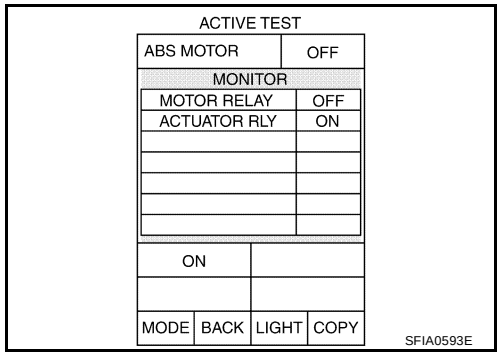
VDC/TCS/ABS

NOTE:
- If active test is performed with brake pedal depressed, pedal stroke may change. This is normal.
- "TEST IS STOPPED" is displayed approximately 10 seconds after operation starts.
- After "TEST IS STOPPED" is displayed, to perform test again, repeat Step 6.

ABS MOTOR

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

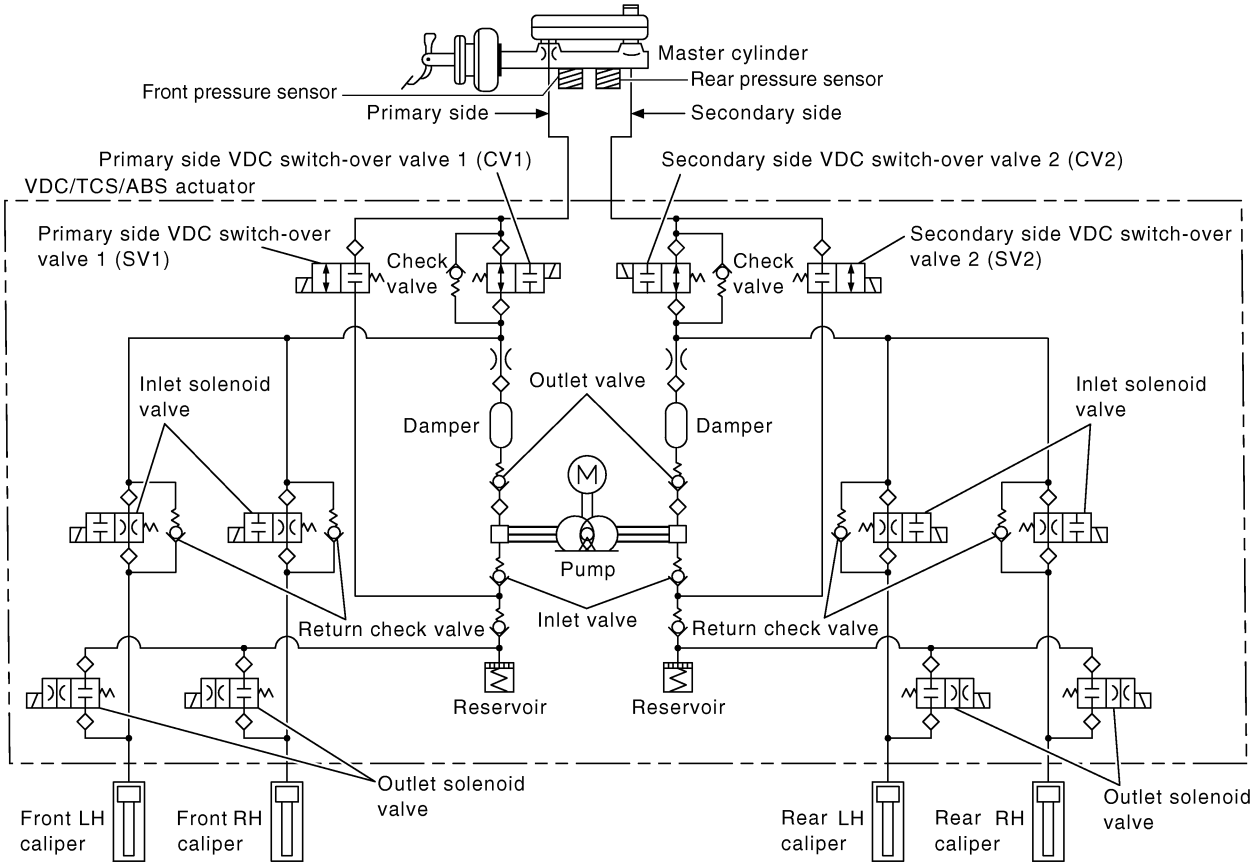
Operation	ON	OFF
MOTOR RELAY	ON	OFF
ACTUATOR RELAY	ON	ON



NOTE:
- If active test is performed with brake pedal depressed, pedal stroke may change. This is normal.
- "TEST IS STOPPED" is displayed approximately 10 seconds after operation starts.

Hydraulic Circuit Diagram

EFS0066I



Solenoid and VDC Change-Over Valve System Inspection

EFS0066Y

INSPECTION PROCEDURE

1. SELF-DIAGNOSIS RESULT CHECK

Check self-diagnosis results.

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

Is the above displayed in the self-diagnosis display items?

YES >> GO TO 2.
NO >> Inspection End.

2. CONNECTOR INSPECTION

1. Disconnect ABS actuator and electric unit (control unit) connector E125.
2. Check the terminals for deformation, disconnection, looseness or damage.

OK or NG

OK >> GO TO 3.
NG >> Repair or replace as necessary.

ENGINE COOLANT

PFP:KQ100

System Check

EBS00QCW

WARNING:

- **Never remove the radiator/reservoir cap when the engine is hot. Serious burns could occur from high pressure fluid escaping from the radiator.**
- **Wrap a thick cloth around the cap. Slowly push down and turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by pushing down and turning it all the way.**

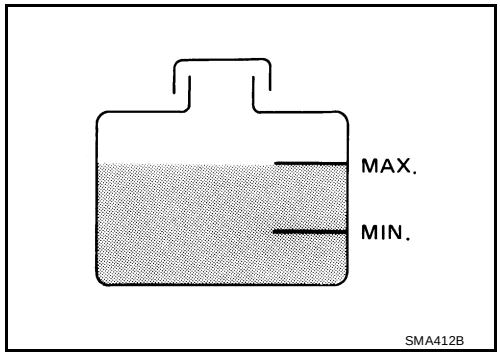
CHECKING COOLING SYSTEM HOSES

Check hoses for the following:

- Improper attachment
- Leaks
- Cracks
- Damage
- Loose connections
- Chafing
- Deterioration

CHECKING RESERVOIR LEVEL

- Check if the reservoir tank coolant level is within MIN to MAX when the engine is cool.
- Adjust coolant level if it is too much or too little.



CHECKING COOLING SYSTEM FOR LEAKS

To check for leakage, apply pressure to the cooling system using Tool.

Tool number : EG17650301 (J-33984-A)

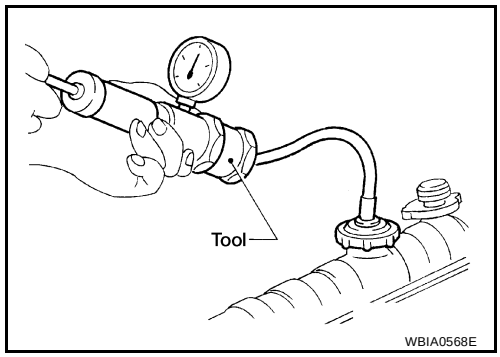
Testing pressure : 137 kPa (1.4 kg/cm^2 , 20 psi)

WARNING:

Never remove the radiator/reservoir cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator.

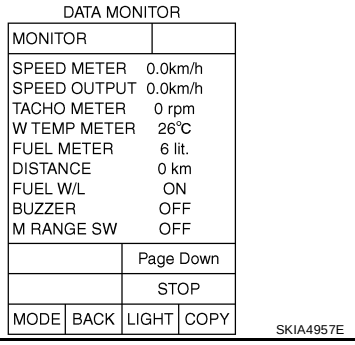
CAUTION:

Higher pressure than specified may cause radiator damage.



4. When "SELECTION FROM MENU" is selected, touch individual items to be monitored. When "MAIN SIGNALS" is selected, main items will be monitored.
5. Touch "RECORD" while monitoring, then the status of the monitored item can be recorded. To stop recording, touch "STOP".

Example)



Display Item List

Display item [Unit]	MAIN SIGNALS	SELECTION FROM MENU	Contents
SPEED METER [km/h] or [mph]	X	X	This is the angle correction value after the speed signal from the ABS actuator and electric unit (control unit) is converted into the vehicle speed.
SPEED OUTPUT [km/h] or [mph]	X	X	This is the angle correction value before the speed signal from the ABS actuator and electric unit (control unit) is converted into the vehicle speed.
TACHO METER [rpm]	X	X	This is the converted value for the engine speed signal from the ECM.
W TEMP METER [°C] or [°F]	X	X	This is the converted value for the water temp signal from the ECM.
FUEL METER [lit.]	X	X	This is the processed value for the signal (resistance value) from the fuel gauge.
DISTANCE [km]	X	X	This is the calculated value for the speed signal from the ABS actuator and electric unit (control unit), the signal (resistance signal) from the fuel gauge and fuel consumption from ECM.
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.
AIR PRES W/L [ON/OFF]		X	Indicates [ON/OFF] condition of low tire pressure indicator lamp.
SEAT BELT W/L [ON/OFF]		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.
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.
VDC/TCS IND [ON/OFF]		X	Indicates [ON/OFF] condition of VDC OFF indicator lamp.
ABS W/L [ON/OFF]		X	Indicates [ON/OFF] condition of ABS warning lamp.
SLIP IND [ON/OFF]		X	Indicates [ON/OFF] condition of SLIP indicator lamp.
BRAKE W/L [ON/OFF]		X	Indicates [ON/OFF] condition of brake warning lamp.*
KEY G W/L [ON/OFF]		X	Indicates [ON/OFF] condition of key warning lamp (green).
KEY R W/L [ON/OFF]		X	Indicates [ON/OFF] condition of key warning lamp (red).
KEY KNOB W/L [ON/OFF]		X	Indicates [ON/OFF] condition of key knob warning lamp.
M RANGE SW [ON/OFF]	X	X	Indicates [ON/OFF] condition of manual mode range switch.
NM RANGE SW [ON/OFF]	X	X	Indicates [ON/OFF] condition of except for manual mode range switch.
AT SFT UP SW [ON/OFF]	X	X	Indicates [ON/OFF] condition of A/T shift-up switch.
AT SFT DWN SW [ON/OFF]	X	X	Indicates [ON/OFF] condition of A/T shift-down switch.

Display Item List

Test item	Malfunction is detected when···
LIGHT WARN ALM	This test is able to check light warning chime operation. Light warning chime sounds for 2 seconds after touching “ON” on CONSULT-II screen.
IGN KEY WARN ALM	This test is able to check key warning chime operation. Key warning chime sounds for 2 seconds after touching “ON” on CONSULT-II screen.
SEAT BELT WARN TEST	This test is able to check seat belt warning chime operation. Seat belt warning chime sounds for 2 seconds after touching “ON” on CONSULT-II screen.

SELF-DIAGNOSTIC RESULTS

Operation Procedure

1. Touch "BCM" on "SELECT TEST ITEM" screen.
2. Touch "SELF-DIAG RESULTS" on "SELECT DIAG MODE" screen.
3. Self-diagnostic results are displayed.

Display Item List

Monitored Item	CONSULT-II display	Description
CAN communication	CAN communication [U1000]	Malfunction is detected in CAN communication.

NOTE:
If "CAN communication [U1000]" is indicated, after printing the monitor item, go to "CAN System". Refer to LAN-25, "CAN COMMUNICATION" .

All Warning Chimes Do Not Operate

EKS00FZ1

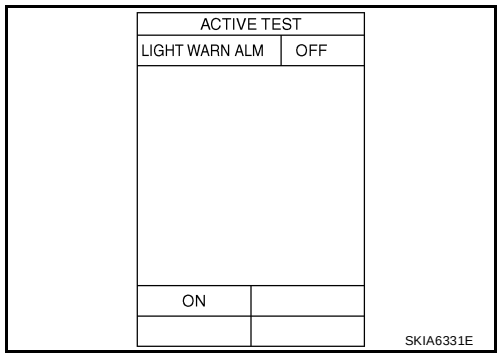
1. CHECK BCM CHIME OPERATION

Select "BUZZER" on CONSULT-II, and perform "LIGHT WARN ALM", "IGN KEY WARN ALM", OR "SEAT BELT WARN TEST" active test.

Does chime sound?

YES >> Replace the BCM. Refer to BCS-27, "Removal and Installation" .

NO >> Replace the combination meter. Refer to IP-14, "COMBINATION METER" .



- During acceleration

The knock sensor retard system is designed only for emergencies. The basic ignition timing is programmed within the anti-knocking zone, if recommended fuel is used under dry conditions. The retard system does not operate under normal driving conditions. If engine knocking occurs, the knock sensor monitors the condition. The signal is transmitted to the ECM. The ECM retards the ignition timing to eliminate the knocking condition.

Fuel Cut Control (at No Load and High Engine Speed)

UBS00K3A

INPUT/OUTPUT SIGNAL CHART

Sensor	Input Signal to ECM	ECM function	Actuator
Park/neutral position (PNP) switch	Neutral position	Fuel cut control	Fuel injector
Accelerator pedal position sensor	Accelerator pedal position		
Engine coolant temperature sensor	Engine coolant temperature		
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed		
Wheel sensor	Vehicle speed*		

*: This signal is sent to the ECM through CAN communication line.

SYSTEM DESCRIPTION

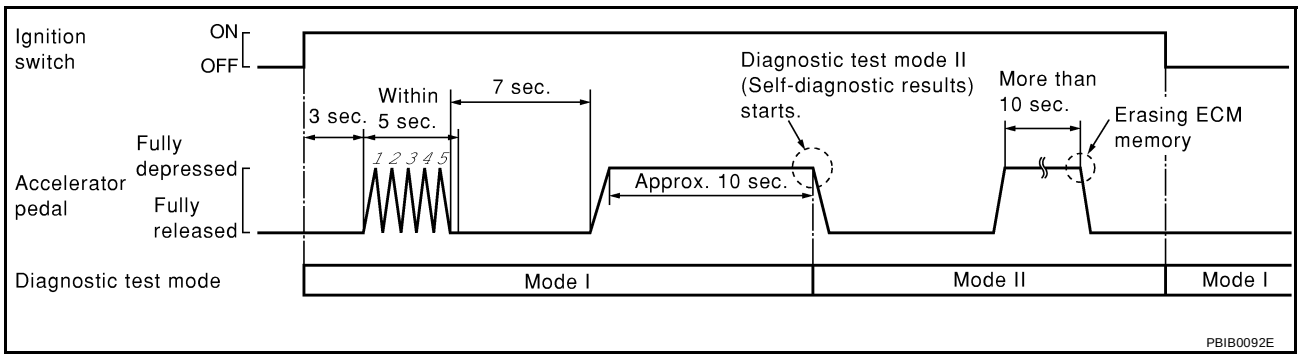
If the engine speed is above 1,800 rpm under no load (for example, the shift position is neutral and engine speed is over 1,800 rpm) fuel will be cut off after some time. The exact time when the fuel is cut off varies based on engine speed.
Fuel cut will be operated until the engine speed reaches 1,500 rpm, then fuel cut will be cancelled.

NOTE:
This function is different from deceleration control listed under EC-24, "Multiport Fuel Injection (MFI) System" .

NOTE:
Do not release the accelerator pedal for 10 seconds if MIL may start blinking on the halfway of this 10 seconds. This blinking is displaying SRT status and is continued for another 10 seconds. For the details, refer to EC-56, "How to Set SRT Code".

4. Fully release the accelerator pedal.
   ECM has entered to Diagnostic Test Mode II (Self-diagnostic results).

NOTE:
Wait until the same DTC (or 1st trip DTC) appears to confirm all DTCs certainly.



How to Erase Diagnostic Test Mode II (Self-diagnostic Results)

1. Set ECM in Diagnostic Test Mode II (Self-diagnostic results). Refer to EC-62, "How to Set Diagnostic Test Mode II (Self-diagnostic Results)" .
2. Fully depress the accelerator pedal and keep it for more than 10 seconds.
   The emission-related diagnostic information has been erased from the backup memory in the ECM.
3. Fully release the accelerator pedal, and confirm the DTC 0000 is displayed.

DIAGNOSTIC TEST MODE I — BULB CHECK

In this mode, the MIL on the instrument panel should stay ON. If it remains OFF, check the bulb. Refer to DI-33, "WARNING LAMPS" or see EC-673 .

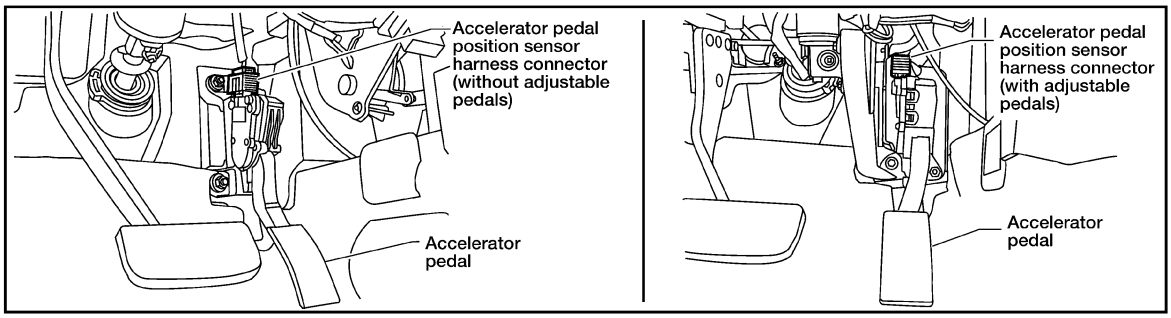
DIAGNOSTIC TEST MODE I — MALFUNCTION WARNING

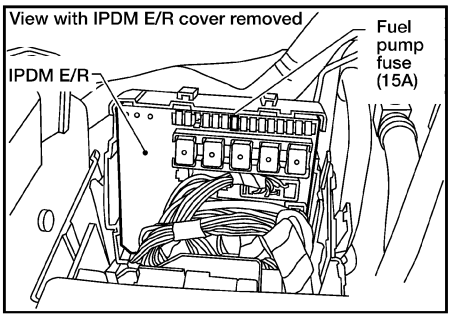
MIL	Condition
ON	When the malfunction is detected.
OFF	No malfunction.

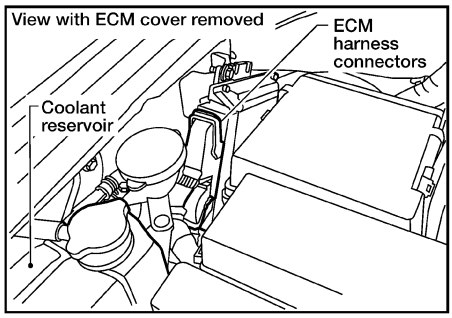
This DTC number is clarified in Diagnostic Test Mode II (SELF-DIAGNOSTIC RESULTS)

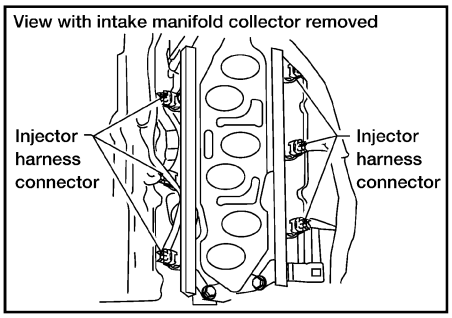
DIAGNOSTIC TEST MODE II — SELF-DIAGNOSTIC RESULTS

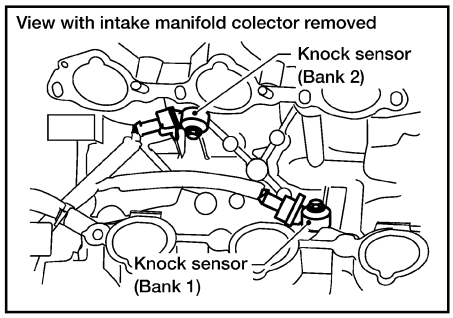
In this mode, the DTC and 1st trip DTC are indicated by the number of blinks of the MIL as shown below. The DTC and 1st trip DTC are displayed at the same time. If the MIL does not illuminate in diagnostic test mode I (Malfunction warning), all displayed items are 1st trip DTCs. If only one code is displayed when the MIL illuminates in diagnostic test mode II (SELF-DIAGNOSTIC RESULTS), it is a DTC; if two or more codes are displayed, they may be either DTCs or 1st trip DTCs. DTC No. is same as that of 1st trip DTC. These uniden-

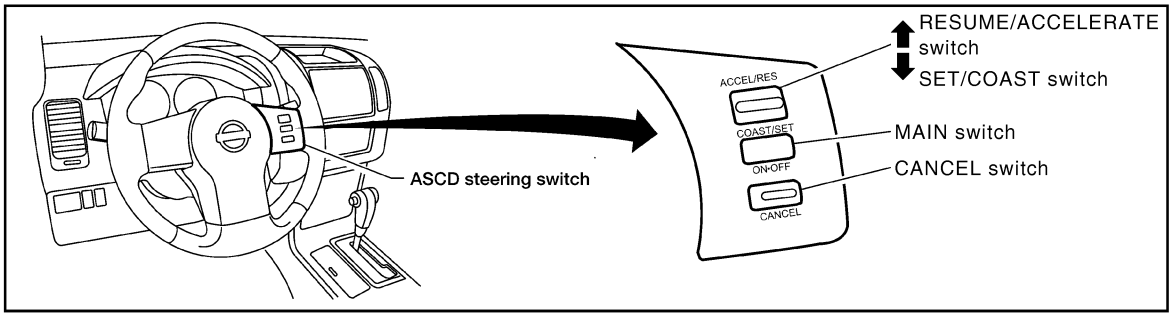

Accelerator pedal position sensor harness connector (without adjustable pedals)
Accelerator pedal
Accelerator pedal position sensor harness connector (with adjustable pedals)
Accelerator pedal


View with IPDM E/R cover removed
Fuel pump fuse (15A)
IPDM E/R


View with ECM cover removed
ECM harness connectors
Coolant reservoir


View with intake manifold collector removed
Injector harness connector
Injector harness connector


View with intake manifold colector removed
Knock sensor (Bank 2)
Knock sensor (Bank 1)

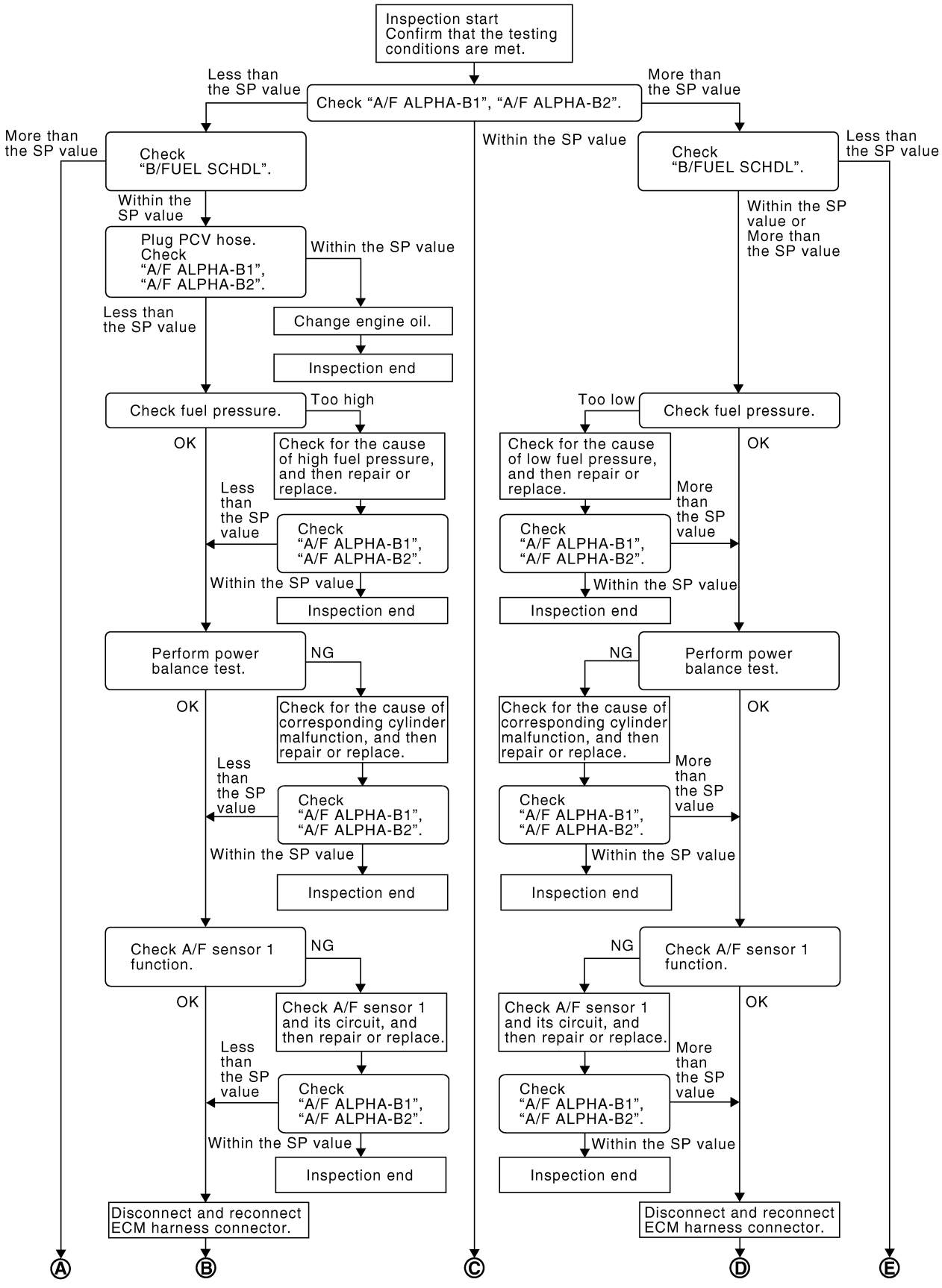

RESUME/ACCELERATE switch
SET/COAST switch
ACCEL/RES
COAST/SET
ON-OFF
CANCEL
MAIN switch
CANCEL switch
ASCD steering switch

PBIB2646E

Diagnostic Procedure

UBS00K4J

OVERALL SEQUENCE



PBIB2268E

DTC Confirmation Procedure

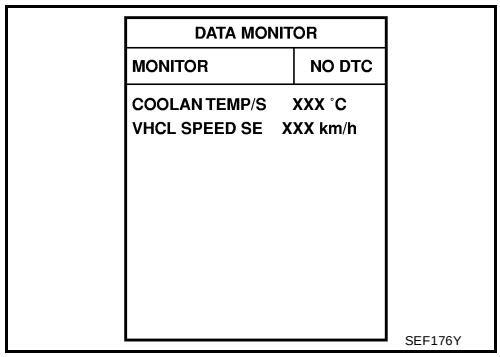
UBS00K54

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 between 10.5V and 16V at idle.

WITH CONSULT-II

1. Turn ignition switch ON and select “DATA MONITOR” mode with CONSULT-II.
2. Start engine and warm it up to the normal operating temperature.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Start the engine and keep the engine speed between 3,500 rpm and 4,000 rpm for at least 1 minute under no load.
5. Let engine idle for 1 minute.
6. If 1st trip DTC is detected, go to EC-175, "Diagnostic Procedure" .



WITH GST

Follow the procedure “WITH CONSULT-II” above.

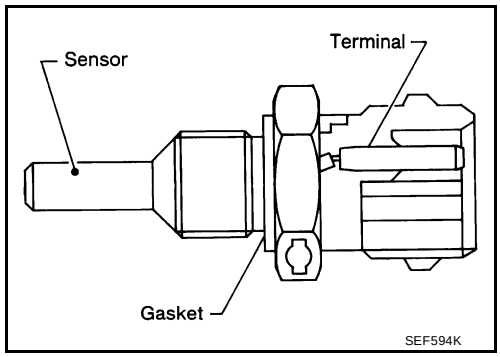
DTC P0117, P0118 ECT SENSOR

PFP:22630

Component Description

UBS00K5X

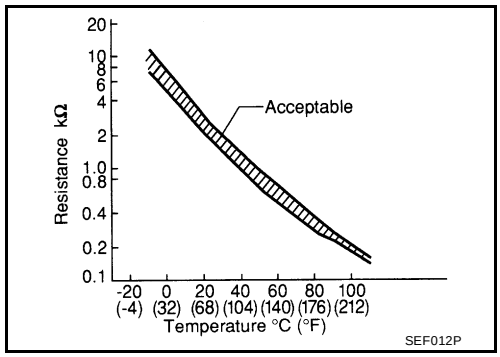
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



<Reference data>

Engine coolant temperature °C (°F)	Voltage* V	Resistance kΩ
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.1 - 2.9
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260

*: This data is reference value and is measured between ECM terminal 73 (Engine coolant temperature sensor) 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.

On Board Diagnosis Logic

UBS00K5Y

These self-diagnoses have the one trip detection logic.

DTC No.	Trouble Diagnosis Name	DTC Detecting Condition	Possible Cause
P0117 0117	Engine coolant temperature sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	● Harness or connectors (The sensor circuit is open or shorted.) ● Engine coolant temperature sensor
P0118 0118	Engine coolant temperature sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	

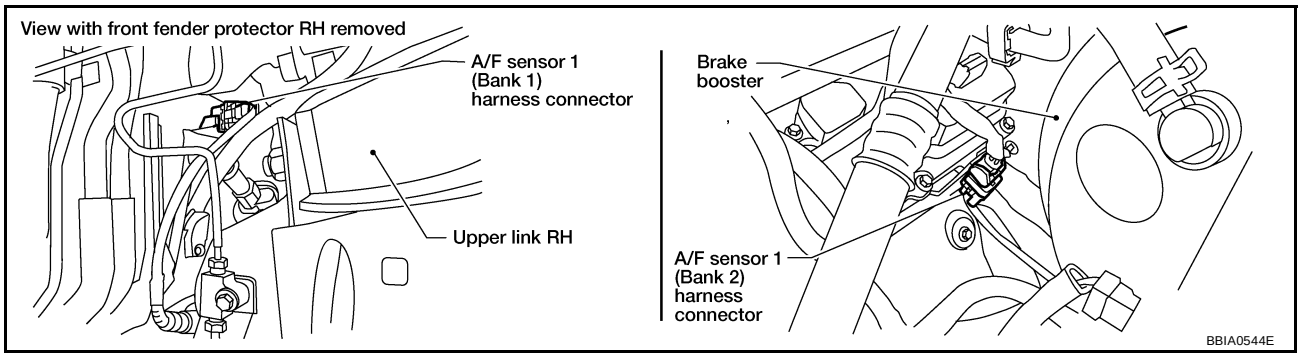
FAIL-SAFE MODE

When the malfunction is detected, the ECM enters fail-safe mode and the MIL lights up.

Detected items	Engine operating condition in fail-safe mode	
Engine coolant temperature sensor circuit	Engine coolant temperature will be determined by ECM based on the time after turning ignition switch ON or START. CONSULT-II displays the engine coolant temperature decided by ECM.	
	Condition	Engine coolant temperature decided (CONSULT-II display)
	Just as ignition switch is turned ON or START	40°C (104°F)
	More than approx. 4 minutes after ignition ON or START	80°C (176°F)
	Except as shown above	40 - 80°C (104 - 176°F) (Depends on the time)
	When the fail-safe system for engine coolant temperature sensor is activated, the cooling fan operates while engine is running.	

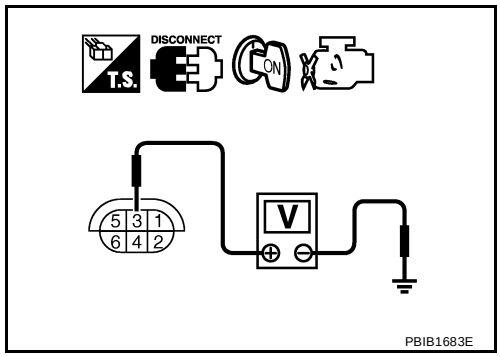
2. CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

1. Disconnect A/F sensor 1 harness connector.



2. Turn ignition switch ON.
3. Check voltage between A/F sensor 1 terminal 3 and ground with CONSULT-II 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 E5, F14
- IPDM E/R connector E119
- 10A fuse
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

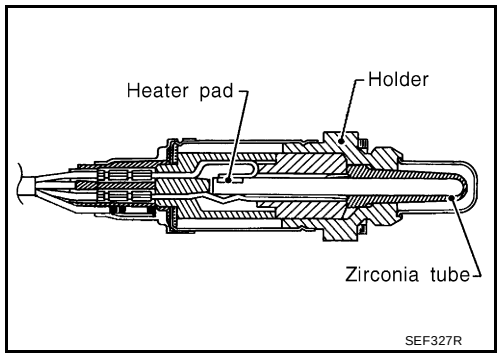
DTC P0138, P0158 HO2S2

PFP:226A0

Component Description

UBS00K6T

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas on each bank.
Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.
This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.
Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



CONSULT-II Reference Value in Data Monitor Mode

UBS00K6U

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
HO2S2 (B1) HO2S2 (B2)	● Revving engine from idle to 3,000 rpm quickly after the following conditions are met	0 - 0.3V ←→ Approx. 0.6 - 1.0V
HO2S2 MNTR (B1) HO2S2 MNTR (B2)	– Engine: After warming up – Keeping engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load.	LEAN ←→ RICH

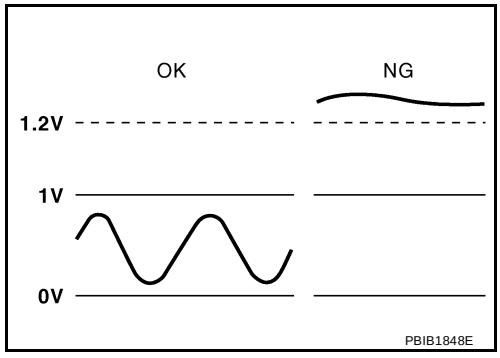
On Board Diagnosis Logic

UBS00K6V

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time.

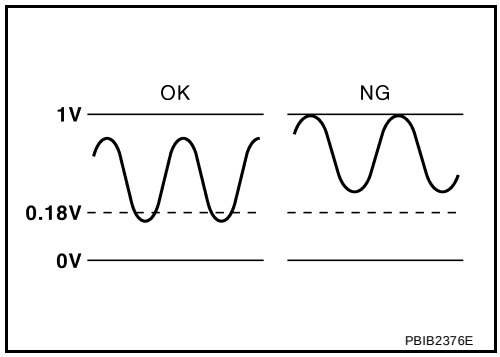
MALFUNCTION A

To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the voltage is unusually high during the various driving condition such as fuel-cut.



MALFUNCTION B

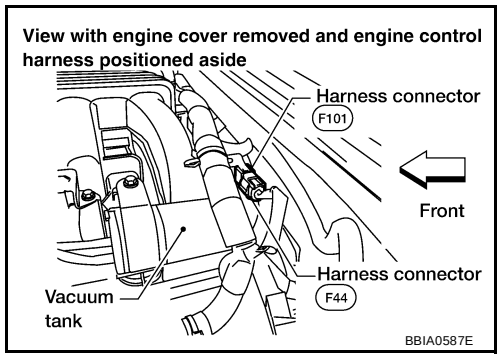
To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the minimum voltage of sensor is sufficiently low during the various driving condition such as fuel-cut.



9. CHECK FUNCTION OF FUEL INJECTOR-I

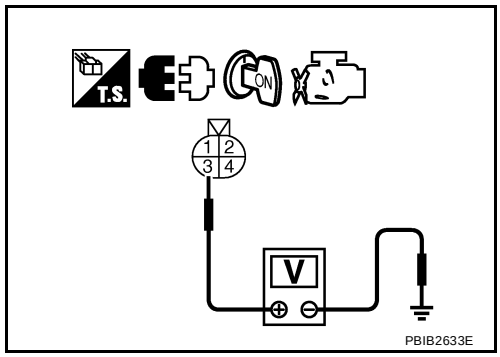
Without CONSULT-II

1. Stop engine.
2. Disconnect harness connector F44, F101
3. Turn ignition switch ON.



4. Check voltage between harness connector F44 terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage



5. Turn ignition switch OFF.
6. Disconnect ECM harness connector.
7. Check harness continuity between harness connector F44 and ECM as follows.
   Refer to Wiring Diagram.

Cylinder	Harness connector F44 terminal	ECM terminal
1	2	23
3	1	22
5	4	21

Continuity should exist.

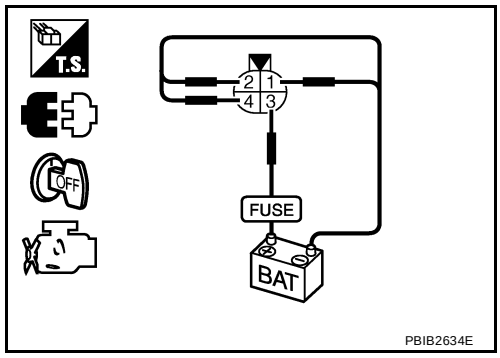
8. Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 10.
NG >> Perform trouble diagnosis for FUEL INJECTOR, refer to EC-633 .

10. CHECK FUNCTION OF FUEL INJECTOR-II

Provide battery voltage between harness connector F101 as follows and then interrupt it. Listen to each fuel injector operating sound.



Cylinder	Harness connector F101 terminal	
	(+)	(–)
1	3	2
3	3	1
5	3	4

Operating sound should exist.

OK or NG

OK >> GO TO 12.
NG >> Perform trouble diagnosis for FUEL INJECTOR, refer to EC-633 .

14. CHECK IGNITION TIMING

Check the following items. Refer to EC-70, "Basic Inspection" .

Items	Specifications
Target idle speed	625 ± 50 rpm (in P or N position)
Ignition timing	15 ± 5° BTDC (in P or N position)

OK or NG

OK >> GO TO 15.
NG >> Follow the EC-70, "Basic Inspection" .

CAUTION:

- **Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.**
- **If the fuel filler cap is not tightened properly, the MIL may come on.**
- **Use only a genuine NISSAN rubber tube as a replacement.**

DTC Confirmation Procedure

UBS00K94

NOTE:

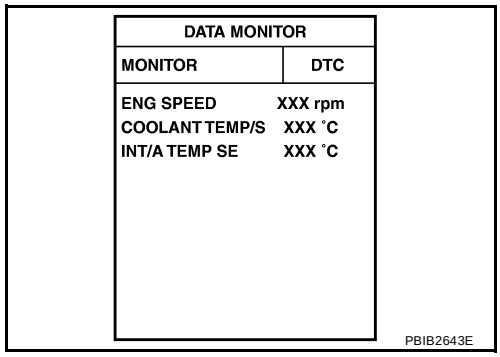
- If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

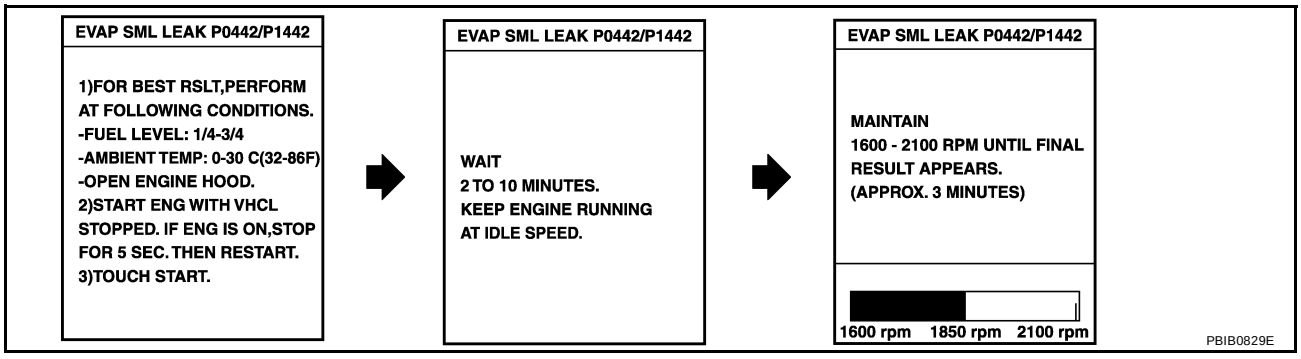
- **Perform "DTC WORK SUPPORT" when the fuel level is between 1/4 and 3/4 full, and vehicle is placed on flat level surface.**
- **Always perform test at a temperature of 0 to 30°C (32 to 86°F).**

WITH CONSULT-II

1. Turn ignition switch ON.
2. Turn ignition switch OFF and wait at least 10 seconds.
3. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-II.



4. Make sure that the following conditions are met.
   COOLAN TEMP/S: 0 - 70°C (32 - 158°F)
   INT/A TEMP SE: 0 - 30°C (32 - 86°F)
5. Select "EVP SML LEAK P0442/P1442" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-II.
   Follow the instruction displayed.



NOTE:

If the engine speed cannot be maintained within the range displayed on the CONSULT-II screen, go to EC-70, "Basic Inspection" .

DTC Confirmation Procedure

UBS00K9O

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-II

1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON and select “DATA MONITOR” mode with CONSULT-II.
3. Start engine and wait at least 40 seconds.
   NOTE:
   Do not depress accelerator pedal even slightly.
   If 1st trip DTC is detected, go to EC-423, "Diagnostic Procedure" .

DATA MONITOR	
MONITOR	NO DTC
ENG SPEED	XXX rpm
COOLAN TEMP/S	XXX °C
FUEL T/TMP SE	XXX °C

SEF194Y

WITH GST

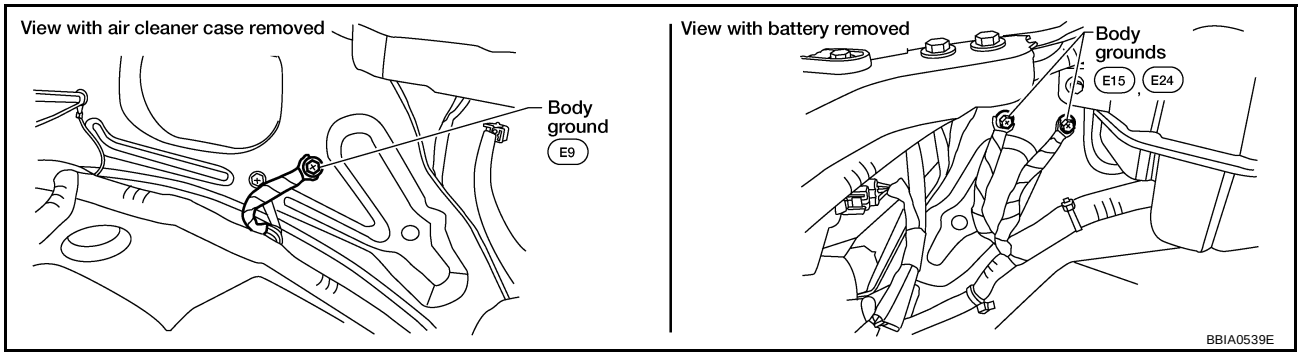
Follow the procedure “WITH CONSULT-II” above.

Diagnostic Procedure

UBS00K9P

1. CHECK GROUND CONNECTIONS

1. Turn ignition switch OFF.
2. Loosen and retighten three ground screws on the body. Refer to EC-151, "Ground Inspection" .



OK or NG

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

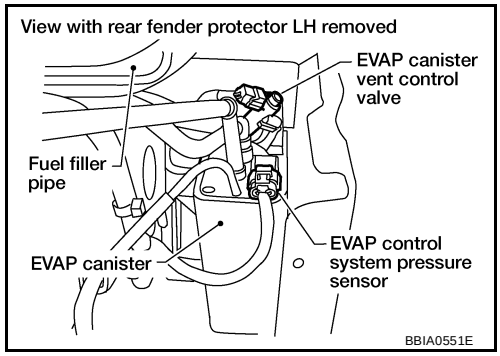
2. CHECK EVPA CONTROL SYSTEM PRESSURE SENSOR CONNECTOR FOR WATER

1. Disconnect EVAP control system pressure sensor harness connector.
2. Check sensor harness connector for water.

Water should not exist.

OK or NG

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



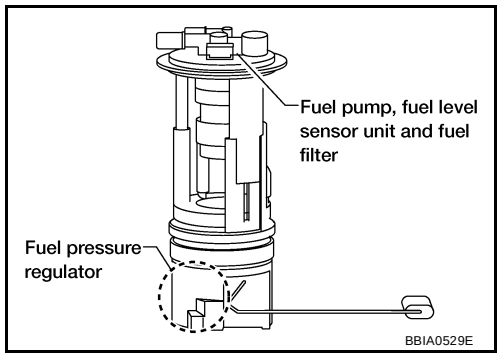
DTC P0462, P0463 FUEL LEVEL SENSOR

PFP:25060

Component Description

UBS00KAM

The fuel level sensor is mounted in the fuel level sensor unit. The sensor detects a fuel level in the fuel tank and transmits a signal to the combination meter. The combination meter sends the fuel level sensor signal to the ECM through CAN communication line.
It consists of two parts, one is mechanical float and the other is variable resistor. Fuel level sensor output voltage changes depending on the movement of the fuel mechanical float.



On Board Diagnosis Logic

UBS00KAN

NOTE:

- **If DTC P0462 or P0463 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-153, "DTC U1000, U1001 CAN COMMUNICATION LINE" .**
- **If DTC P0462 or P0463 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to EC-156, "DTC U1010 CAN COMMUNICATION" .**

This diagnosis indicates the former, to detect open or short circuit malfunction.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0462 0462	Fuel level sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	● Harness or connectors (The CAN communication line is open or shorted) ● Harness or connectors (The sensor circuit is open or shorted) ● Combination meter ● Fuel level sensor
P0463 0463	Fuel level sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	

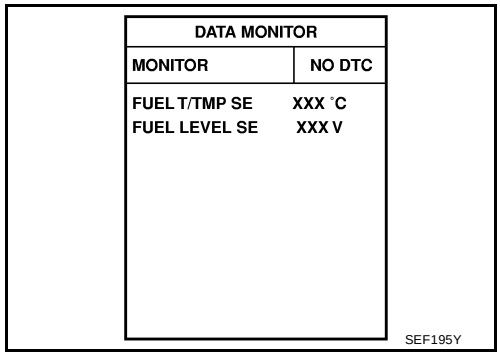
DTC Confirmation Procedure

UBS00KAO

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 11V at ignition switch ON.

WITH CONSULT-II

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode with CONSULT-II.
3. Wait at least 5 seconds.
4. If 1st trip DTC is detected, go to EC-460, "Diagnostic Procedure" .



WITH GST

Follow the procedure “WITH CONSULT-II” above.

On Board Diagnosis Logic

UBS00KDI

If the cooling fan or another component in the cooling system malfunctions, engine coolant temperature will rise.
When the engine coolant temperature reaches an abnormally high temperature condition, a malfunction is indicated.
This self-diagnosis has the one trip detection logic.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1217 1217	Engine over temperature (Overheat)	● Cooling fan does not operate properly (Overheat). ● Cooling fan system does not operate properly (Overheat). ● Engine coolant level was not added to the system using the proper filling method. ● Engine coolant is not within the specified range.	● Harness or connectors (The cooling fan circuit is open or shorted.) ● IPDM E/R ● Cooling fan ● Cooling fan (Crankshaft driven) ● Radiator hose ● Radiator ● Radiator cap ● Reservoir tank ● Reservoir tank cap ● Water pump ● Thermostat For more information, refer to EC-501, "Main 12 Causes of Overheating" .

CAUTION:
When a malfunction is indicated, be sure to replace the coolant. Refer to CO-10, "Changing Engine Coolant" . Also, replace the engine oil. Refer to LU-9, "Changing Engine Oil" .

1. **Fill radiator with coolant up to specified level with a filling speed of 2 liters per minute. Be sure to use coolant with the proper mixture ratio. Refer to MA-12, "ANTI-FREEZE COOLANT MIXTURE RATIO" .**
2. **After refilling coolant, run engine to ensure that no water-flow noise is emitted.**

Overall Function Check

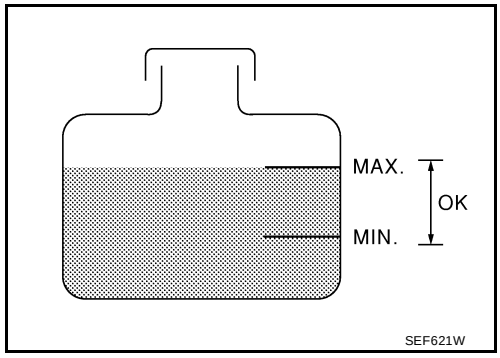
UBS00KDJ

Use this procedure to check the overall function of the cooling fan. During this check, a DTC might not be confirmed.

WARNING:
Never remove the radiator cap and/or reservoir tank cap when the engine is hot. Serious burns could be caused by high pressure fluid escaping from the radiator and/or reservoir tank.
Wrap a thick cloth around cap. Carefully remove the cap by turning it a quarter turn to allow built-up pressure to escape. Then turn the cap all the way off.

WITH CONSULT-II

1. Check the coolant level in the reservoir tank and radiator.
   Allow engine to cool before checking coolant level.
   If the coolant level in the reservoir tank and/or radiator is below the proper range, skip the following steps and go to EC-499, "Diagnostic Procedure" .
2. Confirm whether customer filled the coolant or not. If customer filled the coolant, skip the following steps and go to EC-499, "Diagnostic Procedure" .
3. Turn ignition switch ON.



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 ECMs transistor. Use a ground other than ECM terminals, such as the ground.

TERMINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
49	P	Sensor power supply (Refrigerant pressure sensor/Battery current sensor)	**[Ignition switch: ON]**	Approximately 5V
67	B	Sensor ground	**[Engine is running]** ● **Warm-up condition** ● Idle speed	Approximately 0V
71	R	Battery current sensor	**[Engine is running]** ● Battery: Fully charged* ● Idle speed	Approximately 2.6 - 3.5 V

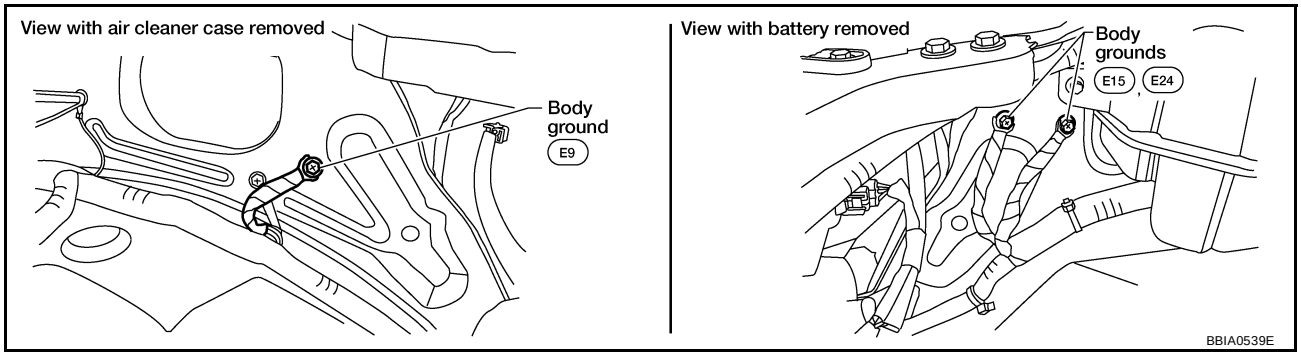
*: Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to SC-5, "SPECIFIC GRAVITY CHECK" .

Diagnostic Procedure

UBS00KU3

1. CHECK GROUND CONNECTIONS

1. Turn ignition switch OFF.
2. Loosen and retighten three ground screws on the body.
   Refer to EC-151, "Ground Inspection" .



OK or NG

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

2. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT-II

1. Disconnect ECM harness connector.
2. Disconnect IPDM E/R harness connector E122.
3. Check continuity between ECM terminal 104 and IPDM E/R terminal 47.
   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 3.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK FUSE

1. Disconnect 20A fuse.
2. Check 20A fuse for blown.

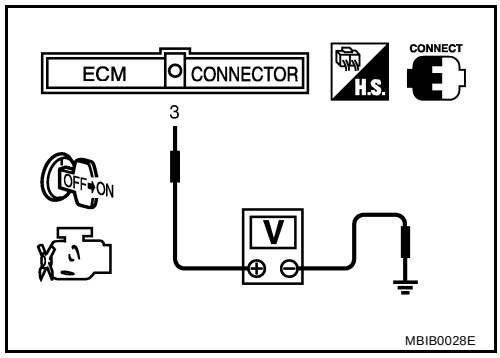
OK or NG

OK >> GO TO 7.
NG >> Replace 20A fuse.

4. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-I

1. Check voltage between ECM terminal 3 and ground under the following conditions with CONSULT-II or tester.

Ignition switch	Voltage
OFF	Approximately 0V
ON	Battery voltage (11 - 14V)



OK or NG

OK >> GO TO 7.
NG >> GO TO 5.

5. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-II

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Disconnect IPDM E/R harness connector E119.
4. Check continuity between ECM terminal 3 and IPDM E/R terminal 6.
   Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

OK >> GO TO 7.
NG >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E2, F32
- Harness for open or short between ECM and IPDM E/R

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

DTC Confirmation Procedure

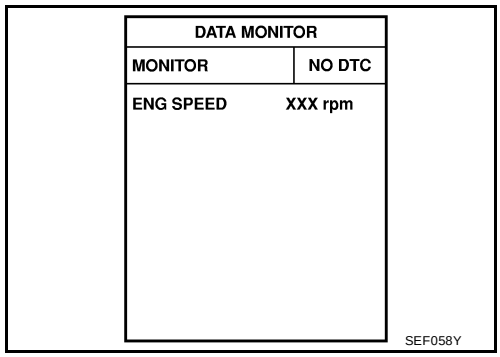
UBS00KHQ

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 10V at idle.

WITH CONSULT-II

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode with CONSULT-II.
3. Start engine and let it idle for 1 second.
4. If DTC is detected, go to EC-605, "Diagnostic Procedure" .



WITH GST

Follow the procedure “WITH CONSULT-II” above.

10. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F101, F44
- Harness for open or short between fuel injector and ECM

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

11. CHECK FUEL INJECTOR

Refer to EC-639, "Component Inspection" .

OK or NG

OK >> GO TO 12.
NG >> Replace fuel injector.

12. CHECK INTERMITTENT INCIDENT

Refer to EC-144, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" .

>> **INSPECTION END**

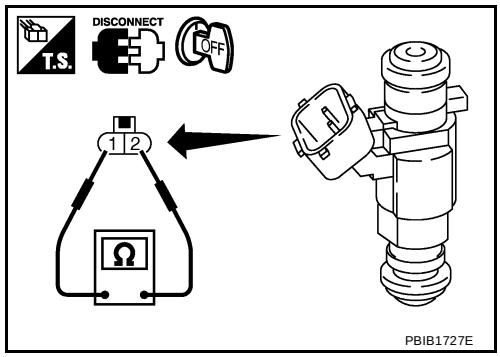
Component Inspection

UBS00KIA

FUEL INJECTOR

1. Disconnect injector harness connector.
2. Check resistance between terminals as shown in the figure.

Resistance: 11.1 - 14.5Ω [at 10 - 60°C (50 - 140°F)]



Removal and Installation

UBS00KIB

FUEL INJECTOR

Refer to EM-35, "FUEL INJECTOR AND FUEL TUBE" .

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Fuel Pressure

UBS00KIZ

Fuel pressure at idling kPa (kg/cm^2 , psi)	Approximately 350 (3.57, 51)

Idle Speed and Ignition Timing

UBS00KJ0

Target idle speed	No load* (in P or N position)	625 ± 50 rpm
Air conditioner: ON	In P or N position	775 rpm or more
Ignition timing	In P or N position	15 ± 5° BTDC

*: Under the following conditions:

- Air conditioner switch: OFF
- Electric load: OFF (Lights, heater fan & rear window defogger)
- Steering wheel: Kept in straight-ahead position

Calculated Load Value

UBS00KJ1

Condition	Calculated load value% (Using CONSULT-II or GST)
At idle	5 - 35
At 2,500 rpm	5 - 35

Mass Air Flow Sensor

UBS00KJ2

Supply voltage	Battery voltage (11 - 14V)
Output voltage at idle	0.9 - 1.2*V
Mass air flow (Using CONSULT-II or GST)	2.0 - 6.0 g·m/sec at idle* 7.0 - 20.0 g·m/sec at 2,500 rpm*

*: Engine is warmed up to normal operating temperature and running under no load.

Intake Air Temperature Sensor

UBS00KJ3

Temperature °C (°F)	Resistance kΩ
25 (77)	1.800 - 2.200

Engine Coolant Temperature Sensor

UBS00KJ4

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

Air Fuel Ratio (A/F) Sensor 1 Heater

UBS00KJ5

Resistance [at 25°C (77°F)]	2.3 - 4.3Ω

Heated Oxygen sensor 2 Heater

UBS00KJ6

Resistance [at 25°C (77°F)]	9.9 - 13.3Ω

Crankshaft Position Sensor (POS)

UBS00KJ7

Refer to EC-365, "Component Inspection" .

Camshaft Position Sensor (PHASE)

UBS00KJ8

Refer to EC-374, "Component Inspection" .

Throttle Control Motor

UBS00KJ9

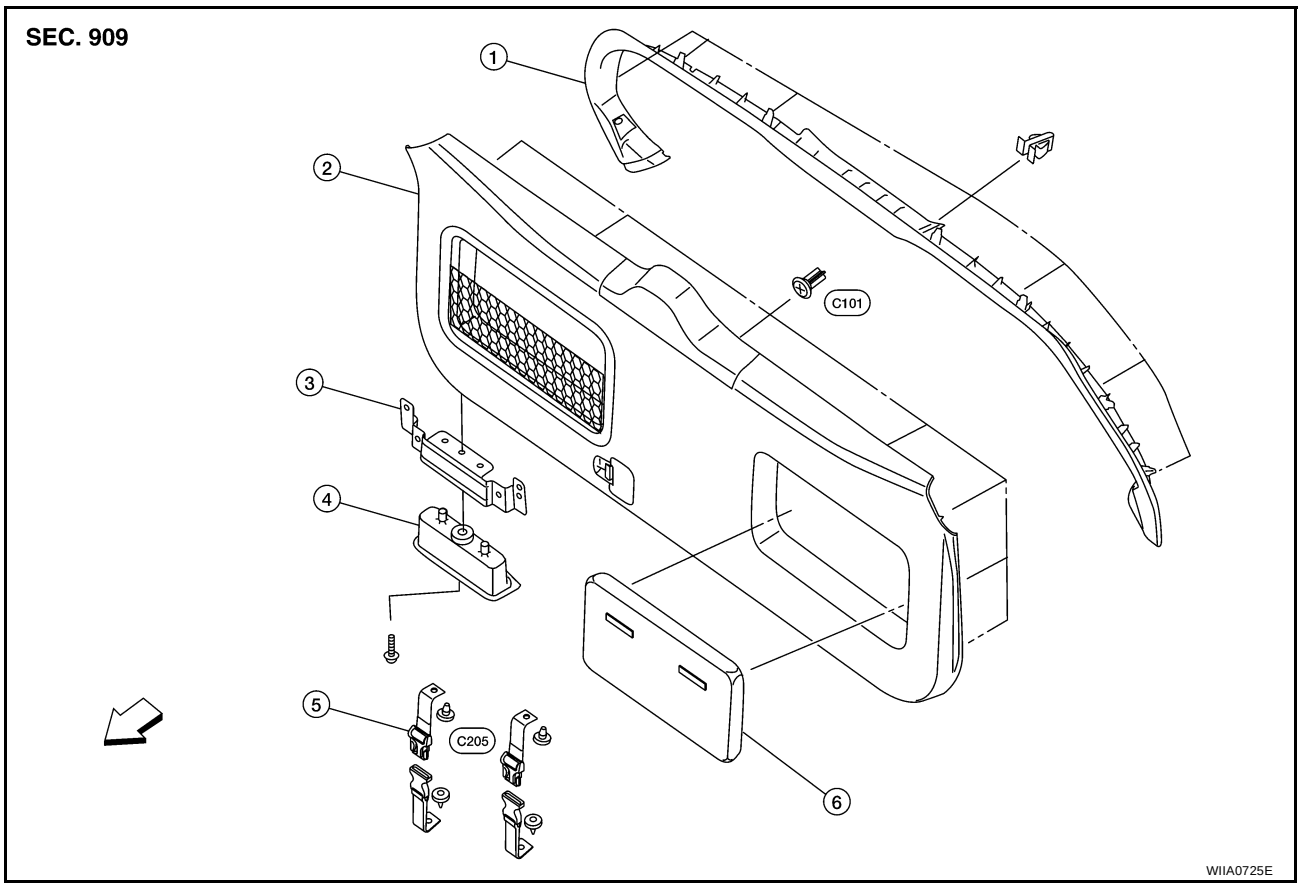
Resistance [at 25°C (77°F)]	Approximately 1 - 15Ω

BACK DOOR TRIM

PFP:90900

Removal and Installation

EIS007UA



1. Back door window garnish
2. Back door finisher
3. Back door handle bracket
4. Back door handle
5. First aid kit strap
6. First aid kit

⇐ Vehicle front

REMOVAL

1. Open back door glass.
2. Disconnect the gas spring LH and RH from back door (through window garnish).
3. Open the back door, release the clips and remove back door window garnish.
4. Remove the screw and back door handle.
5. Release the clips and remove back door finisher assembly.

INSTALLATION

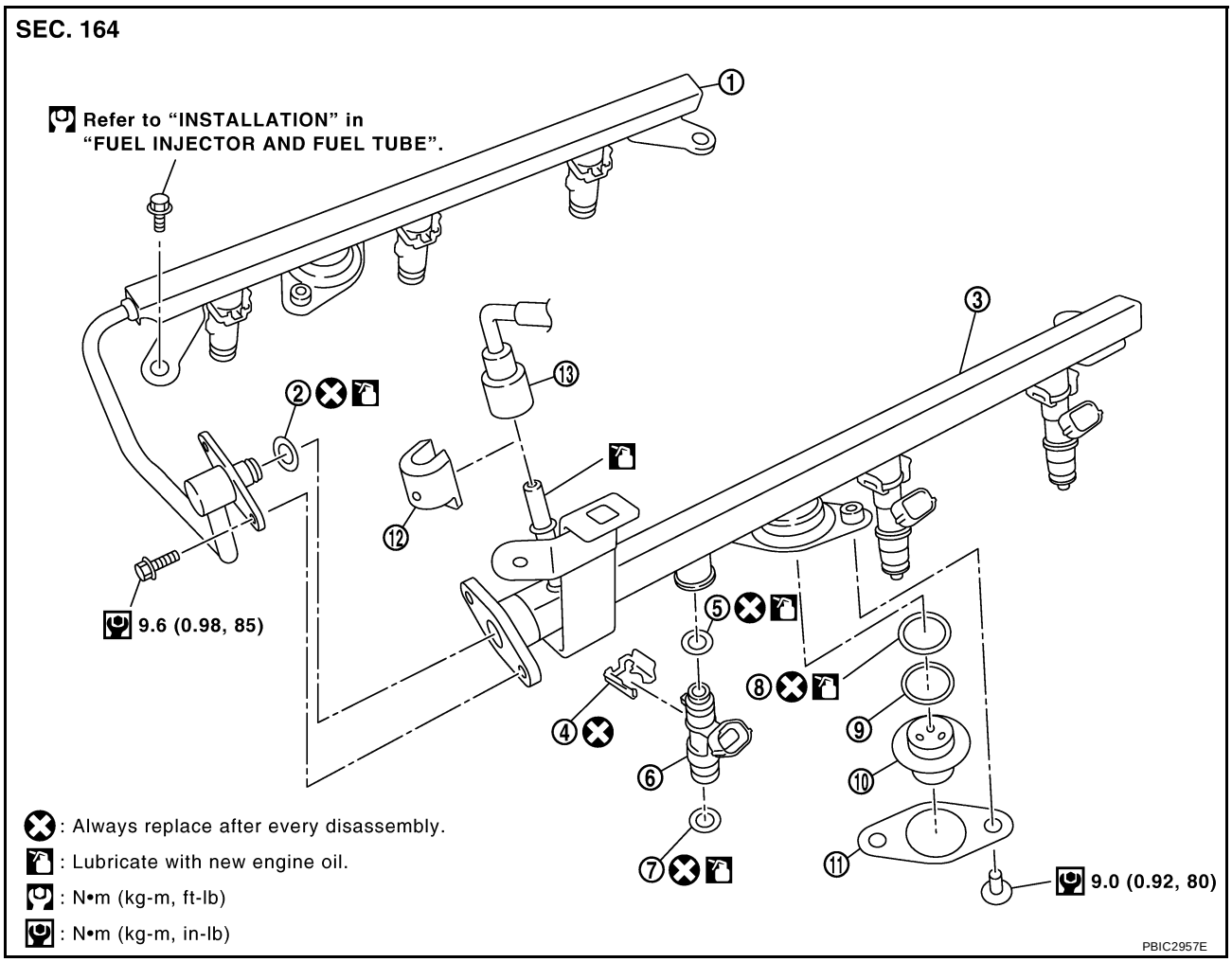
Installation is in the reverse order of removal.

FUEL INJECTOR AND FUEL TUBE

PFP:16600

Removal and Installation

EBS00QBW



1. Fuel tube (RH)
2. O-ring
3. Fuel tube (LH)
4. Clip
5. O-ring (blue)
6. Fuel injector
7. O-ring (brown)
8. O-ring
9. Spacer
10. Fuel damper
11. Fuel damper cap
12. Quick connector cap
13. Fuel feed hose

REMOVAL

WARNING:

- **Put a “CAUTION INFLAMMABLE” sign in the workshop.**
- **Be sure to work in a well ventilated area and furnish workshop with a CO_2 fire extinguisher.**
- **Do not smoke while servicing fuel system. Keep open flames and sparks away from the work area.**
- **To avoid the danger of being scalded, do not drain engine coolant when engine is hot.**

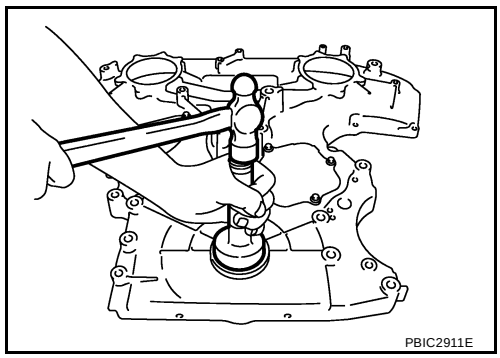
1. Remove intake manifold collector. Refer to EM-18, "REMOVAL" .

   CAUTION:
   Perform this step when engine is cold.

2. Disconnect the fuel quick connector on the engine side.
   - Using Tool perform the following steps to disconnect the quick connector.

   Tool number : — (J-45488)

- Press-fit oil seal until it becomes flush with front timing chain case end face using suitable drift [outer diameter: 60 mm (2.36 in)].
- Make sure the garter spring is in position and seal lip is not inverted.

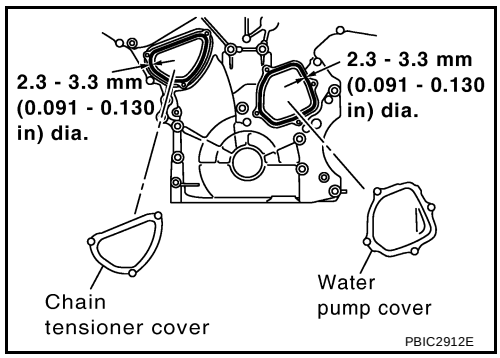

PBIC2911E

12. Install water pump cover and chain tensioner cover to front timing chain case.

- Apply a continuous bead of liquid gasket using Tool to front timing chain case as shown.

Tool number : WS39930000 (—)

Use Genuine RTV Silicone Sealant or equivalent. Refer to GI-47, "Recommended Chemical Products and Sealants" .



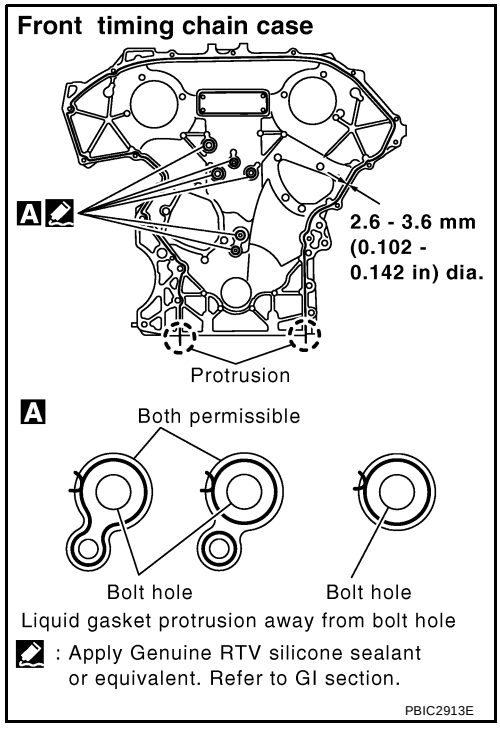
PBIC2912E

13. Install front timing chain case as follows:

a. Apply a continuous bead of liquid gasket using Tool to front timing chain case back side as shown.

Tool number : WS39930000 (—)

Use Genuine RTV Silicone Sealant or equivalent. Refer to GI-47, "Recommended Chemical Products and Sealants" .



PBIC2913E

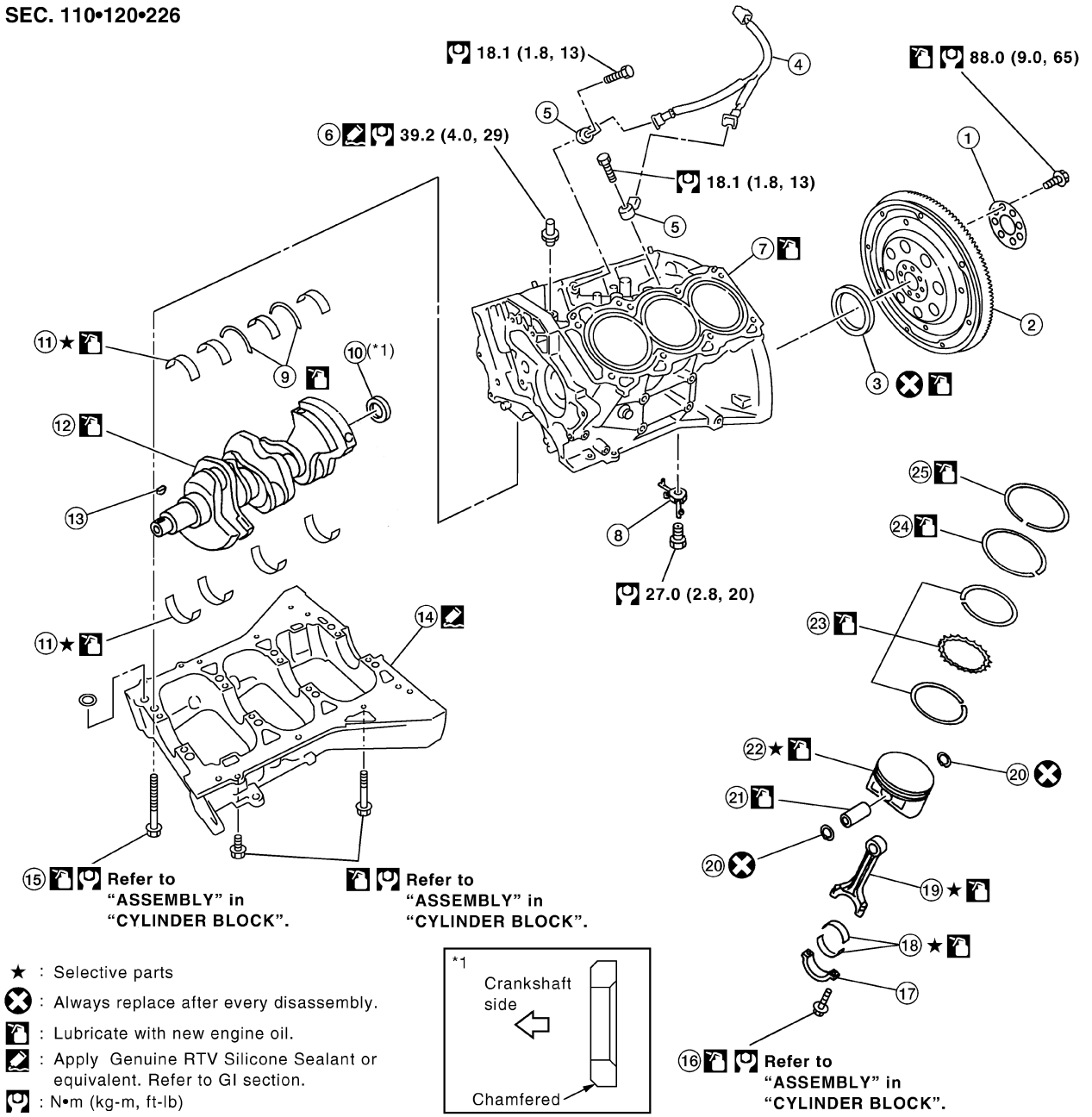
CYLINDER BLOCK

PFP:11010

Disassembly and Assembly

EBS00QCA

SEC. 110•120•226

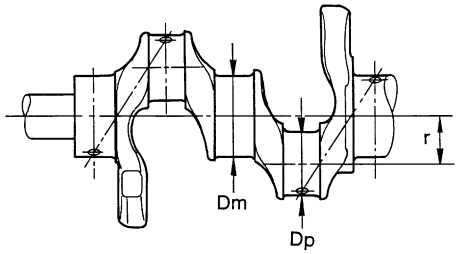


WBIA0582E

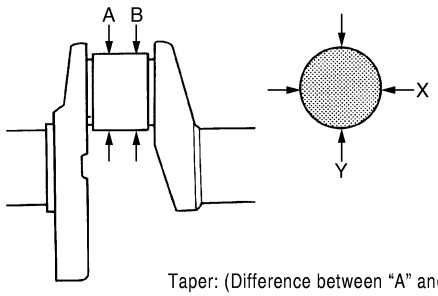
1. Reinforcement plate
2. Drive plate (A/T models)
3. Rear oil seal
4. Sub harness
5. Knock sensor
6. Water connector
7. Cylinder block
8. Oil jet
9. Thrust bearing
10. Pilot converter (A/T models)
11. Main bearing
12. Crankshaft
13. Crankshaft key
14. Lower cylinder block
15. Lower cylinder block bolt
16. Connecting rod bolt
17. Connecting rod bearing cap
18. Connecting rod bearing
19. Connecting rod
20. Snap ring
21. Piston pin
22. Piston
23. Oil ring
24. Second ring
25. Top ring

CRANKSHAFT

Unit: mm (in)



SEM645



Taper: (Difference between “A” and “B”)
Out-of-round: (Difference between “X” and “Y”)

SBIA0535E

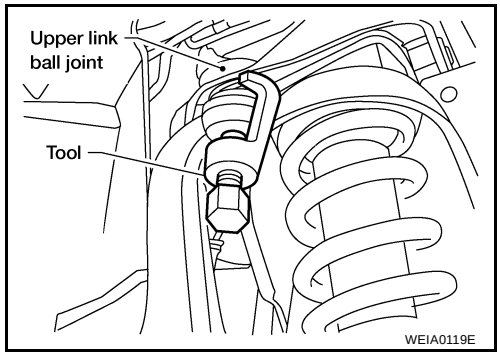
Main journal diameter. “Dm” grade	Standard	Grade No. A	69.975 - 69.974 (2.7549 - 2.7549)
		Grade No. B	69.974 - 69.973 (2.7549 - 2.7548)
		Grade No. C	69.973 - 69.972 (2.7548 - 2.7548)
		Grade No. D	69.972 - 69.971 (2.7548 - 2.7548)
		Grade No. E	69.971 - 69.970 (2.7548 - 2.7547)
		Grade No. F	69.970 - 69.969 (2.7547 - 2.7547)
		Grade No. G	69.969 - 69.968 (2.7547 - 2.7546)
		Grade No. H	69.968 - 69.967 (2.7546 - 2.7546)
		Grade No. J	69.967 - 69.966 (2.7546 - 2.7546)
		Grade No. K	69.966 - 69.965 (2.7546 - 2.7545)
		Grade No. L	69.965 - 69.964 (2.7545 - 2.7545)
		Grade No. M	69.964 - 69.963 (2.7545 - 2.7544)
		Grade No. N	69.963 - 69.962 (2.7544 - 2.7544)
		Grade No. P	69.962 - 69.961 (2.7544 - 2.7544)
		Grade No. R	69.961 - 69.960 (2.7544 - 2.7543)
		Grade No. S	69.960 - 69.959 (2.7543 - 2.7543)
		Grade No. T	69.959 - 69.958 (2.7543 - 2.7542)
		Grade No. U	69.958 - 69.957 (2.7542 - 2.7542)
		Grade No. V	69.957 - 69.956 (2.7542 - 2.7542)
		Grade No. W	69.956 - 69.955 (2.7542 - 2.7541)
		Grade No. X	69.955 - 69.954 (2.7541 - 2.7541)
		Grade No. Y	69.954 - 69.953 (2.7541 - 2.7540)
		Grade No. 4	69.953 - 69.952 (2.7540 - 2.7540)
		Grade No. 7	69.952 - 69.951 (2.7540 - 2.7540)
Pin journal diameter. “Dp” grade	Standard	Grade No. 0	53.968 - 53.974 (2.1247 - 2.1250)
		Grade No. 1	53.962 - 53.968 (2.1245 - 2.1247)
		Grade No. 2	53.956 - 53.962 (2.1242 - 2.1245)
Center distance “r”			45.96 - 46.04 (1.8094 - 1.8126)
Taper (Difference between “A” and “B”)	Limit		0.002 (0.0001)
Out-of-round (Difference between “X” and “Y”)			0.002 (0.0001)
Crankshaft runout [TIR*]	Standard		Less than 0.05 (0.002)
	Limit		0.10 (0.0039)
Crankshaft end play	Standard		0.10 - 0.25 (0.0039 - 0.0098)
	Limit		0.30 (0.0118)

*: Total indicator reading

CAUTION:
Do not pull on the ABS sensor harness.

4. Support the lower link using a suitable jack.
5. Separate the upper link ball joint stud from the steering knuckle using Tool.

Tool number : ST29020001 (J-24319-01)



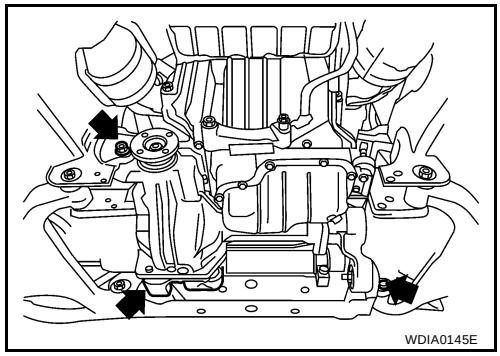
CAUTION:
Support the lower link using a jack.

6. Remove the engine under cover using power tool.
7. Drain the front final drive fluid. Refer to FFD-8, "Changing Differential Gear Oil" .
8. Remove the RH and LH drive shafts from the front final drive using suitable tool.

CAUTION:
Do not reuse the front final drive side oil seals.

9. Remove the front crossmember.
10. Disconnect the front propeller shaft from the front final drive. Then reposition the front propeller shaft aside using suitable wire. Refer to PR-5, "Removal and Installation" .
11. Disconnect the vent hose from the front final drive.
12. Support the front final drive using a suitable jack.
13. Remove the front final drive bolts, then remove the front final drive assembly.

CAUTION:
Support the front final drive using a jack.



INSTALLATION

Installation is the reverse order of removal.

- Install new side oil seals into the front final drive assembly. Refer to FFD-12, "Removal and Installation" .

CAUTION:
- **When installing the drive shaft assembly into the front final drive assembly, do not damage the side oil seal.**
- **Make sure there are no pinched or restricted areas on the breather hose caused by bending or winding when installing it.**
- **Fill the final drive with recommended gear oil after installation. Refer to FFD-8, "Changing Differential Gear Oil" .**

- Tighten the upper link ball joint stud nut to specifications. Refer to FSU-5, "Components" .
- Tighten the wheel nuts to specification. Refer to WT-7, "Rotation" .

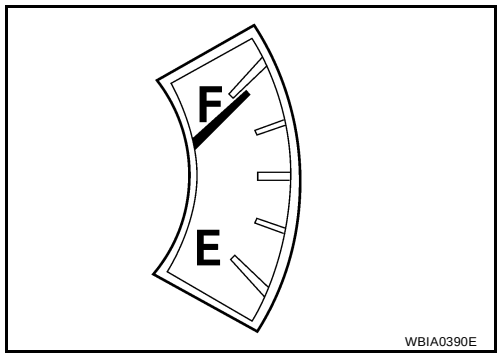
13. Fuel filler hose grommet
14. Fuel filler cap
15. EVAP canister hose
16. Clamp
⇐ Front

REMOVAL

WARNING:

Follow the “General Precautions” before working on the fuel system. Refer to FL-2, "General Precautions" .

1. Remove the fuel filler cap to release the pressure from inside the fuel tank.
2. Remove the LH rear wheel and tire. Refer to WT-7, "Rotation" .
3. Check the fuel level on level gauge. If the fuel gauge indicates more than the level as shown (full or almost full), drain the fuel from the fuel tank until the fuel gauge indicates the level as shown, or less.



NOTE:
Fuel will be spilled when removing the fuel level sensor, fuel filter, and fuel pump assembly for the fuel level is above the fuel level sensor, fuel filter, and fuel pump assembly fuel tank opening.

- As a guide, the fuel level reaches the fuel gauge position as shown, or less, when approximately 15 ℓ (4 US gal, 3 1/4 Imp gal) of fuel are drained from the fuel tank.
- If the fuel pump does not operate, use the following procedure to drain the fuel to the specified level.

a. Insert a suitable hose of less than 15 mm (0.59 in) diameter into the fuel filler pipe through the fuel filler opening to drain the fuel from fuel filler pipe.
b. Remove the fuel filler pipe shield.
c. Disconnect the fuel filler hose from the fuel filler pipe.
d. Insert a suitable hose into the fuel tank through the fuel filler hose to drain the fuel from the fuel tank.

4. Release the fuel pressure from the fuel lines. Refer to EC-79, "FUEL PRESSURE RELEASE" .
5. Disconnect the battery negative terminal.
6. Disconnect the lower fuel filler hose from the fuel tank, the EVAP hose, and the vent pipe quick connector.
   - Disconnect the fuel feed hose from the molded clip in the side of the fuel tank.

   Disconnect the quick connector as follows:
   - Hold the sides of the connector, push in the tabs and pull out the tube.
   - If the connector and the tube are stuck together, push and pull several times until they start to move. Then disconnect them by pulling.

Relation between Illustrations and Descriptions

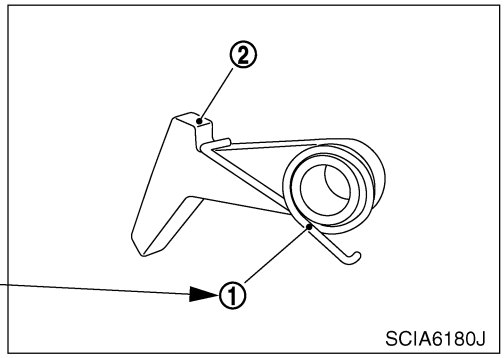
EAS001RU

The following sample explains the relationship between the part description in an illustration, the part name in the text and the service procedures.

< Example 1 >

1. Remove return spring (1) from parking pawl (2).

The identifier number of the part name in the text is consistent with the identifier part number in the illustration.



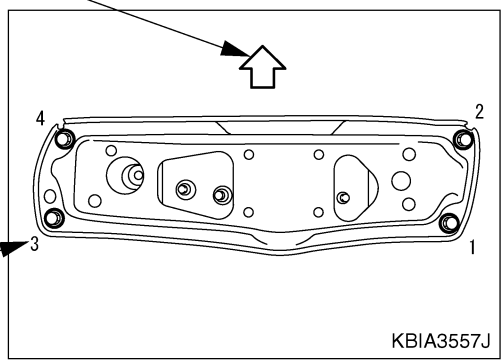
SCIA6180J

< Example 2 >

- ⇨ : Vehicle front
- Tighten rear member mounting bolts following the numerical order shown in the illustration.
- Note : View upward

Direction mark

The numbers in the illustration are consistent with the service operation instructions.



KBIA3557J

SAIA0519E

Components

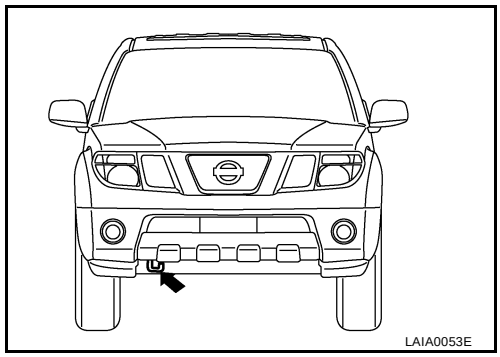
EAS001RV

- **THE LARGE ILLUSTRATIONS** are exploded views (see the following) and contain tightening torques, lubrication points, section number of the **PARTS CATALOG** (e.g. SEC. 440) and other information necessary to perform repairs.
  The illustrations should be used in reference to service matters only. When ordering parts, refer to the appropriate **PARTS CATALOG** .
  Components shown in an illustration may be identified by a circled number. When this style of illustration is used, the text description of the components will follow the illustration.

Towing Point

CAUTION:

Never tow the vehicle using only the towing points. To avoid damaging the vehicle body, use proper towing equipment when towing.

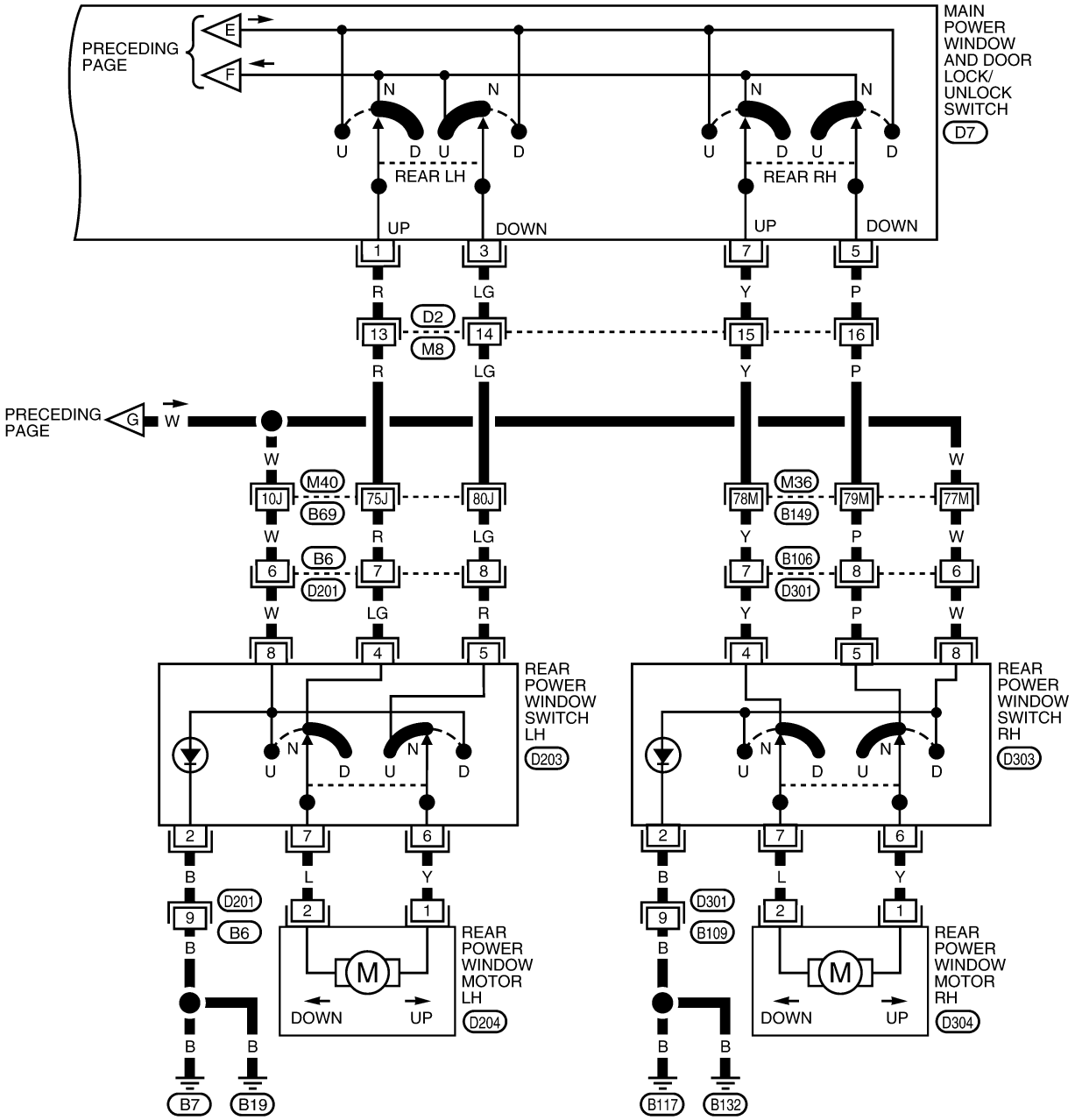


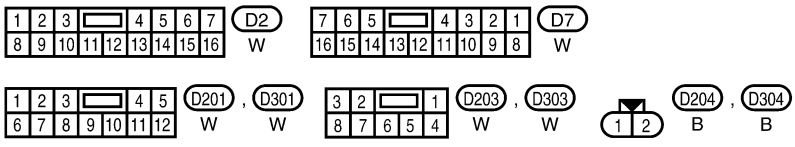
Vehicle Recovery (Freeing a stuck vehicle)

EAS001SC

- **Tow chains or cables must be attached only to the main structural members or tow hook (if equipped) of the vehicle.**
- **Pulling devices should be routed so they do not touch any part of the suspension, steering, brake or cooling systems**
- **Always pull the cable straight out from the front or rear of the vehicle. Never pull the vehicle at a sideways angle.**
- **Pulling devices such as ropes or canvas straps are not recommended for use for vehicle towing or recovery.**

GW-WINDOW-05





REFER TO THE FOLLOWING.
M36 , M40 - SUPER MULTIPLE JUNCTION (SMJ)

WIWA1755E

REAR DOOR GLASS AND REGULATOR

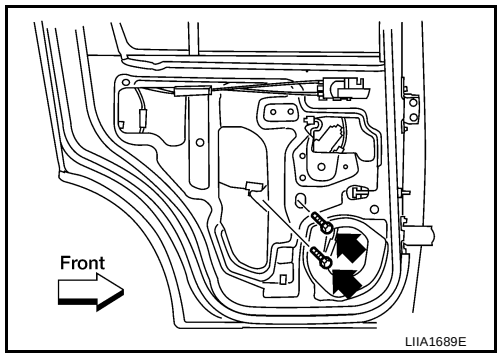
PFP:82300

Rear Door Glass

EIS007S2

REMOVAL

1. Remove the rear door finisher. Refer to EI-25, "DOOR FINISHER" .
2. Remove the inside seal.
3. Temporarily reconnect the power window switch.
4. Remove the glass run from the partition glass.
5. Operate the power window switch to raise/lower the door window until the glass bolts can be seen.
6. Remove the partition sash bolt (lower) and screw (upper) to remove the sash.
7. Remove the bolts and the glass.



INSTALLATION

Installation is in the reverse order of removal.

Glass bolts : 5.7 N·m (0.58 kg-m, 50 in-lb)

- Check the glass alignment. Refer to GW-61, "FITTING INSPECTION" .

FITTING INSPECTION

- Check that the glass is securely fit into the glass run groove.
- Lower the glass slightly [approximately 10 to 20 mm (0.39 to 0.79 in)], and check that the clearance to the sash is parallel. If the clearance between the glass and sash is not parallel, loosen the regulator bolts, guide rail bolts, and glass carrier plate bolts to correct the glass position.

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The arranged results of CAN diagnosis support monitor

Check sheet table

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR											SELF-DIAG RESULTS	
		Initial diagnosis	Transmit diagnosis	Receive diagnosis										
				ECM	TCM	Front air control	STRG	BCM /SEC	METER /M&A	AWD/4WD	VDC/TCS /ABS	IPDM E/R		
ENGINE	–	–	UNKWN	–	UNKWN	–	–	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	–	NG	UNKWN	UNKWN	–	–	–	–	UNKWN	UNKWN	UNKWN	–	CAN COMM CIRCUIT (U1000)	–
Display control unit	–	NG	UNKWN	UNKWN	–	UNKWN	–	UNKWN	UNKWN	–	–	UNKWN	–	–
BCM	No indication	NG	UNKWN	UNKWN	–	–	–	–	UNKWN	–	–	UNKWN	CAN COMM CIRCUIT (U1000)	–
METER	No indication	–	UNKWN	UNKWN	UNKWN	–	–	UNKWN	–	–	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	–
ALL MODE AWD/4WD	No indication	–	UNKWN	UNKWN	UNKWN	–	UNKWN	–	–	–	UNKWN	–	CAN COMM CIRCUIT (U1000)	–
AUTO DRIVE POS.	No indication	–	–	–	UNKWN	–	–	UNKWN	UNKWN	–	–	–	CAN COMM CIRCUIT (U1000)	–
ABS	–	NG	UNKWN	UNKWN	UNKWN	–	UNKWN	–	–	UNKWN	–	–	CAN COMM CIRCUIT (U1000)	–
IPDM E/R	No indication	–	UNKWN	UNKWN	–	–	–	UNKWN	–	–	–	–	CAN COMM CIRCUIT (U1000)	–

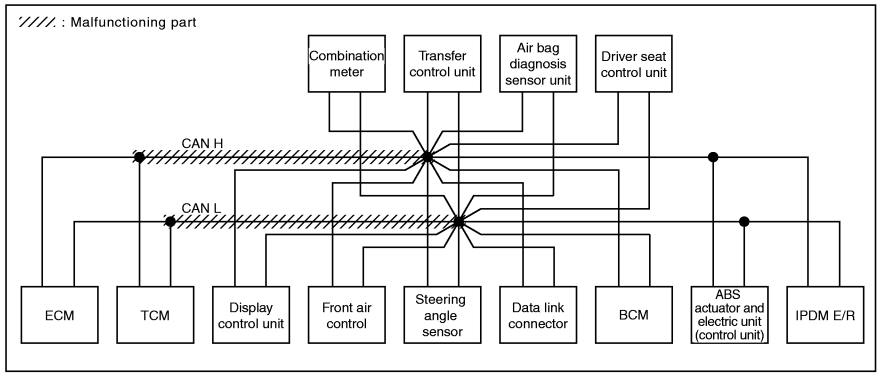
Choose similar indications between the results of CAN diagnosis support monitor and the results of the check sheet. Malfunctioning parts are found.

Case 1

Check harness between TCM and data link connector.

Check sheet results (example)

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR											SELF-DIAG RESULTS	
		Initial diagnosis	Transmit diagnosis	Receive diagnosis										
				ECM	TCM	Front air control	STRG	BCM /SEC	METER /M&A	AWD/4WD	VDC/TCS /ABS	IPDM E/R		
ENGINE	–	–	UNKWN	–	UNKWN	–	–	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	–	NG	UNKWN	UNKWN	–	–	–	–	UNKWN	UNKWN	UNKWN	–	CAN COMM CIRCUIT (U1000)	–
Display control unit	–	NG	UNKWN	UNKWN	–	UNKWN	–	UNKWN	UNKWN	–	–	UNKWN	–	–
BCM	No indication	NG	UNKWN	UNKWN	–	–	–	–	UNKWN	–	–	UNKWN	CAN COMM CIRCUIT (U1000)	–
METER	No indication	–	UNKWN	UNKWN	UNKWN	–	–	UNKWN	–	–	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	–
ALL MODE AWD/4WD	No indication	–	UNKWN	UNKWN	UNKWN	–	UNKWN	–	–	–	UNKWN	–	CAN COMM CIRCUIT (U1000)	–
AUTO DRIVE POS.	No indication	–	–	–	UNKWN	–	–	UNKWN	UNKWN	–	–	–	CAN COMM CIRCUIT (U1000)	–
ABS	–	NG	UNKWN	UNKWN	UNKWN	–	UNKWN	–	–	UNKWN	–	–	CAN COMM CIRCUIT (U1000)	–
IPDM E/R	No indication	–	UNKWN	UNKWN	–	–	–	UNKWN	–	–	–	–	CAN COMM CIRCUIT (U1000)	–



PKIC5984E

NOTE:

There is a case that some of “CAN DIAG SUPPORT MNTR” and “SELF-DIAG RESULTS” are not needed for diagnosis. In the case, “UNKWN” and “CAN COMM CIRCUIT [U1000]” in “Check sheet results (example)” change to “–”. Then, ignore check marks on the check sheet table.

6. Perform system diagnosis for possible causes identified.
7. Perform diagnosis again after inspection and repair. Make sure that repair is completely performed, and then end the procedure.

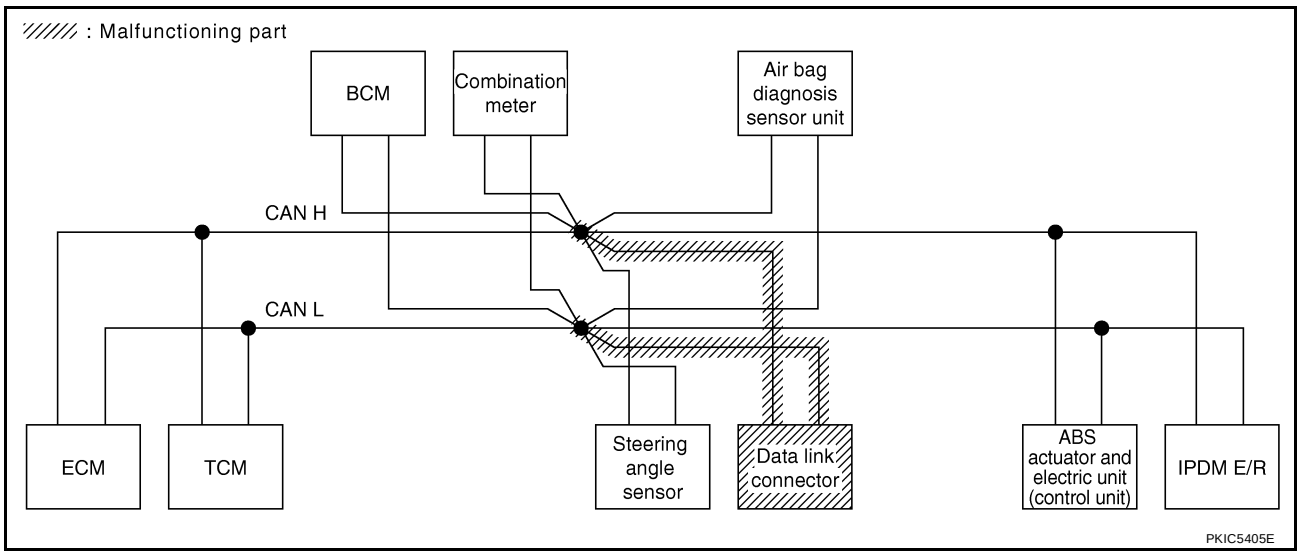
Start CAN system trouble diagnosis if this procedure can be confirmed. Refer to LAN-30, "CAN Communication Unit" .

Case 6

Check data link connector circuit. Refer to LAN-199, "Data Link Connector Circuit Inspection" .

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR									SELF-DIAG RESULTS	
		Initial diagnosis	Transmit diagnosis	Receive diagnosis								
				ECM	TCM	STRG	BCM /SEC	METER /M&A	VDC/TCS /ABS	IPDM E/R		
ENGINE	—	—	UNKWN	—	UNKWN	—	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	—	NG	UNKWN	UNKWN	—	—	—	UNKWN	UNKWN	—	CAN COMM CIRCUIT (U1000)	—
BCM	✓ No indication	NG	UNKWN	UNKWN	—	—	—	UNKWN	—	UNKWN	CAN COMM CIRCUIT (U1000)	—
METER	✓ No indication	—	UNKWN	UNKWN	UNKWN	—	UNKWN	—	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	—
ABS	—	NG	UNKWN	UNKWN	UNKWN	UNKWN	—	—	—	—	CAN COMM CIRCUIT (U1000)	—
IPDM E/R	✓ No indication	—	UNKWN	UNKWN	—	—	UNKWN	—	—	—	CAN COMM CIRCUIT (U1000)	—

PKIC5631E



PKIC5405E

Check Sheet

UKS00535

NOTE:
If a check mark is put on “NG” on “INITIAL DIAG (Initial diagnosis)”, replace the control unit.

Check sheet table

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR										SELF-DIAG RESULTS	
		Initial diagnosis	Transmit diagnosis	Receive diagnosis									
				ECM	TCM	Front air control	STRG	BCM /SEC	METER /M&A	VDC/TCS /ABS	IPDM E/R		
ENGINE	—	—	UNKWN	—	UNKWN	—	—	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	—	NG	UNKWN	UNKWN	—	—	—	—	UNKWN	UNKWN	—	CAN COMM CIRCUIT (U1000)	—
Display control unit	—	NG	UNKWN	UNKWN	—	UNKWN	—	UNKWN	UNKWN	—	UNKWN	—	—
BCM	No indication	NG	UNKWN	UNKWN	—	—	—	—	UNKWN	—	UNKWN	CAN COMM CIRCUIT (U1000)	—
METER	No indication	—	UNKWN	UNKWN	UNKWN	—	—	UNKWN	—	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	—
AUTO DRIVE POS.	No indication	—	—	—	UNKWN	—	—	UNKWN	UNKWN	—	—	CAN COMM CIRCUIT (U1000)	—
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—	—	—	CAN COMM CIRCUIT (U1000)	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	—	—	UNKWN	—	—	—	CAN COMM CIRCUIT (U1000)	—

Symptoms :

Attach copy of
SELECT SYSTEM

Attach copy of
SELECT SYSTEM

Display control unit Translation Sheet: Rewrite the following names, and put a check mark on the above check sheet table.			
Confirmation/Adjustment Display	Check sheet table Display	Confirmation/Adjustment Display	Check sheet table Display
CAN COMM	Initial diagnosis	CAN CIRC 5	METER/M&A
CAN CIRC 1	Transmit diagnosis	CAN CIRC 6	—
CAN CIRC 2	BCM	CAN CIRC 7	IPDM E/R
CAN CIRC 3	ECM	CAN CIRC 8	—
CAN CIRC 4	Front air control	CAN CIRC 9	—

Attach copy of
display control unit
CAN DIAG SUPPORT MONITOR Check Sheet

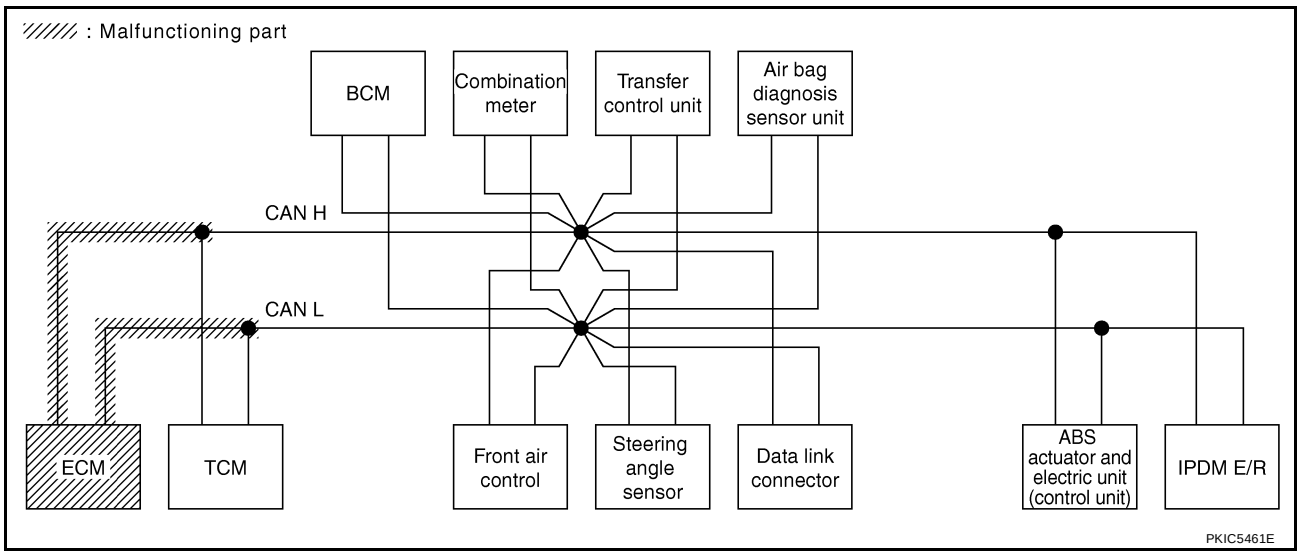
PKIC5655E

Case 3

Check ECM circuit. Refer to LAN-197, "ECM Circuit Inspection" .

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR										SELF-DIAG RESULTS	
		Initial diagnosis	Transmit diagnosis	Receive diagnosis									
				ECM	TCM	STRG	BCM /SEC	METER /M&A	AWD/4WD	VDC/TCS /ABS	IPDM E/R		
ENGINE	—	—	UNKWN	—	UNKWN	—	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	—	NG	UNKWN	UNKWN	—	—	—	UNKWN	UNKWN	UNKWN	—	CAN COMM CIRCUIT (U1000)	—
BCM	No indication	NG	UNKWN	UNKWN	—	—	—	UNKWN	—	—	UNKWN	CAN COMM CIRCUIT (U1000)	—
METER	No indication	—	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	—
ALL MODE AWD/4WD	—	NG	UNKWN	UNKWN	UNKWN	—	—	UNKWN	—	UNKWN	—	CAN COMM CIRCUIT (U1000)	—
ABS	—	NG	UNKWN	UNKWN	UNKWN	UNKWN	—	—	UNKWN	—	—	CAN COMM CIRCUIT (U1000)	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	—	UNKWN	—	—	—	—	CAN COMM CIRCUIT (U1000)	—

PKIC5676E

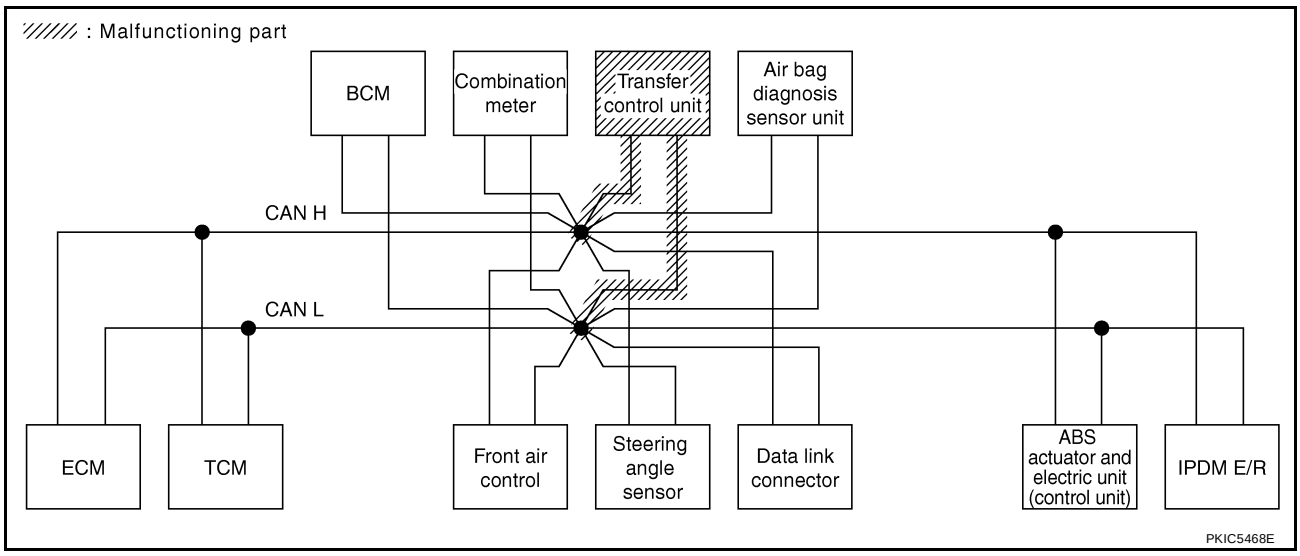


Case 9

Check transfer control unit circuit. Refer to LAN-201, "Transfer Control Unit Circuit Inspection" .

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR										SELF-DIAG RESULTS	
		Initial diagnosis	Transmit diagnosis	Receive diagnosis									
				ECM	TCM	STRG	BCM /SEC	METER /M&A	AWD/4WD	VDC/TCS /ABS	IPDM E/R		
ENGINE	—	—	UNKWN	—	UNKWN	—	UNKWN	UNKWN	UNKWN ✓	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001) ✓
A/T	—	NG	UNKWN	UNKWN	—	—	—	UNKWN	UNKWN ✓	UNKWN	—	CAN COMM CIRCUIT (U1000) ✓	—
BCM	No indication	NG	UNKWN	UNKWN	—	—	—	UNKWN	—	—	UNKWN	CAN COMM CIRCUIT (U1000)	—
METER	No indication	—	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	—
ALL MODE AWD/4WD	No indication ✓	—	UNKWN	UNKWN	UNKWN	UNKWN	—	—	—	UNKWN	—	CAN COMM CIRCUIT (U1000) ✓	—
ABS	—	NG	UNKWN	UNKWN	UNKWN	UNKWN	—	—	UNKWN ✓	—	—	CAN COMM CIRCUIT (U1000) ✓	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	—	UNKWN	—	—	—	—	CAN COMM CIRCUIT (U1000)	—

PKIC5697E

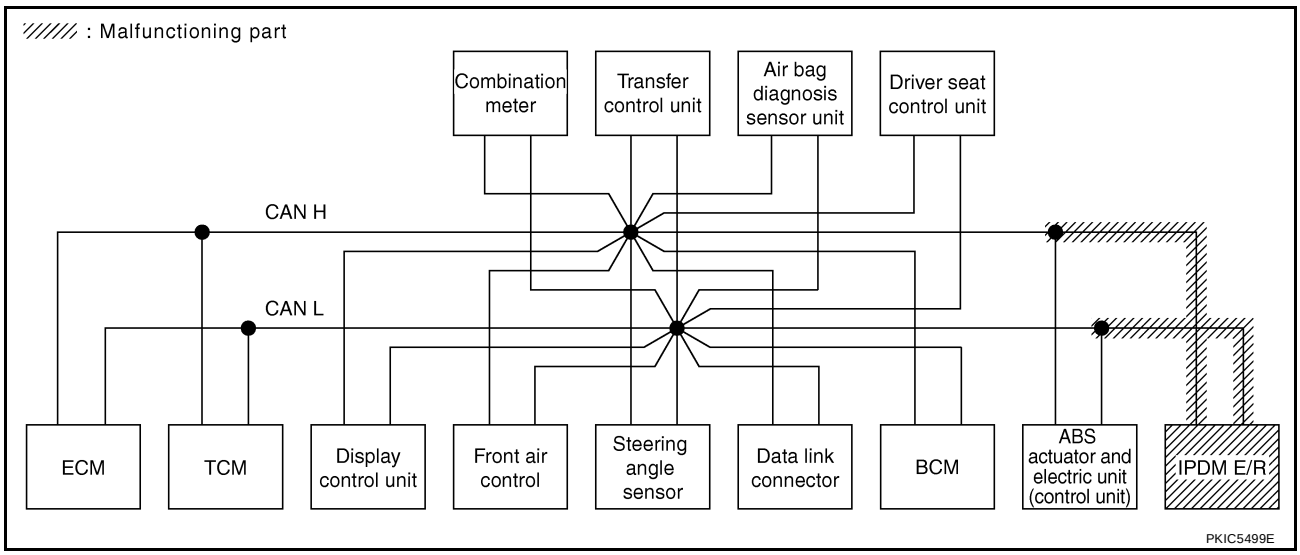


Case 14

Check IPDM E/R circuit. Refer to LAN-203, "IPDM E/R Circuit Inspection" .

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR											SELF-DIAG RESULTS	
		Initial diagnosis	Transmit diagnosis	Receive diagnosis										
				ECM	TCM	Front air control	STRG	BCM /SEC	METER /M&A	AWD/4WD	VDC/TCS /ABS	IPDM E/R		
ENGINE	—	—	UNKWN	—	UNKWN	—	—	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	—	NG	UNKWN	UNKWN	—	—	—	—	UNKWN	UNKWN	UNKWN	—	CAN COMM CIRCUIT (U1000)	—
Display control unit	—	NG	UNKWN	UNKWN	—	UNKWN	—	UNKWN	UNKWN	—	—	UNKWN	—	—
BCM	No indication	NG	UNKWN	UNKWN	—	—	—	—	UNKWN	—	—	UNKWN	CAN COMM CIRCUIT (U1000)	—
METER	No indication	—	UNKWN	UNKWN	UNKWN	—	—	UNKWN	—	—	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	—
ALL MODE AWD/4WD	No indication	—	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—	—	UNKWN	—	CAN COMM CIRCUIT (U1000)	—
AUTO DRIVE POS.	No indication	—	—	—	UNKWN	—	—	UNKWN	UNKWN	—	—	—	CAN COMM CIRCUIT (U1000)	—
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN	—	—	CAN COMM CIRCUIT (U1000)	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	—	—	UNKWN	—	—	—	—	CAN COMM CIRCUIT (U1000)	—

PKIC5735E



PKIC5499E

Case 15

Check CAN communication circuit. Refer to LAN-203, "CAN Communication Circuit Inspection" .

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR											SELF-DIAG RESULTS	
		Initial diagnosis	Transmit diagnosis	Receive diagnosis										
				ECM	TCM	Front air control	STRG	BCM /SEC	METER /M&A	AWD/4WD	VDC/TCS /ABS	IPDM E/R		
ENGINE	—	—	UNKWN	—	UNKWN	—	—	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	—	NG	UNKWN	UNKWN	—	—	—	—	UNKWN	UNKWN	UNKWN	—	CAN COMM CIRCUIT (U1000)	—
Display control unit	—	NG	UNKWN	UNKWN	—	UNKWN	—	UNKWN	UNKWN	—	—	UNKWN	—	—
BCM	No indication	NG	UNKWN	UNKWN	—	—	—	—	UNKWN	—	—	UNKWN	CAN COMM CIRCUIT (U1000)	—
METER	No indication	—	UNKWN	UNKWN	UNKWN	—	—	UNKWN	—	—	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	—
ALL MODE AWD/4WD	No indication	—	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—	—	UNKWN	—	CAN COMM CIRCUIT (U1000)	—
AUTO DRIVE POS.	No indication	—	—	—	UNKWN	—	—	UNKWN	UNKWN	—	—	—	CAN COMM CIRCUIT (U1000)	—
ABS	—	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	—	—	UNKWN	—	—	CAN COMM CIRCUIT (U1000)	—
IPDM E/R	No indication	—	UNKWN	UNKWN	—	—	—	UNKWN	—	—	—	—	CAN COMM CIRCUIT (U1000)	—

PKIC5736E

Headlamp LO Does Not Illuminate (One Side)

EKS00FUE

1. BULB INSPECTION

Inspect inoperative headlamp bulb.

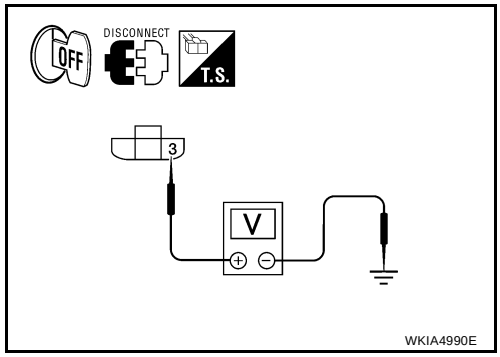
OK or NG

OK >> GO TO 2.
NG >> Replace headlamp bulb. Refer to LT-27, "HEADLAMP BULB" .

2. CHECK POWER TO HEADLAMP

1. Disconnect inoperative headlamp connector.
2. Turn the low beam headlamps ON.
3. Check voltage between inoperative headlamp connector terminal and ground.

Front headlamp			(–)	Voltage (Approx.)
(+)				
Connector		Terminal		
RH	E107	3	Ground	Battery voltage
LH	E11			



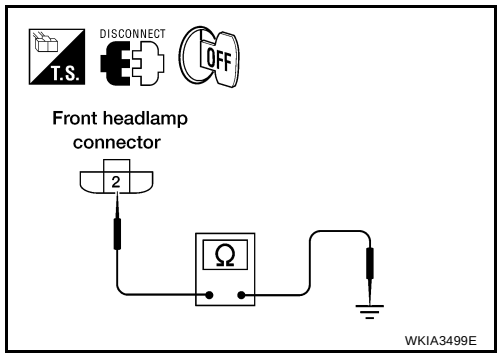
OK or NG

OK >> GO TO 3.
NG >> GO TO 4.

3. CHECK HEADLAMP GROUND

1. Turn the low beam headlamps OFF.
2. Check continuity between inoperative headlamp connector terminal and ground.

Front headlamp				Continuity
Connector		Terminal		
RH	E107	2	Ground	Yes
LH	E11			



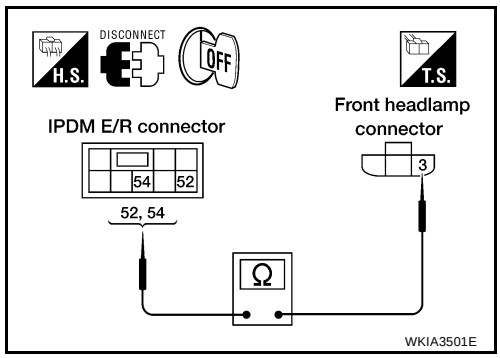
OK or NG

OK >> Check front headlamp and IPDM E/R connector. Repair as necessary.
NG >> Repair open circuit in harness between inoperative headlamp and ground.

4. INSPECTION BETWEEN IPDM E/R AND HEADLAMPS

1. Disconnect IPDM E/R connector.
2. Check continuity between harness connector terminals of IPDM E/R harness connector terminals of inoperative headlamp.

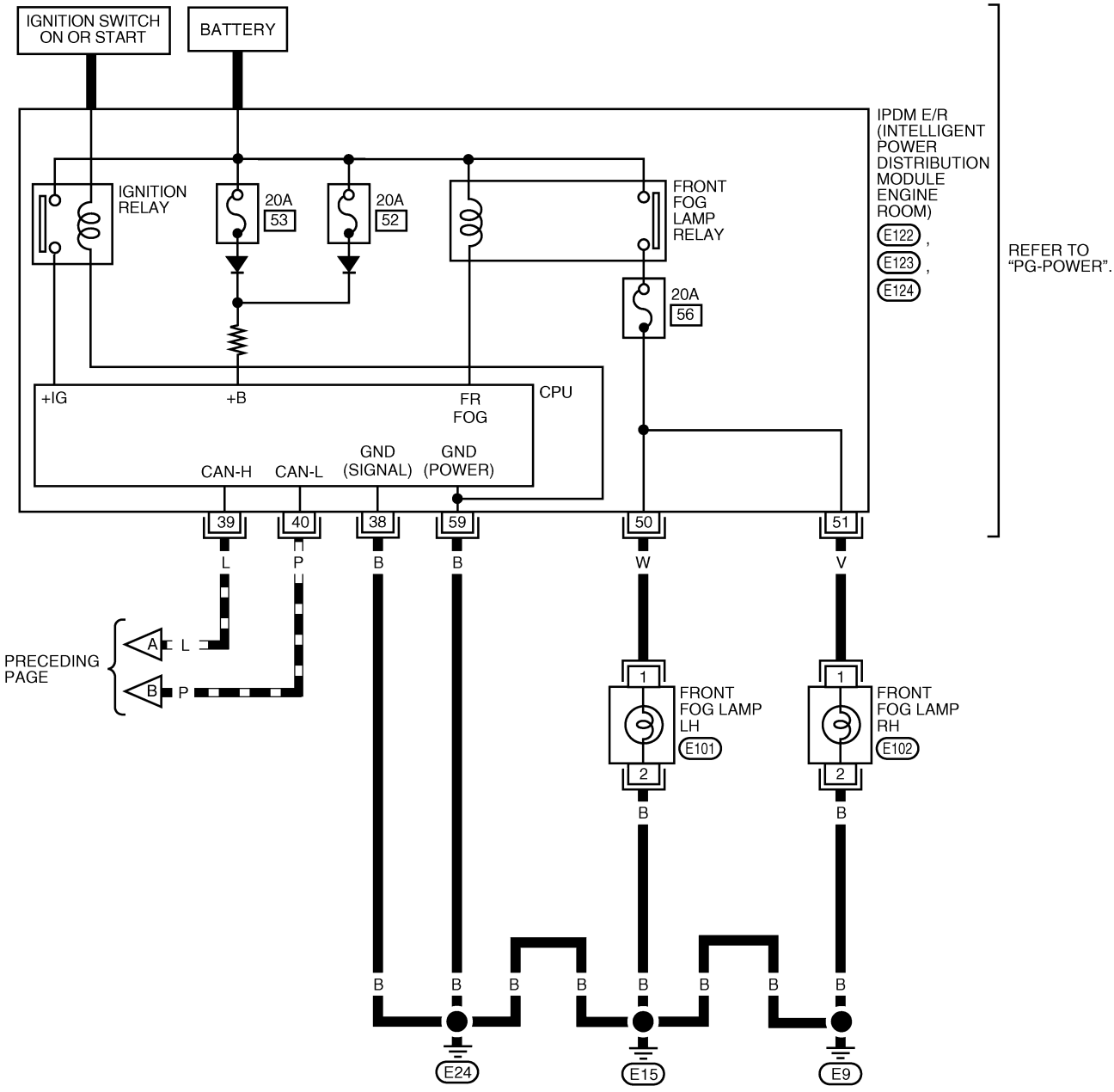
IPDM E/R		Front headlamp			Continuity
Connector	Terminal	Connector		Terminal	
E123	54	RH	E107	3	Yes
	52	LH	E11		

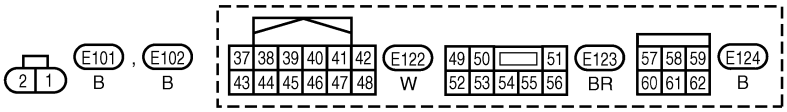


OK or NG

OK >> Replace IPDM E/R. Refer to PG-34, "Removal and Installation of IPDM E/R" .
NG >> Check for short and open circuits in harness between IPDM E/R and headlamps. Repair as necessary.

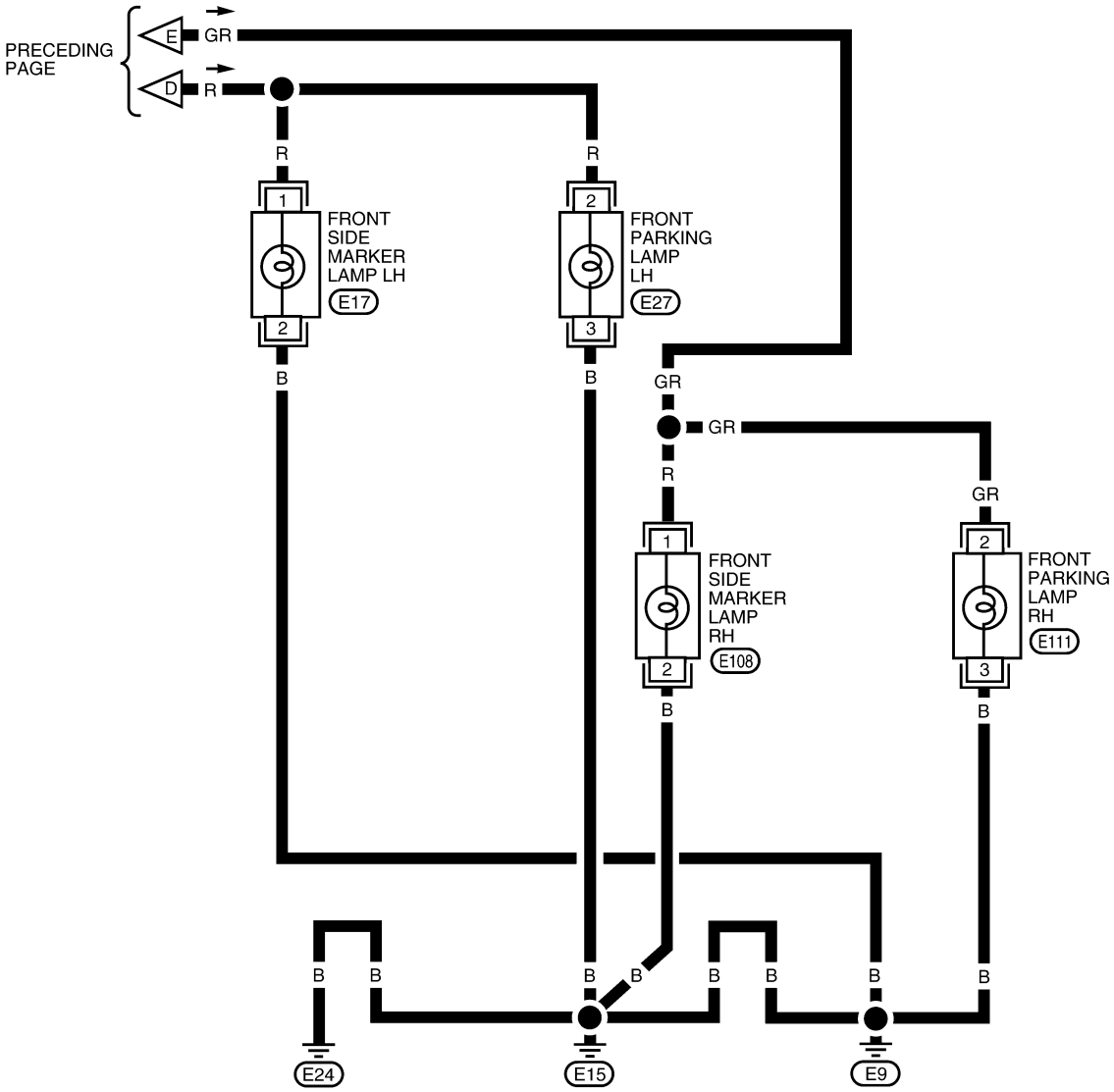
LT-F/FOG-02

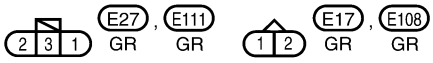




WKWA4630E

LT-TAIL/L-03





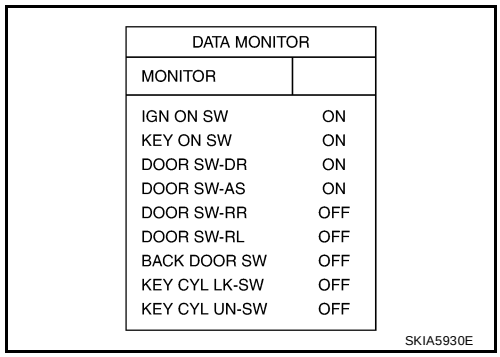
WKWA2039E

Personal Lamp Control Does Not Operate (Room/Map Lamps Operate)

EKS00FXH

1. CHECK EACH DOOR SWITCH

Select "BCM" on CONSULT-II. With "INT LAMP" data monitor, make sure switches listed in display item list turn ON-OFF linked with switch operation. Refer to LT-117, "SWITCH OPERATION" for switches and their function.



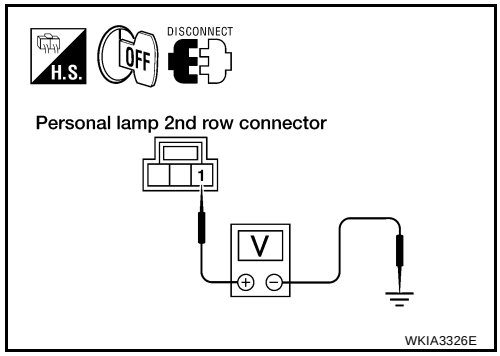
OK or NG

OK >> GO TO 2.
NG >> Inspect malfunctioning door switch.

2. CHECK PERSONAL LAMP OUTPUT

1. Turn ignition switch OFF.
2. Confirm lamp switch is in the DOOR position.
3. Disconnect personal lamp 2nd row connector.
4. Open any door.
5. Check voltage between personal lamp 2nd row harness connector R10 terminal 1 and ground.

1 - Ground : Battery voltage should exist.



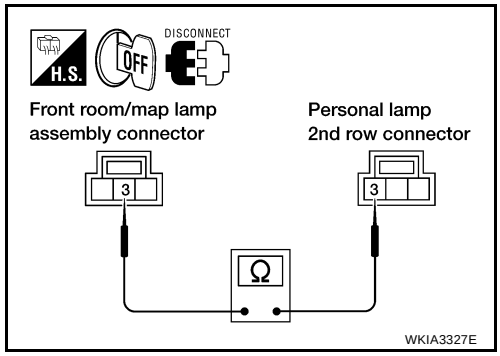
OK or NG

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

3. CHECK PERSONAL LAMP CONTROL CIRCUIT

1. Disconnect front room/map lamp assembly connector.
2. Check continuity between front room/map lamp assembly harness connector R9 terminal 3 and personal lamp 2nd row harness connector R10 terminal 3.

3 - 3 : Continuity should exist.



OK or NG

OK >> Replace personal lamp 2nd row.
NG >> Repair harness or connector.

Regulator Valve Clearance

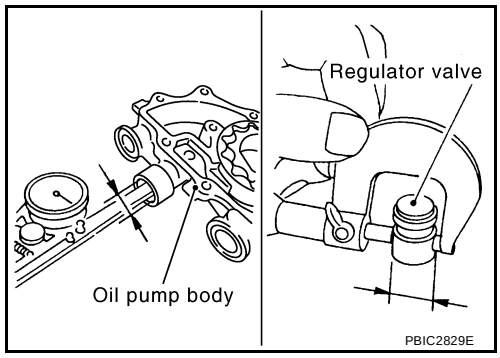
(Clearance) = (Valve hole diameter) – (Regulator valve outer diameter)

Standard : 0.025 - 0.070 mm (0.0010 - 0.0028 in)

- If the calculated value is out of the standard, replace oil pump assembly.

CAUTION:

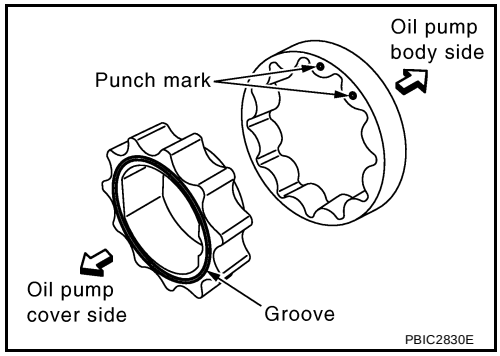
- **Coat regulator valve with engine oil.**
- **Make sure that it falls smoothly into valve hole by its own weight.**



ASSEMBLY

Note the following, and assemble in the reverse order of disassembly.

- Install oil pump inner rotor with the groove faced and oil pump outer rotor with the punch mark to oil pump cover side.

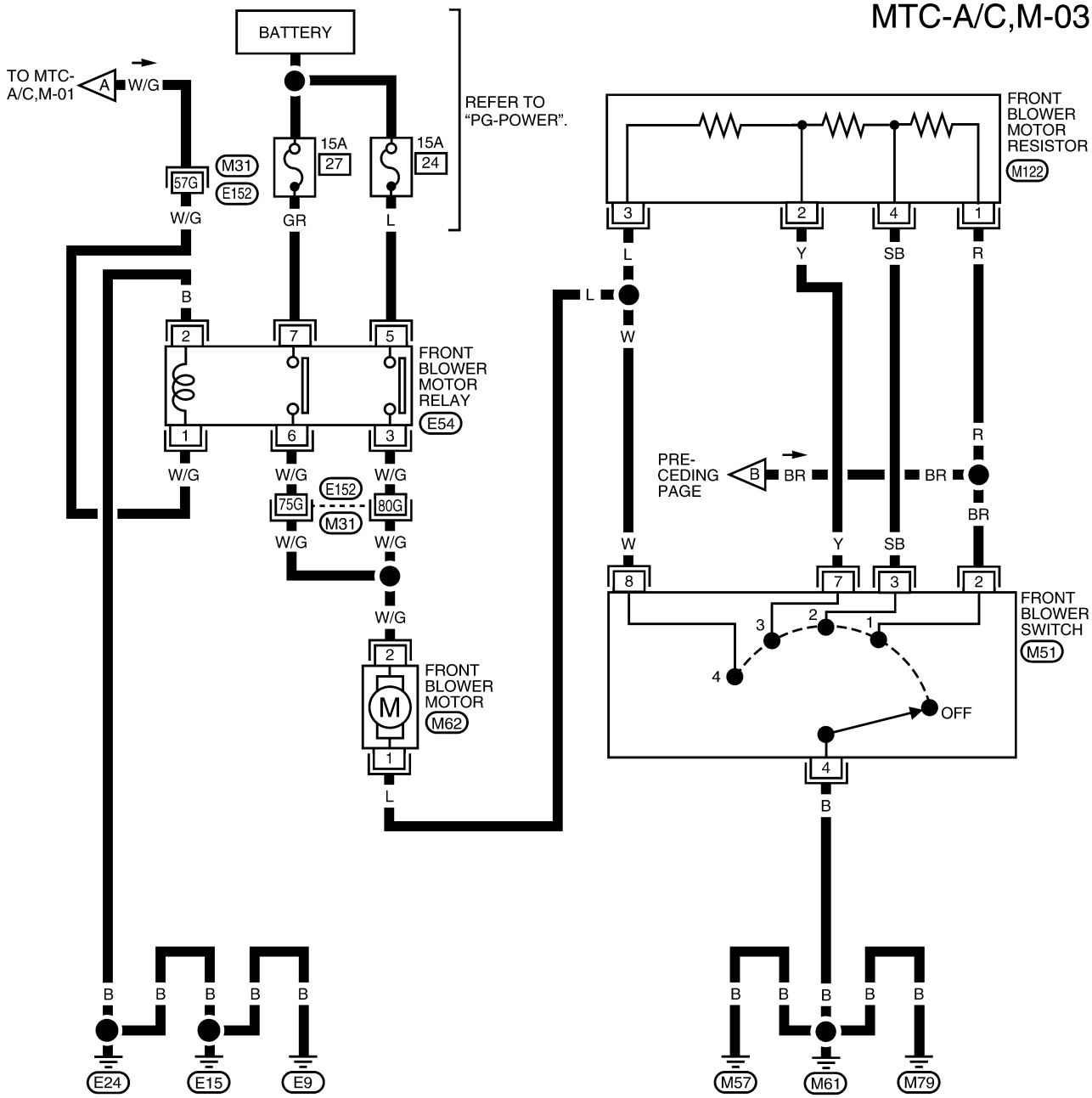


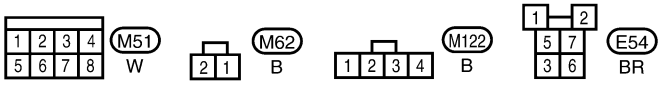
SECTION MTC

MANUAL AIR CONDITIONER

CONTENTS

MTC-A/C,M-03





REFER TO THE FOLLOWING.
M31 - SUPER MULTIPLE JUNCTION (SMJ)

WJWA0415E

PERFORMANCE CHART

Test Condition

Testing must be performed as follows:

Vehicle location	Indoors or in the shade (in a well-ventilated place)
Doors	Closed
Door window	Open
Hood	Open
TEMP.	Max. COLD
Mode switch	(Ventilation) set
Recirculation (REC) switch	(Recirculation) set
Blower speed	Max. speed set
Engine speed	Idle speed
Operate the air conditioning system for 10 minutes before taking measurements.	

Test Reading

Recirculating-to-discharge Air Temperature Table

Inside air (Recirculating air) at blower assembly inlet		Discharge air temperature at center ventilator °C (°F)
Relative humidity %	Air temperature °C (°F)	
50 - 60	20 (68)	5.3 - 6.5 (42 - 44)
	25 (77)	9.7 - 11.5 (49 - 53)
	30 (86)	13.8 - 16.3 (57 - 61)
	35 (95)	18.0 - 21.2 (64 - 70)
	40 (104)	22.2 - 25.7 (72 - 78)
60 - 70	20 (68)	6.5 - 7.7 (44 - 46)
	25 (77)	11.5 - 13.3 (53 - 56)
	30 (86)	16.3 - 18.8 (61 - 66)
	35 (95)	21.2 - 24.0 (70 - 75)
	40 (104)	25.7 - 29.2 (78 - 85)

Ambient Air Temperature-to-operating Pressure Table

Ambient air		High-pressure (Discharge side) kPa (kg/cm^2 , psi)	Low-pressure (Suction side) kPa (kg/cm^2 , psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	20 (68)	680 - 840 (6.94 - 8.57, 98.6 - 121.8)	160 - 198 (1.63 - 2.02, 23.2 - 28.7)
	25 (77)	800 - 985 (8.16 - 10.05, 116.0 - 142.8)	198 - 245 (2.02 - 2.50, 28.7 - 35.5)
	30 (86)	940 - 1,150 (9.59 - 11.73, 136.3 - 166.8)	225 - 278 (2.30 - 2.84, 32.6 - 40.3)
	35 (95)	1,160 - 1,410 (11.83 - 14.38, 168.2 - 204.5)	273 - 335 (2.78 - 3.42, 39.6 - 48.6)
	40 (104)	1,325 - 1,620 (13.52 - 16.52, 192.1 - 234.9)	325 - 398 (3.32 - 4.06, 47.1 - 57.7)

REMOVAL

1. Remove the heater core. Refer to MTC-89, "HEATER CORE" .
2. Separate the heater and cooling unit case.
3. Remove the evaporator.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Replace the O-rings on the A/C low-pressure flexible A/C hose and the high-pressure A/C pipe with new ones. Apply compressor oil to the O-rings for installation.

Removal and Installation for Expansion Valve

EJS004SN

REMOVAL

1. Discharge the refrigerant. Refer to MTC-98, "HFC-134a (R-134a) Service Procedure" .
2. Remove the heater and cooling unit assembly. Refer to MTC-87, "HEATER & COOLING UNIT ASSEMBLY" .
3. Remove the heater core and evaporator pipes grommet.
4. Remove the expansion valve.

INSTALLATION

Installation is in the reverse order of removal.

Expansion valve bolts	**: Refer to MTC-100, "Components" .**
A/C refrigerant pipe to expansion valve bolt	**: Refer to MTC-100, "Components" .**

CAUTION:

- **Replace the O-rings on then expansion valve and the A/C refrigerant pipes with new ones, then apply compressor oil to them for installation.**
- **After charging refrigerant, check for leaks.**

Checking for Refrigerant Leaks

EJS004SO

Perform a visual inspection of all refrigeration parts, fittings, hoses and components for signs of A/C oil leakage, damage, and corrosion. Any A/C oil leakage may indicate an area of refrigerant leakage. Allow extra inspection time in these areas when using either an electronic refrigerant leak detector (J-41995) or fluorescent dye leak detector (J-42220).

If any dye is observed using a fluorescent dye leak detector (J-42220), confirm the leak using a electronic refrigerant leak detector (J-41995). It is possible that the dye is from a prior leak that was repaired and not properly cleaned.

When searching for leaks, do not stop when one leak is found but continue to check for additional leaks at all system components and connections.

When searching for refrigerant leaks using an electronic refrigerant leak detector (J-41995), move the probe along the suspected leak area at 25 - 50 mm (1 - 2 in) per second and no further than 6 mm (1/4 in) from the component.

CAUTION:

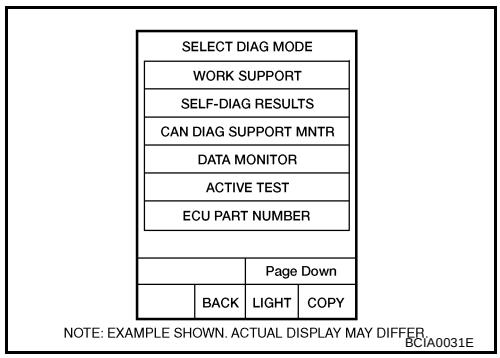
Moving the electronic refrigerant leak detector probe slower and closer to the suspected leak area will improve the chances of finding a leak.

Checking System for Leaks Using the Fluorescent Dye Leak Detector

EJS004SP

1. Check the A/C system for leaks using the fluorescent dye leak detector and safety goggles (J-42220) in a low sunlight area (area without windows preferable). Illuminate all components, fittings and lines. The dye will appear as a bright green/yellow area at the point of leakage. Fluorescent dye observed at the evaporator drain opening indicates an evaporator core assembly leak (tubes, core or expansion valve).
2. If the suspected area is difficult to see, use an adjustable mirror or wipe the area with a clean shop rag or cloth, then inspect the shop rag or cloth with the fluorescent dye leak detector (J-42220) for dye residue.
3. After the leak is repaired, remove any residual dye using refrigerant dye cleaner (J-43872) to prevent future misdiagnosis.

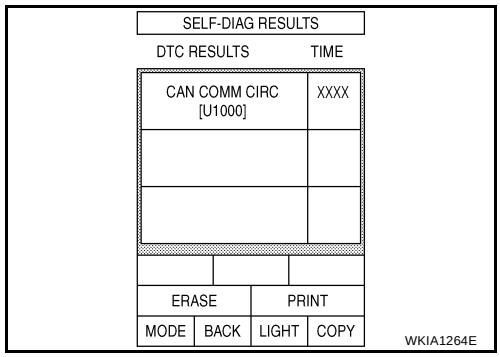
4. Select the desired part to be diagnosed on the “SELECT DIAG MODE” screen.



SELF-DIAGNOSTIC RESULTS

Operation Procedure

1. Touch “SELF-DIAG RESULTS” on “SELECT DIAG MODE” screen.
2. Self-diagnosis results are displayed.



Display Item List

Display items	CONSULT-II display code	Malfunction detection	TIME		Possible causes
			CRNT	PAST	
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	—	—	—	—	—
CAN COMM CIRC	U1000	● If CAN communication reception/transmission data has a malfunction, or if any of the control units fail, data reception/transmission cannot be confirmed. ● When the data in CAN communication is not received before the specified time.	X	X	Any of items listed below have errors: ● TRANSMIT DIAG ● ECM ● BCM/SEC

NOTE:

The details for display of the period are as follows:

- CRNT: Error currently detected with IPDM E/R.
- PAST: Error detected in the past and placed in IPDM E/R memory.

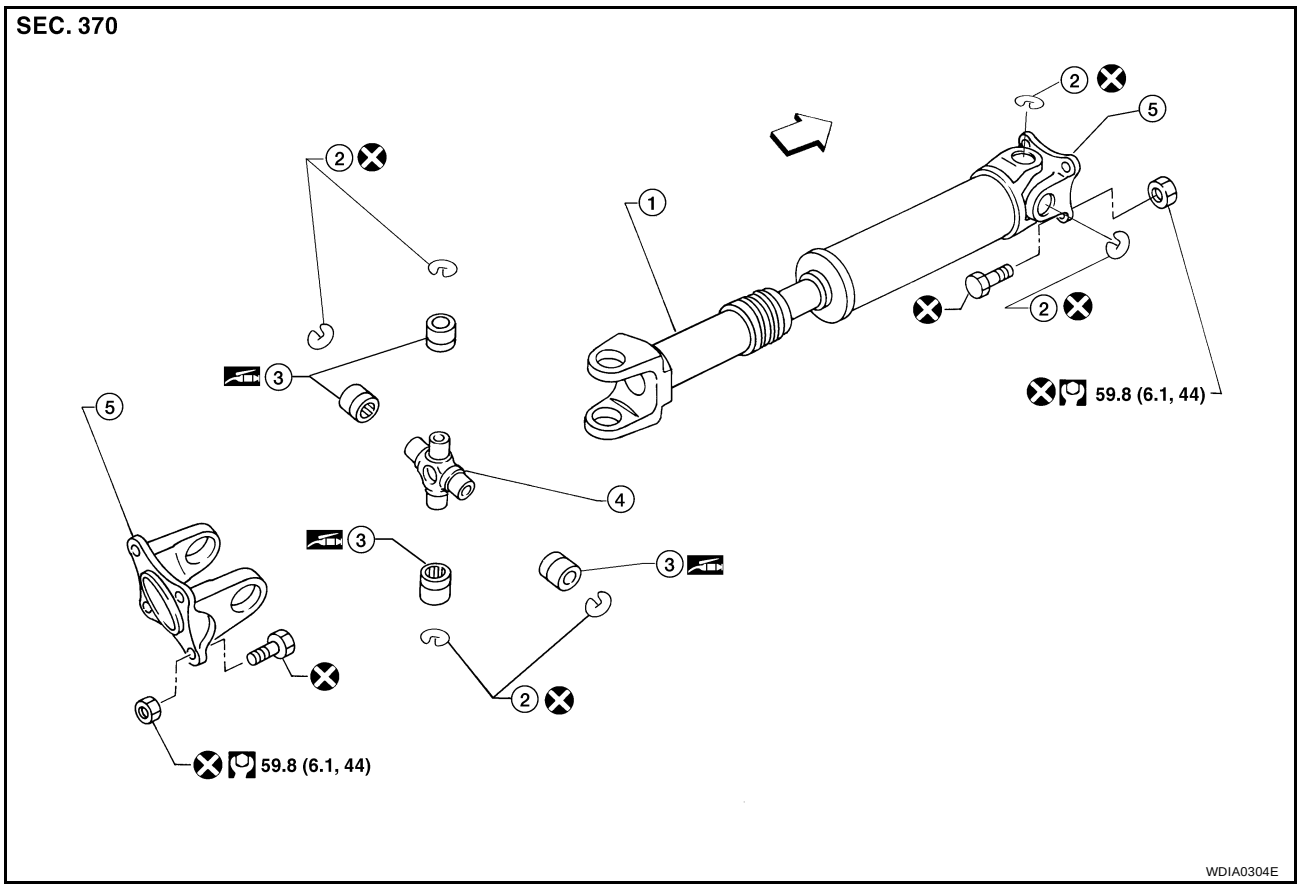
D5	F3	B/1	: A/C Compressor	F2	F59††	B/2	: Wait detection switch (all mode 4WD)
E4	F5	B/6	: Air fuel ratio (A/F) sensor 1 (bank 2)	G2	F60†	GR/2	: 4LO switch (part time 4WD)
D4	F6	GR/3	: Ignition coil No. 2 (with power transistor)	C1	F60††	GR/2	: 4LO switch (all-mode 4WD)
D4	F7	GR/3	: Ignition coil No. 4 (with power transistor)		F65	B/6	: Air fuel ratio (A/F) sensor 1 (bank 1)
E3	F8	GR/3	: Ignition coil No. 6 (with power transistor)	D3	F66	GR/3	: Camshaft position sensor (PHASE) (bank 1)
E3	F9	G/10	: A/T assembly	D2	F67	L/4	: To F150
C4	F10	—	: Engine ground	Injector sub-harness			
D2	F11	B/3	: Crankshaft position sensor (POS)	D2	F101	GR/4	: To F44
E3	F12	G/4	: Heated oxygen sensor 2 (bank 2)	B3	F102	GR/2	: Fuel injector No. 1
E3	F13	L/4	: Heated oxygen sensor 2 (bank 1)	B3	F103	GR/2	: Fuel injector No. 3
B1	F14	W/24	: To E5	C1	F104	GR/2	: Fuel injector No. 5
C4	F15	L/2	: EVAP canister purge volume control solenoid valve	Ignition coil sub-harness			
C4	F16	—	: Engine ground	D2	F125	G/8	: To F26
C3	F18	GR/2	: Fuel injector No. 2	C1	F126	GR/3	: Ignition coil No. 1 (with power transistor)
B3	F19	B/2	: VIAS control solenoid valve	C1	F127	GR/3	: Ignition coil No. 3 (with power transistor)
D4	F20	GR/2	: Fuel injector No. 4	C1	F128	GR/3	: Ignition coil No. 5 (with power transistor)
D2	F21	GR/2	: Condenser-1	C2	F129	G/2	: Intake valve timing control solenoid valve (bank 1)
D3	F22	GR/2	: Fuel injector No. 6	Knock sensor sub-harness			
D3	F23	B/3	: Camshaft position sensor (PHASE) (bank 1)	D2	F150	L/4	: To F67
C3	F24	GR/2	: Engine coolant temperature sensor	D2	F151	B/2	: Knock sensor (bank 1)
C3	F26	G/8	: To F125	D3	F152	B/2	: Knock sensor (bank 2)
C2	F32	W/16	: To E2				
B2	F33	W/16	: To E19				
D2	F44	GR/4	: To F101				
B4	F46	B/3	: Power steering pressure sensor				
B3	F50	B/6	: Electric throttle control actuator				
D4	F51	G/2	: Intake valve timing control solenoid valve (bank 2)				
C4	F53	B/6	: Mass air flow sensor				
B1	F54	B/81	: ECM				
F3	F55†	B/2	: ATP switch (all-mode 4WD)				
F2	F55††	B/2	: ATP switch (part time 4WD)				
G3	F56	B/8	: Terminal cord assembly (all-mode 4WD)				
G3	F57	B/2	: Transfer motor (all-mode 4WD)				
F3	F58†	B/8	: Transfer control device (part time 4WD)				
E2	F58††	GR/6	: Transfer control device (all-mode 4WD)				
F3	F59†	GR/2	: Wait detection switch (part time 4WD)				

Removal and Installation

EDS00399

COMPONENTS

Model 2F1310



1. Propeller shaft tube
2. Snap ring
3. Journal bearing
4. Journal
5. Flange yoke
⇐: Front

REMOVAL

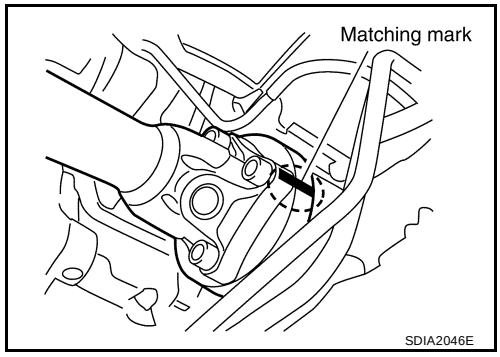
1. Put matching marks on the front propeller shaft flange yoke and the front final drive companion flange as shown.

   CAUTION:
   For matching marks, use paint. Never damage the flange yoke and companion flange of the front final drive.

2. Put matching marks on the front propeller shaft flange yoke and the transfer companion flange.

   CAUTION:
   For matching marks, use paint. Never damage the flange yoke and companion flange of the front final drive.

3. Remove the bolts and then remove the front propeller shaft from the front final drive and transfer.



7. Reservoir tank bracket
8. Return hose
9. Hose clamps
10. Suction hose
11. Connector bolts
12. Copper washers

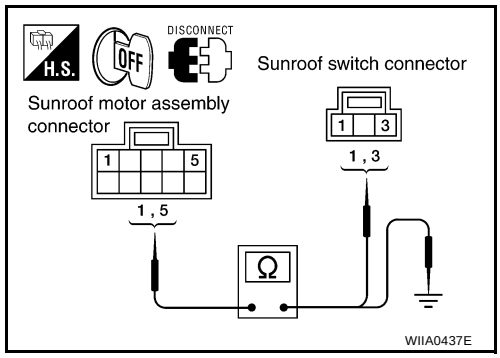
2. SUNROOF SWITCH CIRCUIT CHECK

1. Turn ignition switch OFF.
2. Disconnect sunroof motor assembly and sunroof switch connectors.
3. Check continuity between sunroof motor assembly connector B83 terminals 1, 5 and sunroof switch connector R4 terminals 1, 3.

1 - 3 : Continuity should exist.
5 - 1 : Continuity should exist.

4. Check continuity between sunroof motor assembly connector B83 terminals 1, 5 and ground.

1 - Ground : Continuity should not exist.
5 - Ground : Continuity should not exist.



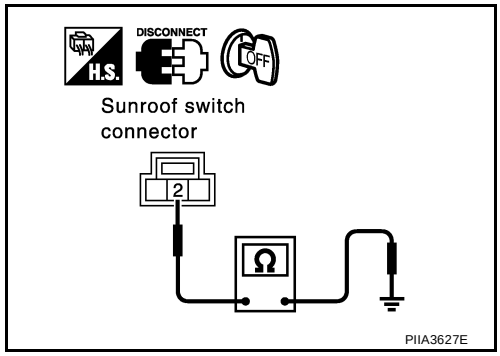
OK or NG

OK >> GO TO 3.
NG >> Repair or replace harness between sunroof motor assembly and sunroof switch.

3. SUNROOF SWITCH GROUND CIRCUIT CHECK

Check continuity between sunroof switch connector R4 terminal 2 and ground.

2 - Ground : Continuity should exist.



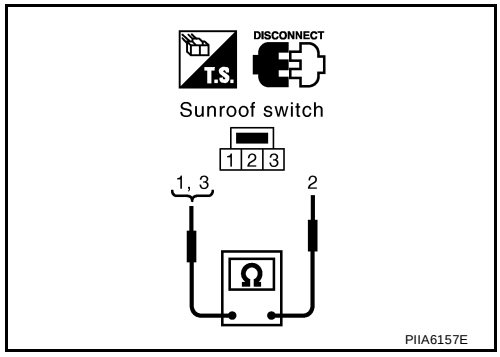
OK or NG

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

4. SUNROOF SWITCH CHECK

Check continuity between sunroof switch terminals 1, 3 and 2.

Terminals		Condition	Continuity
1	2	Sunroof switch is operated to DOWN/OPEN	Yes
		Other than above	No
3		Sunroof switch is operated to UP/CLOSE	Yes
		Other than above	No



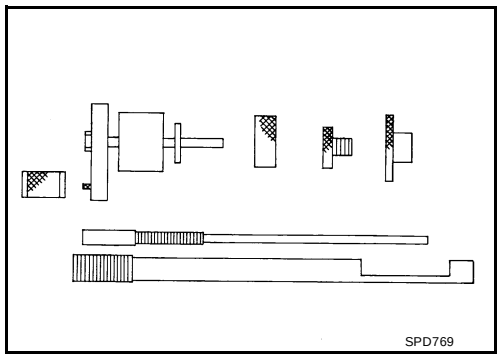
OK or NG

OK >> Replace sunroof motor assembly. Refer to RF-26, "SUNROOF MOTOR" .
NG >> Replace sunroof switch.

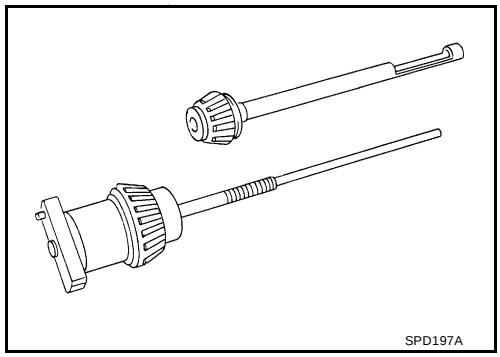
Pinion Gear Height

1. Make sure all parts are clean and that the bearings are well lubricated with gear oil.
2. Assemble the pinion gear bearings into the Tool.

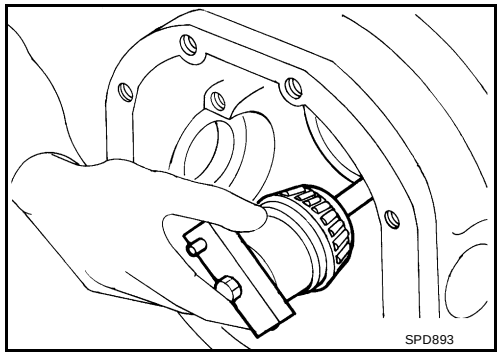
Tool number : — (J-34309)



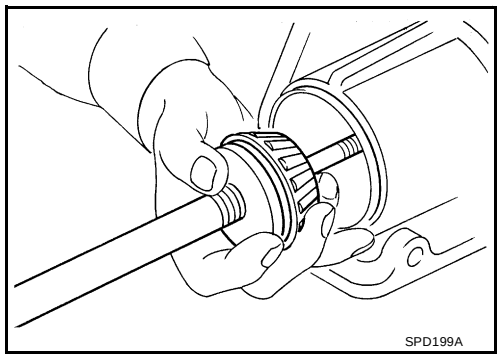
- **Pinion front bearing;** make sure the J-34309-3 pinion front bearing seat is secured tightly against the J-34309-2 gauge anvil. Then turn the pinion front bearing pilot, J-34309-5, to secure the bearing in its proper position.
- **Pinion rear bearing;** the pinion rear bearing pilot, J-34309-8, is used to center the pinion rear bearing only. The pinion rear bearing locking seat, J-34309-4, is used to lock the bearing to the assembly.
- **Installation of J-34309-9 and J-34309-16;** place a suitable 2.5 mm (0.098 in) thick plain washer between J-34309-9 and J-34309-16. Both surfaces of J-34309-9 and J-34309-16 must be parallel with a clearance of 2.5 mm (0.098 in).



3. Install the pinion rear bearing inner race into the gear carrier. Then insert the pinion preload shim selector tool, J-34309-1 gauge screw assembly.



4. Assemble the pinion front bearing inner race and the J-34309-2 gauge anvil. Assemble them together with the J-34309-1 gauge screw in the gear carrier. Make sure that the pinion height gauge plate, J-34309-16, will turn a full 360 degrees. Tighten the two sections together by hand.



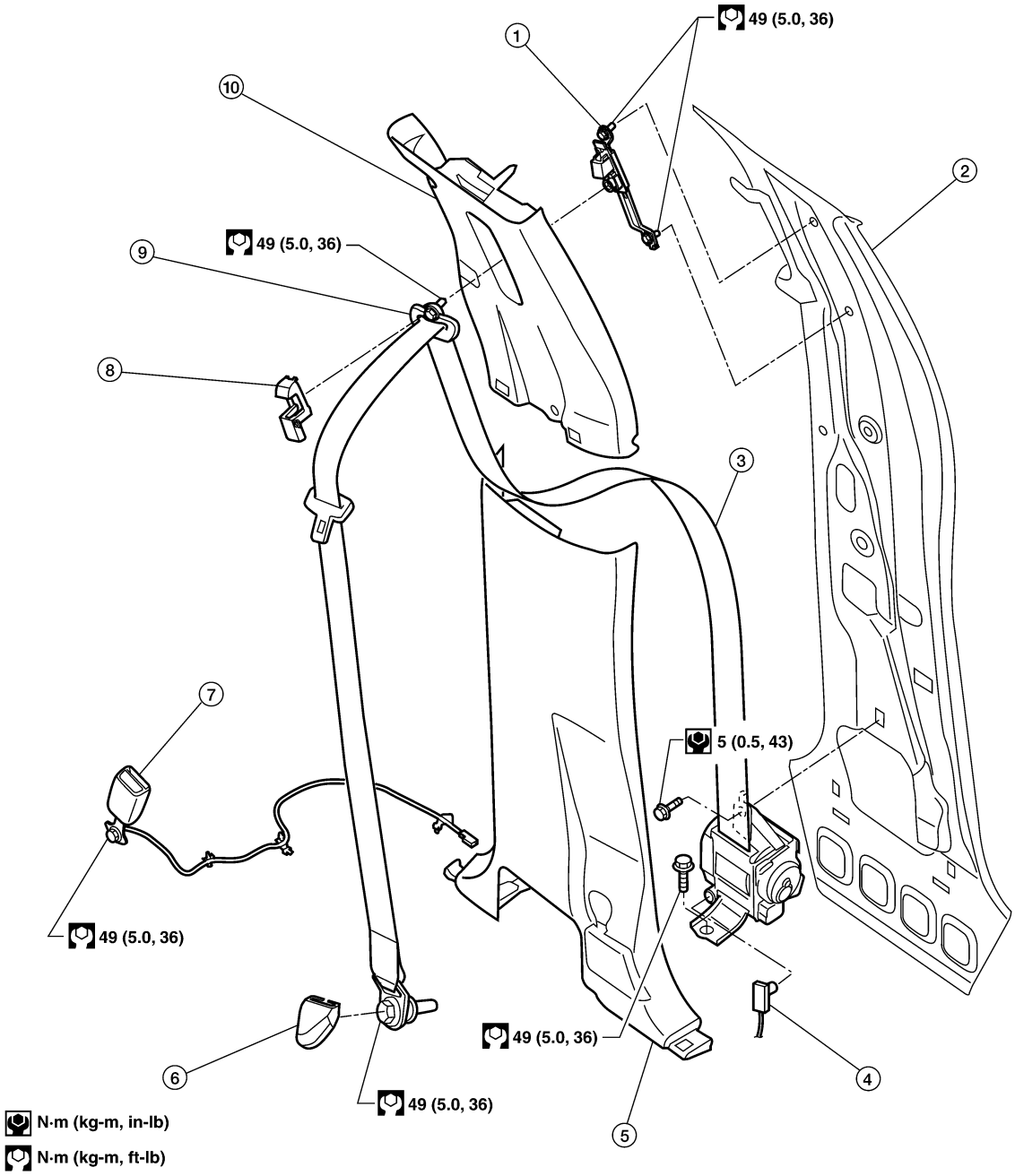
SEAT BELTS

PFP:86884

Removal and Installation of Front Seat Belt

EHS001LC

SEC. 868



LHIA0081E

1. Seat belt height adjuster
2. Center pillar
3. Seat belt retractor and belt assembly LH
4. Seat belt pre-tensioner connector
5. Center pillar lower finisher
6. Anchor cover
7. Seat belt buckle
8. D-ring anchor bolt cover
9. D-ring anchor
10. Center pillar upper finisher

Power Generation Variable Voltage Control System Inspection

EKS00FTR

CAUTION:

- **For this model, the battery current sensor that is installed to the negative battery cable measures the charging/discharging current of the battery and performs various engine controls. If an electrical component is connected directly to the negative battery terminal, the current flowing through that component will not be measured by the battery current sensor. This condition may cause a malfunction of the engine control system and battery discharge may occur. Do not connect an electrical component or ground wire directly to the battery terminal.**
- **When performing this inspection, always use the charged battery that completed the battery inspection. When the charging rate of the battery is low, the response speed of the voltage change will become slow. This is a cause of an incorrect inspection.**

INSPECTION PROCEDURE

1. CHECK SELF-DIAGNOSIS OF ECM

CAUTION:

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

Perform ECM self-diagnosis with CONSULT-II.

Self-diagnostic results content

No malfunction detected>>GO TO 2.
Malfunction detected>>Check applicable parts, and repair or replace corresponding parts.

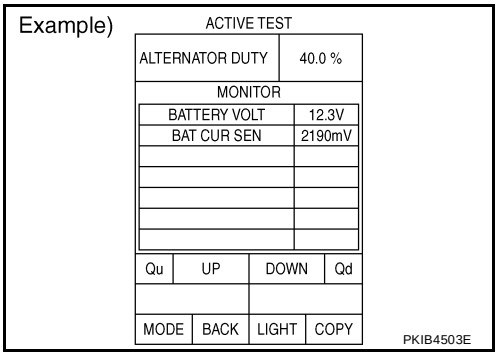
2. CHECK POWER GENERATION VARIABLE VOLTAGE CONTROL SYSTEM OPERATION

1. Connect CONSULT-II and CONSULT-II CONVERTER and start the engine.
2. Put selector lever in “P” or “N” position and turn all electric loads including A/C OFF.
3. Select “ALT DUTY” at “ACTIVE TEST” of “ENGINE”, and then check the value of “BATTERY VOLT” monitor when “ALTERNATOR DUTY” is set to 40 %.

“BATTERY VOLT”

seconds after setting “ALTERNATOR DUTY” to 40%	**12.0 V - 13.6 V**

Example)

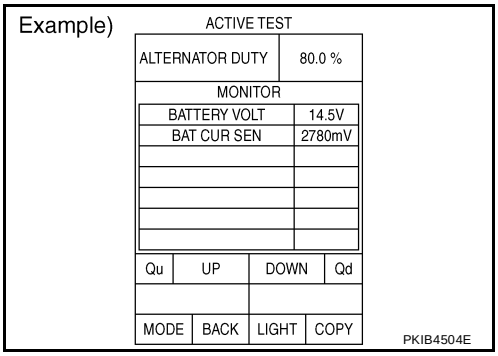


4. Check the value of “BATTERY VOLT” when “ALTERNATOR DUTY” is set to 80%.

“BATTERY VOLT”

20 seconds after setting “ALTERNATOR DUTY” to 80%	**0.5 V or more than the value of “BATTERY VOLT” when "ALTERNATOR DUTY" was 40%**

Example)



OK or NG

OK >> Inspection End.
NG >> GO TO 3. (The charging condition of the battery should be normal.)

SELF-DIAGNOSIS RESULTS

DISPLAY ITEM LIST

CONSULT-II display	Item	Malfunction is detected when...	Reference page
CAN COMM CIRC [U1000]	CAN communication	Malfunction is detected in CAN communication.	SE-35
SEAT SLIDE [B2112]	Seat slide motor	When any manual and automatic operations are not performed, if any motor operations of seat slide is detected for 0.1 second or more, status is judged “Output error”.	SE-37, SE-47
SEAT RECLINING [B2113]	Seat reclining motor	When any manual and automatic operations are not performed, if any motor operations of seat reclining is detected for 0.1 second or more, status is judged “Output error”.	SE-38, SE-48
SEAT LIFTER FR [B2114]	Seat lifting FORWARD motor	When any manual and automatic operations are not performed, if any motor operations of seat lifting FORWARD is detected for 0.1 second or more, status is judged “Output error”.	SE-39, SE-49
SEAT LIFTER RR [B2115]	Seat lifting BACKWARD motor	When any manual and automatic operations are not performed, if any motor operations of seat lifting BACKWARD is detected for 0.1 second or more, status is judged “Output error”.	SE-41, SE-50
ADJ PEDAL MOTOR [B2117]	Pedal adjust motor	When any manual and automatic operations are not performed, if motor operation of pedal is detected for 0.1 second or more, status is judged “Output error”.	SE-42, SE-51
ADJ PEDAL SENSOR [B2120]	Pedal adjust sensor	When pedal adjust sensor detects 0.5V or lower, or 4.5V or higher, for 0.5 seconds or more.	SE-51
DETENT SW [B2126]	Park SW	With the A/T selector lever in P position (park position switch OFF), if the vehicle speed of 7 km/h (4 MPH) or higher was input the park position switch input system is judged malfunctioning.	SE-72
UART COMM [B2128]	UART communication	Malfunction is detected in UART communication.	SE-75

NOTE:

- If park position switch error is detected, manual adjustable pedal operation cannot be performed when ignition switch turns ON.
- The displays of CAN communication and park position switch display error detecting condition from memory erase to the present on “TIME”.
  - If error is detected in the past and present error is detected, “CRNT” is displayed.
  - If error is detected in the past and present error is not detected, “PAST” is displayed.
  - If error has never been detected, nothing is displayed on “TIME”.
- Any items other than CAN communication and park position switch count error detection frequency occurred after erase history to “1-127”.
  - If error was detected in the past, error detection frequency from memory erase to the present is displayed on “TIME”.
  - If error has never been detected, nothing is displayed on “TIME”.
  - Can clear the detected memory.
    Normal: Clear memory in normal condition, history is erased and nothing is displayed on “TIME”.
    Error: Clear memory in error condition, error is detected again and “1” is displayed on “TIME”.

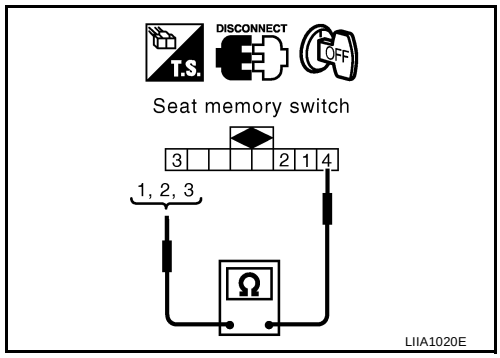
DATA MONITOR

CAN DIAGNOSIS SUPPORT MONITOR

Monitor item [UNIT]		Contents
INITIAL DIAG	[OK/NG]	When CAN communication circuit is malfunctioning, it displays “NG”.
TRANSMIT DIAG	[OK/UNKWN]	Displays [OK/UNKWN] condition of the CAN communication judged by each signal input.
BCM	[OK/UNKWN]	
METER/M&A	[OK/UNKWN]	
ECM	[OK/UNKWN]	

2. CHECK SEAT MEMORY SWITCH

1. Turn ignition switch OFF.
2. Disconnect seat memory switch.
3. Operate the setting switch and seat memory switch.
4. Check continuity between seat memory switch as follows.



Terminal		Condition	Continuity
1	4	Memory switch 1 ON	Yes
		Memory switch 1: OFF	No
2		Memory switch 2: ON	Yes
		Memory switch 2: OFF	No
3		Set switch: ON	Yes
		Set switch: OFF	No

OK or NG

OK >> GO TO 3.
NG >> Replace seat memory switch.

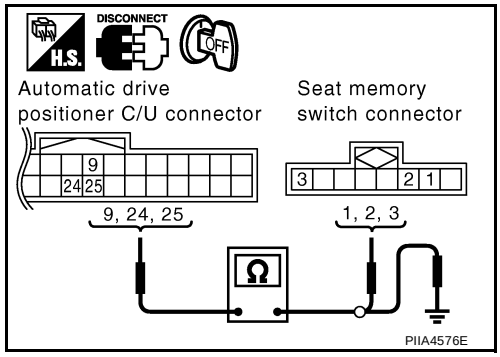
3. CHECK HARNESS CONTINUITY

1. Disconnect automatic drive positioner control unit.
2. Check continuity between automatic drive positioner control unit connector M33 terminals 9, 24, 25 and seat memory switch connector D5 terminals 1, 2, 3.

9 - 1 : Continuity should exist.
24 - 3 : Continuity should exist.
25 - 2 : Continuity should exist.

3. Check continuity between automatic drive positioner control unit connector M41 terminals 9, 24, 25 and ground.

9 - Ground : Continuity should not exist.
24 - Ground : Continuity should not exist.
25- Ground : Continuity should not exist.



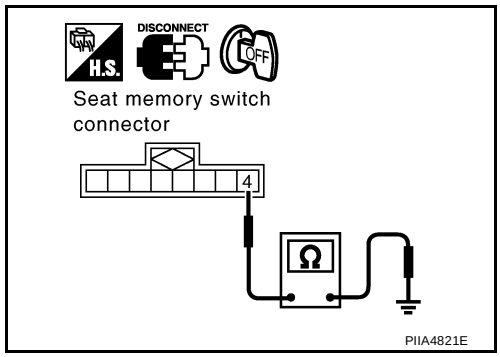
OK or NG

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

4. CHECK SEAT MEMORY SWITCH GROUND CIRCUIT

Check continuity between seat memory switch D5 terminal 4 and ground.

4 - Ground : Continuity should exist.



OK or NG

OK >> Replace automatic drive positioner control unit.
NG >> Repair or replace harness.

PRECAUTIONS

PFP:00001

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

EHS001LI

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

WARNING:

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

Precautions for SRS “AIR BAG” and “SEAT BELT PRE-TENSIONER” Service

EHS001LJ

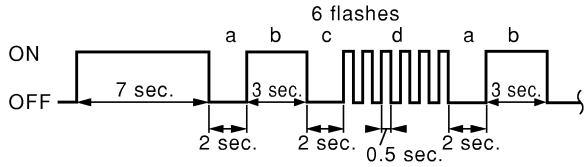
- Do not use electrical test equipment to check SRS circuits unless instructed to in this Service Manual.
- Before servicing the SRS, turn ignition switch OFF, disconnect both battery cables and wait at least 3 minutes.
  For approximately 3 minutes after the cables are removed, it is still possible for the air bag and seat belt pre-tensioner to deploy. Therefore, do not work on any SRS connectors or wires until at least 3 minutes have passed.
- The air bag diagnosis sensor unit must always be installed with the arrow mark “⇐” pointing toward the front of the vehicle for proper operation. Also check the air bag diagnosis sensor unit for cracks, deformities or rust before installation and replace as required.
- The spiral cable must be aligned with the neutral position since its rotations are limited. Do not attempt to turn steering wheel or column after removal of steering gear.
- Handle air bag module carefully. Always place driver and front passenger air bag modules with the pad side facing upward and seat mounted front side air bag module standing with the stud bolt side facing down.
- Conduct self-diagnosis to check entire SRS for proper function after replacing any components.
- After air bag inflates, the front instrument panel assembly should be replaced if damaged.

Occupant Classification System Precaution

EHS001LK

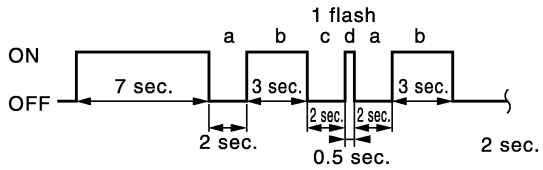
Replace control unit and passenger front seat cushion as an assembly.

<Crash zone sensor>

Flash pattern	Repair order
a through d are repeated. d: Six flashes indicate malfunctioning crash zone sensor circuit. 	1. Visually check the wiring harness connection. 2. Replace the harness if it has visible damage. 3. Replace the crash zone sensor. 4. Replace the air bag diagnosis sensor unit. 5. Replace the related harness.

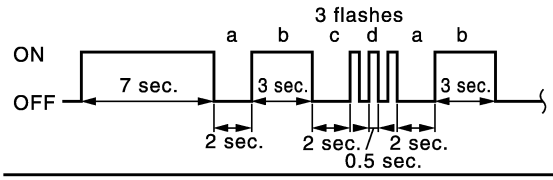
WHIA0200E

<Front RH seat belt pre-tensioner>

Flash pattern	Repair order
a through d are repeated. d: One flash indicates malfunctioning front RH seat belt pre-tensioner circuit. 	1. Visually check the wiring harness connections. 2. Replace the harness if it has visible damage. 3. Replace front RH seat belt pre-tensioner. 4. Replace the air bag diagnosis sensor unit. 5. Replace the related harness.

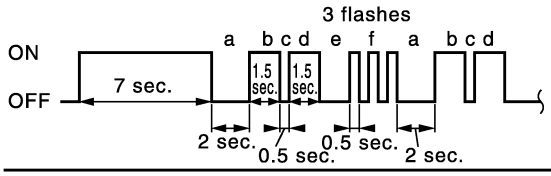
WHIA0262E

<Front LH seat belt pre-tensioner>

Flash pattern	Repair order
a through d are repeated. d: Three flashes indicate malfunctioning front LH seat belt pre-tensioner circuit. 	1. Visually check the wiring harness connections. 2. Replace the harness if it has visible damage. 3. Replace front LH seat belt pre-tensioner. 4. Replace the air bag diagnosis sensor unit. 5. Replace the related harness.

WHIA0263E

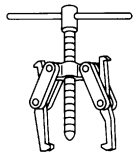
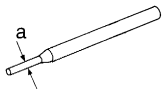
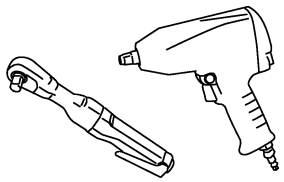
<RH side air bag (Satellite) sensor>

Flash pattern	Repair order
a through f are repeated. f: Three flashes indicate malfunctioning RH side air bag (Satellite) sensor circuit. 	1. Visually check the wiring harness connection. 2. Replace the harness if it has visible damage. 3. Replace the RH side air bag (Satellite) sensor. 4. Replace the air bag diagnosis sensor unit. 5. Replace the related harness.

WHIA0203E

Commercial Service Tools

EDS0035W

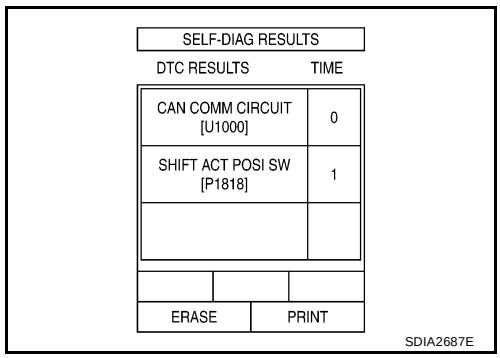
Tool name	Description
Puller  NT077	● Removing companion flange
Pin punch  NT410	● Removing retainer pin ● Installing retainer pin **a: 6 mm (0.24 in) dia.**
Power tool  PBIC0190E	● Removing transfer case assembly

SELF-DIAG RESULT MODE

Operation Procedure

1. Perform “CONSULT-II SETTING PROCEDURE”. Refer to TF-46, "CONSULT-II SETTING PROCEDURE".
2. With engine at idle, touch “SELF-DIAG RESULTS”.
   Display shows malfunction experienced since the last erasing operation.

   NOTE:
   - **The details for “TIME” are as follow:**
   - **“0”: Error currently detected with transfer control unit.**
   - **Except for “0”: Error detected in the past and memorized with transfer control unit.**
     Detects frequency of driving after DTC occurs (frequency of turning ignition switch “ON/OFF”).



Display Item List

Items (CONSULT-II screen terms)	Diagnostic item is detected when...	Check item
CONTROL UNIT 1 [P1802]	Malfunction is detected in the memory (RAM) system of transfer control unit.	TF-59, "Transfer Control Unit"
CONTROL UNIT 2 [P1803]	Malfunction is detected in the memory (ROM) system of transfer control unit.	TF-59, "Transfer Control Unit"
CONTROL UNIT 3 [P1804]	Malfunction is detected in the memory (EEPROM) system of transfer control unit.	TF-59, "Transfer Control Unit"
VHCL SPEED SEN·AT [P1807]	● Malfunction is detected in output shaft revolution signal that is output from TCM through CAN communication. ● Improper signal is input while driving.	TF-60, "Output Shaft Revolution Signal (TCM)"
VHCL SPEED SEN·ABS [P1808]	● Malfunction is detected in vehicle speed signal that is output from ABS actuator and electric unit (control unit) through CAN communication. ● Improper signal is input while driving.	TF-60, "Vehicle Speed Sensor (ABS)"
CONTROL UNIT 4 [P1809]	AD converter system of transfer control unit is malfunctioning.	TF-59, "Transfer Control Unit"
4L POSI SW TF [P1810]	Improper signal from neutral-4LO switch is input due to open or short circuit.	TF-61, "Neutral-4LO Switch"
BATTERY VOLTAGE [P1811]	Power supply voltage for transfer control unit is abnormally low while driving.	TF-56, "Power Supply Circuit For Transfer Control Unit"
4WD MODE SW [P1813]	More than two switch inputs are simultaneously detected due to short circuit of 4WD shift switch.	TF-64, "4WD Shift Switch"
4WD DETECT SWITCH [P1814]	Improper signal from wait detection switch is input due to open or short circuit.	TF-68, "Wait Detection Switch"
PNP SW/CIRC [P1816]	When A/T PNP switch signal is malfunction or communication error between the control units.	TF-71, "PNP Switch Signal (TCM)"
SHIFT ACTUATOR [P1817]	● Motor does not operate properly due to open or short circuit in actuator motor. ● Malfunction is detected in the actuator motor. (When 4WD shift switch is operated and actuator motor is not operated) ● Malfunction is detected in transfer shift high relay and transfer shift low relay.	TF-72, "Actuator Motor"
SHIFT ACT POSI SW [P1818]	● Improper signal from actuator position switch is input due to open or short circuit. ● Malfunction is detected in the actuator position switch.	TF-79, "Actuator Position Switch"

Transfer Control Device

EDS0036O

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item [Unit]	Content	Condition		Display value
SHIFT AC MON1 [ON/OFF]	Check signal for transfer control unit signal output	● Vehicle stopped ● Engine running ● A/T selector lever “N” position ● Brake pedal depressed	4WD shift switch: 4H to 4LO (“Wait” function is operating.)	ON
			Except the above	OFF
SHIFT AC MON2 [ON/OFF]	Check signal for transfer control unit signal output	● Vehicle stopped ● Engine running ● A/T selector lever “N” position ● Brake pedal depressed	4WD shift switch: 4LO to 4H (“Wait” function is operating.)	ON
			Except the above	OFF

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition		Data (Approx.)
16	Y	Power supply	Ignition switch: ON		Battery voltage
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)		0V
22	GR	Power supply	Ignition switch: ON		Battery voltage
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)		0V
30	V	Shut off relay	Ignition switch: ON		0V
			Ignition switch: OFF (5 seconds after ignition switch is turned OFF)		Battery voltage
33	GR	Transfer shift high relay monitor	● Vehicle stopped ● Engine running ● A/T selector lever “N” position ● Brake pedal depressed	4WD shift switch: 4H to 4LO (“Wait” function is operating.)	Battery voltage
				Except the above	0V
42	Y	Transfer shift low relay monitor	● Vehicle stopped ● Engine running ● A/T selector lever “N” position ● Brake pedal depressed	4WD shift switch: 4LO to 4H (“Wait” function is operating.)	Battery voltage
				Except the above	0V

CAUTION:

When using a circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminals.

2. CHECK TRANSFER CONTROL UNIT GROUND CIRCUIT

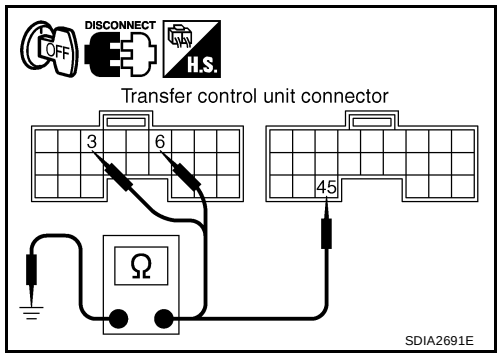
1. Turn ignition switch “OFF”. (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check continuity between transfer control unit harness connector M152 terminals 3 and 6, and M153 terminal 45 and ground.

Continuity should exist.

Also check harness for short to power.

OK or NG

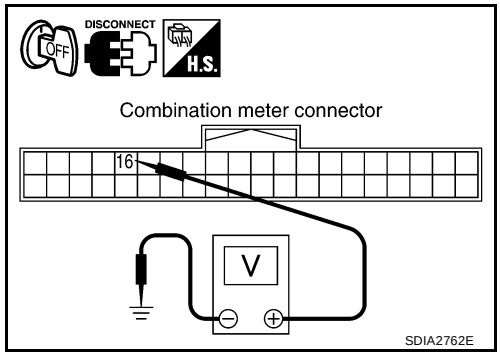
OK >> GO TO 3.
NG >> Repair open circuit or short to power in harness or connectors.



3. CHECK COMBINATION METER POWER SUPPLY CIRCUIT

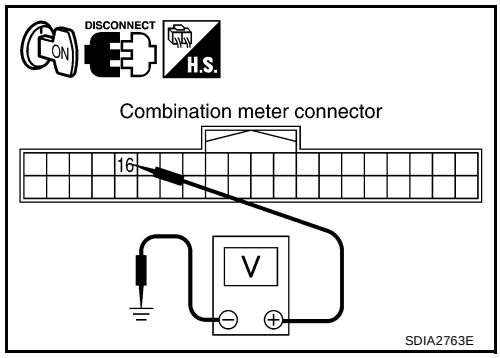
1. Turn ignition switch “OFF”. (Stay for at least 5 seconds.)
2. Disconnect transfer control unit harness connector.
3. Check voltage between combination meter harness connector terminal and ground.

Connector	Terminal	Voltage (Approx.)
M24	16 - Ground	0V



4. Turn ignition switch “ON”. (Do not start engine.)
5. Check voltage between combination meter harness connector terminal and ground.

Connector	Terminal	Voltage (Approx.)
M24	16 - Ground	Battery voltage

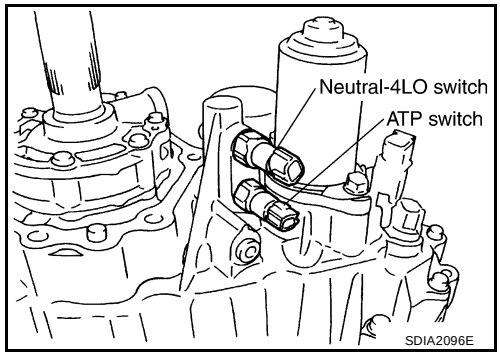


OK or NG

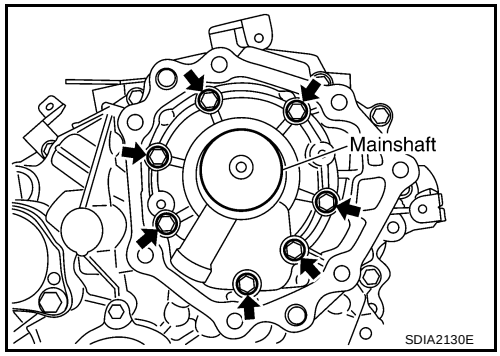
OK >> GO TO 4.
NG >> Check the following. If any items are damaged, repair or replace damaged parts.

- 10A fuse [No. 14, located in the fuse block (J/B)]. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .
- Harness for short or open between ignition switch and combination meter harness connector M24 terminal 16.
- Ignition switch. Refer to PG-4, "POWER SUPPLY ROUTING CIRCUIT" .

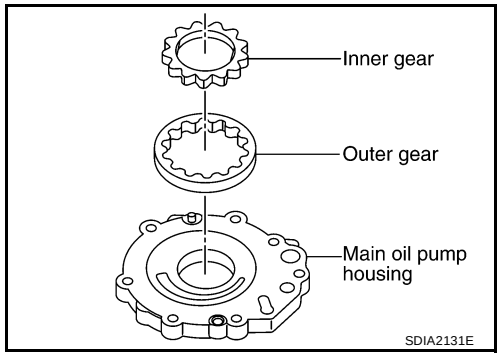
6. Remove the neutral-4LO and ATP switches.



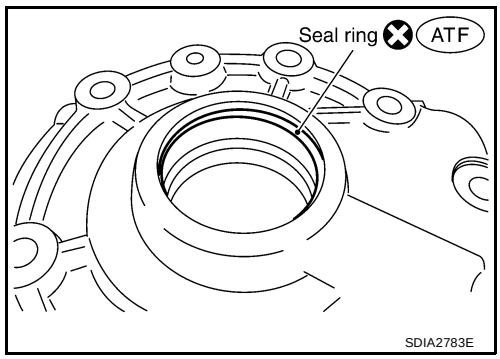
7. Remove the bolts and main oil pump cover.



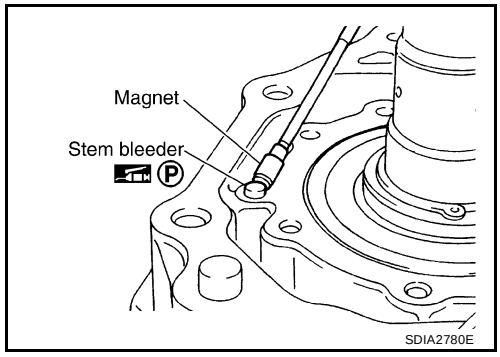
8. Remove the outer gear, inner gear and main oil pump housing from the center case.

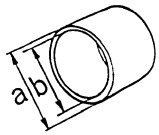
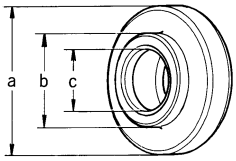


9. Remove the seal ring from the main oil pump cover.



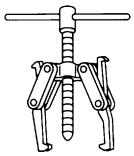
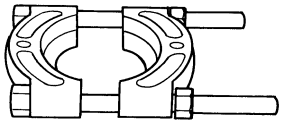
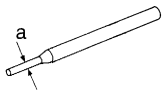
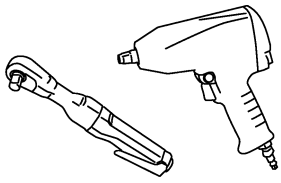
10. Remove the stem bleeder from the bleed hole.



Tool number (Kent-Moore No.) Tool name	Description
ST27863000 (—) Drift  ZZA1003D	● Installing carrier bearing **a: 75 mm (2.95 in) dia.** **b: 62 mm (2.44 in) dia.**
ST30901000 (J-26010-01) Drift  ZZA0978D	● Installing rear bearing ● Installing front bearing **a: 79 mm (3.11 in) dia.** **b: 45 mm (1.77 in) dia.** **c: 35.2 mm (1.38 in) dia.**

Commercial Service Tools

EDS0037T

Tool name	Description
Puller  NT077	● Removing companion flange ● Removing mainshaft rear bearing
Puller  ZZB0823D	● Removing mainshaft rear bearing
Pin punch  NT410	● Removing retaining pin **a: 6 mm (0.24 in) dia.**
Power tool  PBIC0190E	● Loosening bolts and nuts

4LO Switch

EDS0038E

CONSULT-II REFERENCE VALUE IN DATA MONITOR MODE

Data are reference value.

Monitored item	Content	Condition		Display value
4L POSI SW [ON/OFF]	Condition of 4LO switch	● Vehicle stopped ● Engine running ● A/T selector lever “N” position ● Brake pedal depressed	4WD shift switch: 4LO	ON
			Except the above	OFF

TRANSFER CONTROL UNIT TERMINALS AND REFERENCE VALUE

Data are reference value and are measured between each terminal and ground.

Terminal	Wire color	Item	Condition		Data (Approx.)
24	Y	4LO switch	● Vehicle stopped ● Engine running ● A/T selector lever “N” position ● Brake pedal depressed	4WD shift switch: 4LO	0V
				Except the above	Battery voltage

CAUTION:

When using a circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminals.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Confirm 4WD shift indicator lamp and 4LO indicator lamp when ignition switch is turned to ON.

Do 4WD shift indicator lamp and 4LO indicator lamp turn on?

YES >> GO TO 2.
NO >> Go to TF-256, "4WD Shift Indicator Lamp and 4LO Indicator Lamp Do Not Turn ON" .

2. CHECK SYSTEM FOR 4WD SHIFT SWITCH

Perform trouble diagnosis for 4WD shift switch system. Refer to TF-230, "4WD Shift Switch" .

OK or NG

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

3. CHECK SYSTEM FOR WAIT DETECTION SWITCH

Perform trouble diagnosis for wait detection switch system. Refer to TF-234, "Wait Detection Switch" .

OK or NG

OK >> GO TO 4.
NG >> Repair or replace damaged parts.

4. CHECK SYSTEM FOR 4LO SWITCH

Perform trouble diagnosis for 4LO switch system. Refer to TF-227, "4LO Switch" .

OK or NG

OK >> GO TO 5.
NG >> Repair or replace damaged parts.

5. CHECK SYSTEM FOR ATP SWITCH

Perform trouble diagnosis for ATP switch system. Refer to TF-252, "ATP Switch" .

OK or NG

OK >> GO TO 6.
NG >> Repair or replace damaged parts.

6. SYMPTOM CHECK

Check again.

OK or NG

OK >> Inspection End
NG >> GO TO 7.

7. CHECK TRANSFER CONTROL UNIT

Check transfer control unit input/output signal. Refer to TF-211, "Transfer Control Unit Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 8.
NG >> Check transfer control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

FRONT DRIVE SHAFT

PFP:39100

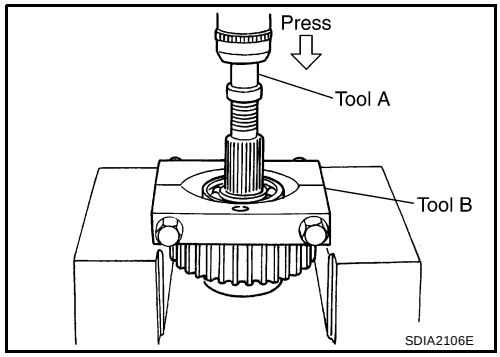
Disassembly and Assembly

EDS00392

DISASSEMBLY

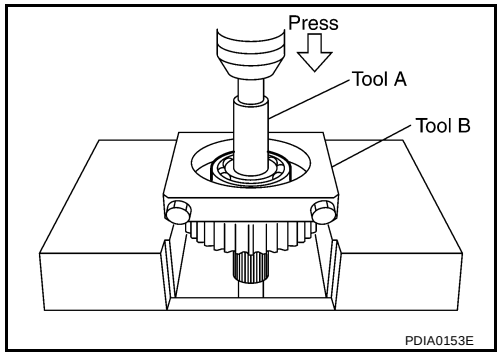
1. Remove the front bearing using Tools.

Tool number **A: ST35300000 (—)**
B: ST30021000 (J-22912-01)



2. Remove the rear bearing using Tools.

Tool number **A: ST33710000 (—)**
B: ST30021000 (J-22912-01)

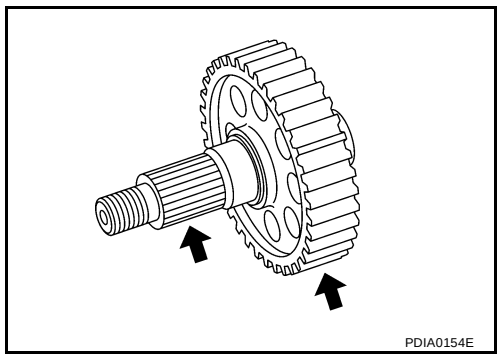


INSPECTION AFTER DISASSEMBLY

Front Drive Shaft

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

- Damage, peeling, dent, uneven wear and bending of the shaft.
- Excessive wear, damage and peeling of the gear.



Bearing

Check the bearing for damage and rough rotation. If necessary, replace the bearing with a new one.