Edition: January 2005
Revision:April 2007
Publication No. SM7E-1Y50U1

INFINITI

M35/M45

MODEL Y50 SERIES

INFINITI

QUICK REFERENCE INDEX

TROUBLE DIAGNOSIS FOR SELF-DIAGNOSTIC ITEMS

PFP:25962

Diagnostic Trouble Code (DTC) Chart

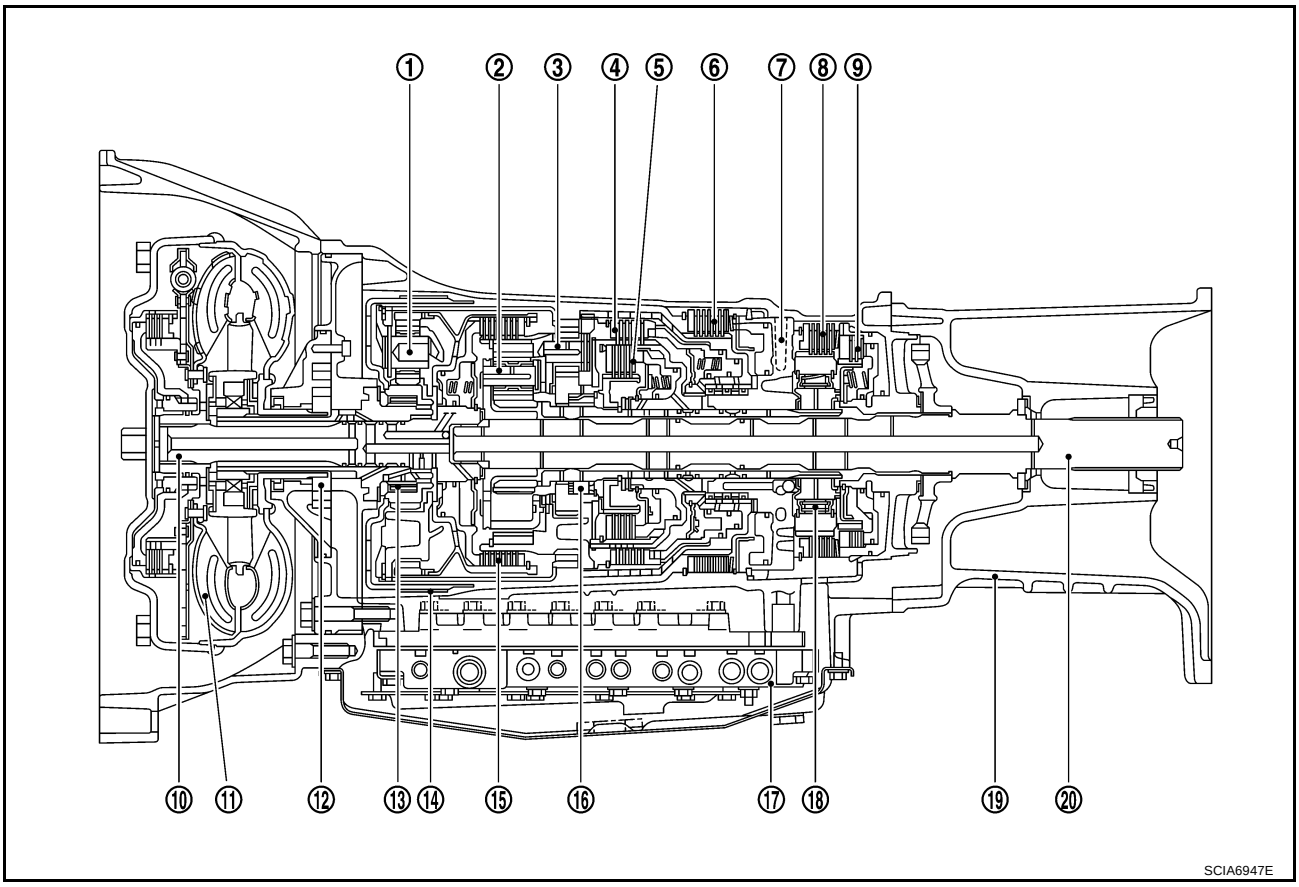
NKS004CZ

×: Applicable

DTC No.	CONSULT-II screen terms	ICC system warning lamp	Fail-safe			Malfunctions detected where...	Reference page
			Vehicle-to-vehicle distance control mode	Conventional (fixed speed) cruise control mode	Brake assist (with preview function)		
0	CONTROL UNIT [C1A00]	×	×	×	×	● ICC sensor integrated unit internal malfunction.	ACS-42
1	POWER SUPPLY CIR [C1A01]	×	×	×	×	● ICC sensor integrated unit power supply voltage is excessively low (less than 8V).	ACS-42
2	POWER SUPPLY CIR 2 [C1A02]	×	×	×	×	● ICC sensor integrated unit power supply voltage is excessively high (more than 19V).	ACS-42
3	VHCL SPEED SE CIRC [C1A03]	×	×	×	×	● Wheel sensor malfunction. ● ABS actuator and electric unit (control unit) malfunction. ● A/T vehicle speed sensor malfunction. ● TCM malfunction. ● ICC sensor integrated unit malfunction.	ACS-43
4	ABS/TCS/VDC CIRC [C1A04]	×	×	×	×	● VDC/TCS/ABS system malfunction.	ACS-43
5	BRAKE SW/STOP L SW [C1A05]	×	×	×	×	● Stop lamp switch harness is open or shorted. ● Stop lamp switch is stuck to OFF. ● ICC brake switch or stop lamp switch is stuck to ON. ● ECM malfunction. ● ABS actuator and electric unit (control unit) malfunction.	ACS-44
6	OPERATION SW CIRC [C1A06]	×	×	×		● ICC steering switch harness or spiral cable is open or shorted. ● ICC steering switch malfunction.	ACS-48
12	LASER BEAM OFFCNTR [C1A12]	×	×		×	● Laser beam of ICC sensor integrated unit is off the aiming point.	ACS-49
13	STOP LAMP RLY FIX [C1A13]	×	×		×	● Normally open terminal of ICC brake hold relay is stuck. ● Improper installation of ICC brake switch or stop lamp switch. ● ICC brake switch malfunction. ● ECM malfunction. ● ABS actuator and electric unit (control unit) malfunction.	ACS-50

Cross-Sectional View (AWD Models)

NCS001JN



1. Front planetary gear
2. Mid planetary gear
3. Rear planetary gear
4. Direct clutch
5. High and low reverse clutch
6. Reverse brake
7. Drum support
8. Forward brake
9. Low coast brake
10. Input shaft
11. Torque converter
12. Oil pump
13. 3rd one-way clutch
14. Front brake
15. Input clutch
16. 1st one-way clutch
17. Control valve with TCM
18. Forward one-way clutch
19. Adapter case
20. Output shaft

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
12	No Up Shift	Gear does not change from $D_3 \rightarrow D_4$ or from $M_3 \rightarrow M_4$. Refer to AT-205, "A/T Does Not Shift: $D_3 \rightarrow D_4$".	ON vehicle	1. A/T fluid level and state	AT-53
				2. Vehicle speed sensor·A/T and vehicle speed sensor·MTR	AT-119, AT-140
				3. ATF pressure switch 3 and input clutch solenoid valve	AT-174, AT-147
				4. ATF pressure switch 1 and front brake solenoid valve	AT-172, AT-151
				5. Line pressure test	AT-55
				6. CAN communication line	AT-105
				7. Control valve with TCM	AT-236
			OFF vehicle	8. Input clutch	AT-327
13		Gear does not change from $D_4 \rightarrow D_5$ or from $M_4 \rightarrow M_5$. Refer to AT-207, "A/T Does Not Shift: $D_4 \rightarrow D_5$".	ON vehicle	1. A/T fluid level and state	AT-53
				2. Vehicle speed sensor·A/T and vehicle speed sensor·MTR	AT-119, AT-140
				3. ATF pressure switch 1 and front brake solenoid valve	AT-172, AT-151
				4. ATF pressure switch 5 and direct clutch solenoid valve	AT-176, AT-155
				5. Turbine revolution sensor	AT-117
				6. Line pressure test	AT-55
				7. CAN communication line	AT-105
				8. Control valve with TCM	AT-236
			OFF vehicle	9. Front brake (brake band)	AT-301
				10. Input clutch	AT-327
14	No Down Shift	In “D” or “M” position, does not downshift to 4th gear.	ON vehicle	1. A/T fluid level and state	AT-53
				2. Vehicle speed sensor·A/T and vehicle speed sensor·MTR	AT-119, AT-140
				3. ATF pressure switch 1 and front brake solenoid valve	AT-172, AT-151
				4. ATF pressure switch 5 and direct clutch solenoid valve	AT-176, AT-155
				5. CAN communication line	AT-105
				6. Line pressure test	AT-55
				7. Control valve with TCM	AT-236
			OFF vehicle	8. Front brake (brake band)	AT-301
				9. Input clutch	AT-327

DTC P0717 TURBINE REVOLUTION SENSOR

PFP:31935

Description

NCS001L8

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

CONSULT-II Reference Value

NCS001L9

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

On Board Diagnosis Logic

NCS001LA

- 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

NCS001LB

- Harness or connectors
  (Sensor circuit is open or shorted.)
- Turbine revolution sensor 1 and/or 2

DTC Confirmation Procedure

NCS001LC

CAUTION:

- **Always drive vehicle at a safe speed.**
- **Be careful not to rev engine into the red zone on the tachometer.**

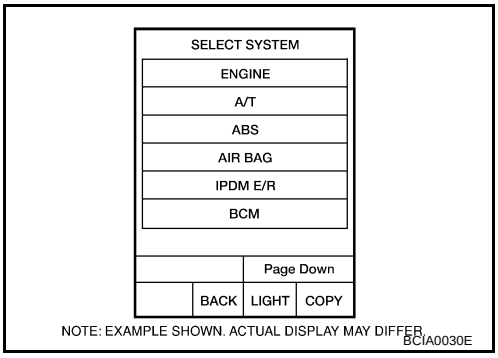
NOTE:

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.
2. Select “SELECTION FROM MENU” in “DATA MONITOR” mode for “A/T” with CONSULT-II and check monitor “VHCL/S SE-A/T”, “ENGINE SPEED”, “ACCELE POSI”, “SLCT LVR POSI ” and “GEAR”.
3. Touch “START”.
4. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   VHCL/S SE-A/T: 40 km/h (25 MPH) or more
   ENGINE SPEED: 1,500 rpm or more
   ACCELE POSI: More than 0.5/8
   SLCT LVR POSI: “D” position
   GEAR (Turbine revolution sensor 1): “4” or “5” position
   GEAR (Turbine revolution sensor 2): All positions
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
5. If DTC is detected, go to AT-118, "Diagnostic Procedure" .



WITH GST

Follow the procedure “WITH CONSULT-II”.

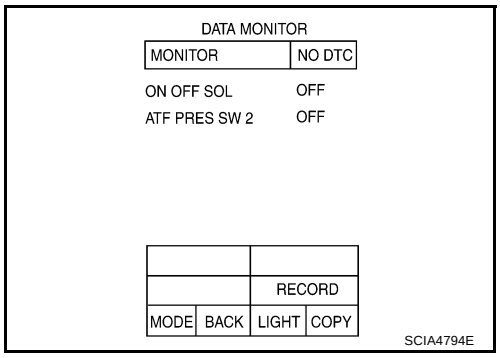
Diagnostic Procedure

NCS001OS

1. CHECK INPUT SIGNALS

With CONSULT-II

1. Start engine.
2. Select “SELECTION FROM MENU” in “DATA MONITOR” mode for “A/T” with CONSULT-II.
3. Drive vehicle in the manual mode (“1st” or “2nd” gear), and confirm the ON/OFF actuation of the “ATF PRES SW 2” and “ON OFF SOL”.



Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to AT-21 .	ON
	Low coast brake disengaged. Refer to AT-21 .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to AT-21 .	ON
	Low coast brake disengaged. Refer to AT-21 .	OFF

OK or NG

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

2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to AT-180, "MAIN POWER SUPPLY AND GROUND CIRCUIT" .

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following.

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> Replace the control valve with TCM. Refer to AT-236, "Control Valve With TCM and A/T Fluid Temperature Sensor 2" .
NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform “DTC Confirmation Procedure”. Refer to AT-165, "DTC Confirmation Procedure" .

OK or NG

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

6. DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to AT-64, "Symptom Chart" (Symptom No.47).

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK SYMPTOM

Check again. Refer to AT-61, "Cruise Test - Part 3" .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 8.

8. CHECK TCM

1. Check TCM input/output signals. Refer to AT-89, "TCM Input/Output Signal Reference Values" .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

9. DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to AT-64, "Symptom Chart" (Symptom No.47).

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

A/T Does Not Shift: 4th Gear → 3rd Gear

NCS001QH

SYMPTOM:

When shifted from M4 to M3 position in manual mode, does not downshift from 4th to 3rd gear.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to AT-92, "SELF-DIAGNOSTIC RESULT MODE" , AT-103, "TCM SELF-DIAGNOSTIC PROCEDURE (NO TOOLS)" .

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to AT-92, "SELF-DIAGNOSTIC RESULT MODE" , AT-104, "Judgement Self-diagnosis Code" .
NO >> GO TO 2.

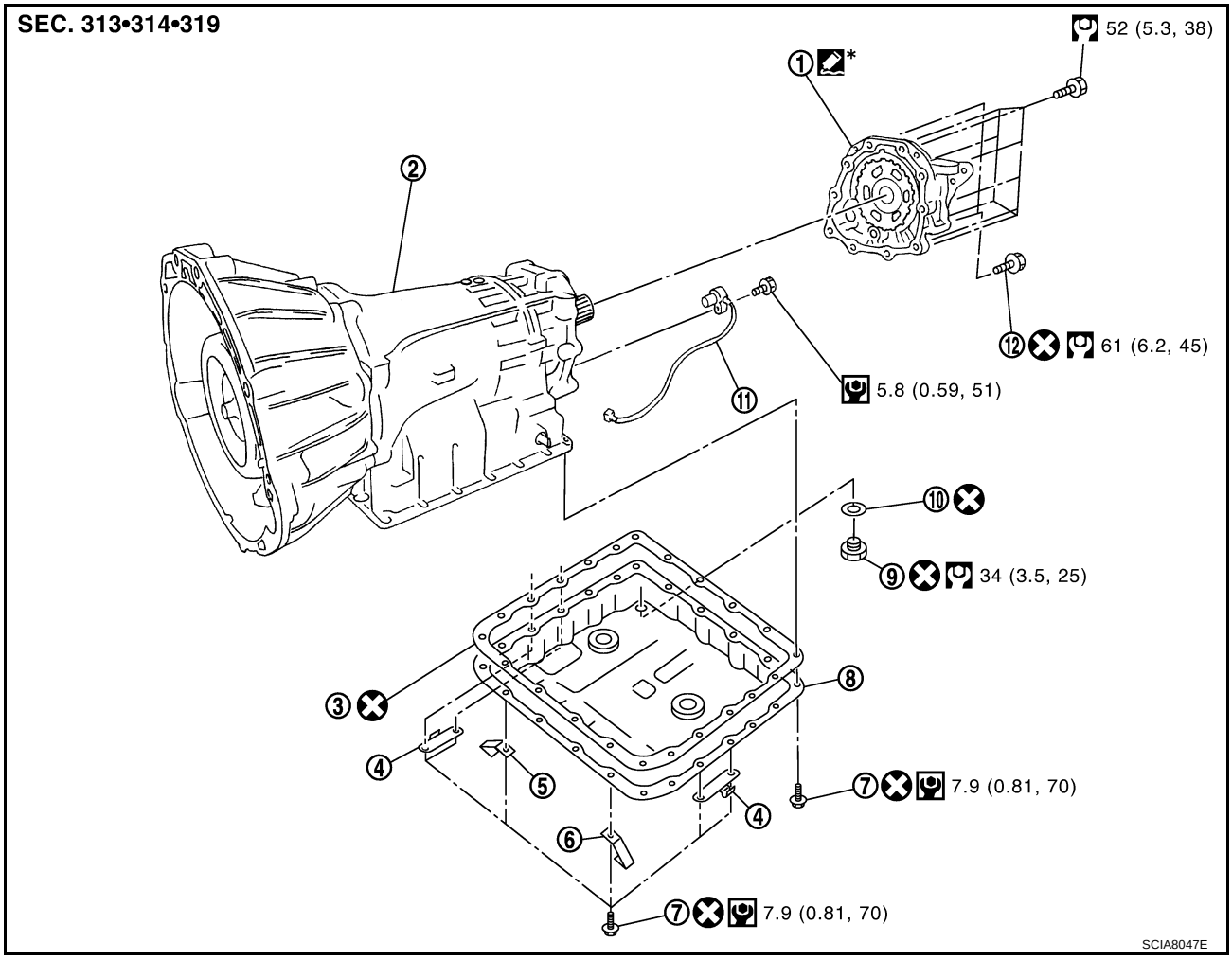
2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-13, "Checking A/T Fluid" .

OK or NG

OK >> GO TO 3.
NG >> Refill ATF.

VK45DE models



1.	Output shaft & companion flange complement	2.	A/T	3.	Oil pan gasket
4.	Clip	5.	Bracket	6.	Bracket
7.	Oil pan mounting bolt	8.	Oil pan	9.	Drain plug
10.	Drain plug gasket	11.	Revolution sensor	12.	Self-sealing bolt

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-11, "Components" .

However, refer to the following symbols for others.

*: Apply Genuine Anaerobic Liquid Gasket or equivalent. Refer to GI-47, "Recommended Chemical Products and Sealants" .

Removal

1. Disconnect the battery cable from the negative terminal.
2. Drain ATF through drain plug.
3. Remove exhaust front tube and center muffler with power tool. Refer to EX-5, "Removal and Installation"
4. Remove rear propeller shaft. Refer to PR-8, "Removal and Installation" .
5. Remove control rod. Refer to AT-226, "Control Rod Removal and Installation" .
6. Remove oil pan, oil pan gasket and clips (VQ35DE models) or oil pan, oil pan gasket, brackets and clips (VK45DE models) according to the following procedures.

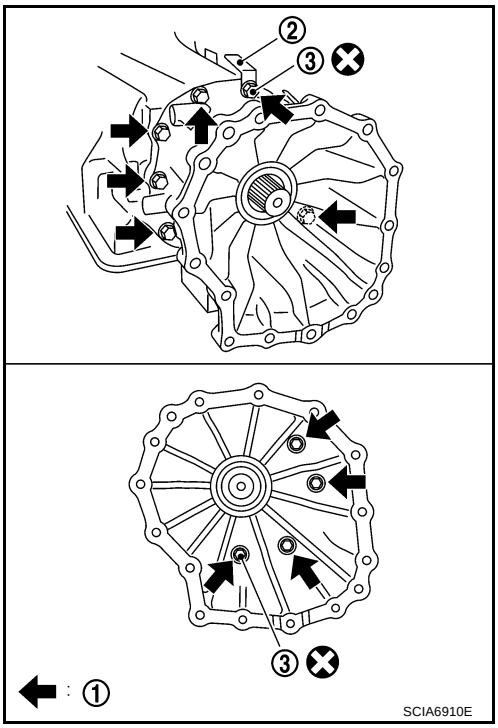
a. VQ35DE models

c. **AWD models**

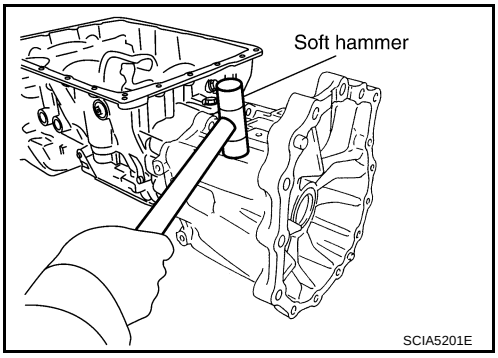
i. Remove tightening bolts (1) for adapter case assembly and transmission case. (With bracket (2).)

⬅: Bolt (10)

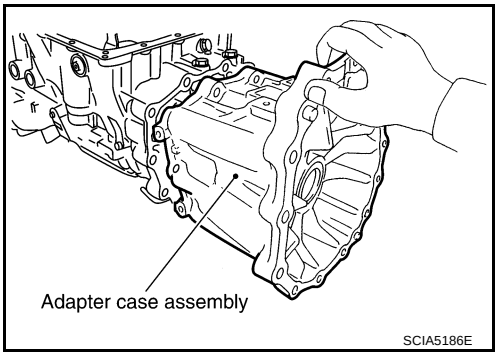
- Self-sealing bolts (3)



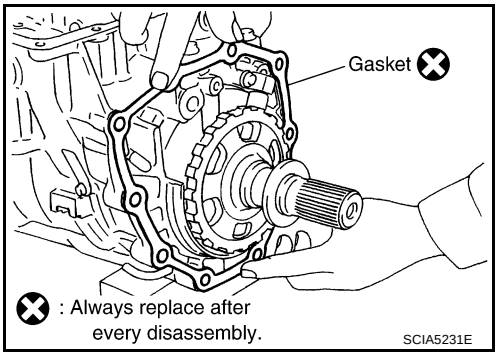
ii. Tap adapter case assembly with a soft hammer.



iii. Remove adapter case assembly from transmission case. (With needle bearing)



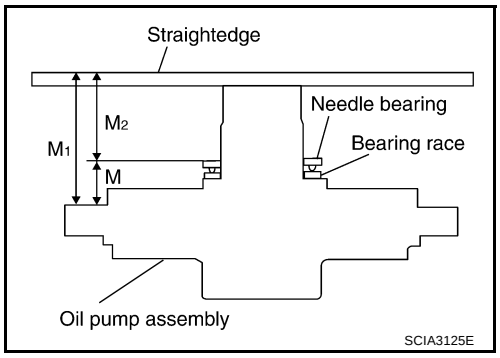
iv. Remove gasket from transmission case.



d. Calculate dimension “M”.

“M”: Distance between transmission case fitting surface of oil pump and needle bearing on oil pump.

$M = M_1 - M_2$



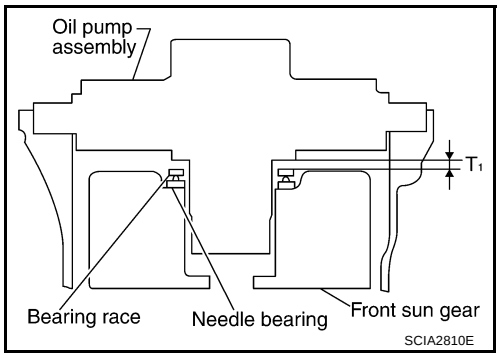
3. Adjust total end play “T_1”.

$T_1 = J - M$

Total end play “T_1”: 0.25 - 0.55 mm (0.0098 - 0.0217 in)

- Select proper thickness of bearing race so that total end play is within specifications.

Bearing races: **Refer to AT-372, "BEARING RACE FOR ADJUSTING TOTAL END PLAY" .**



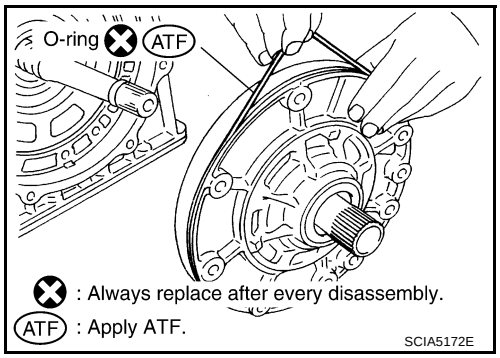
Assembly (2)

NCS001RC

1. Install O-ring to oil pump assembly.

CAUTION:

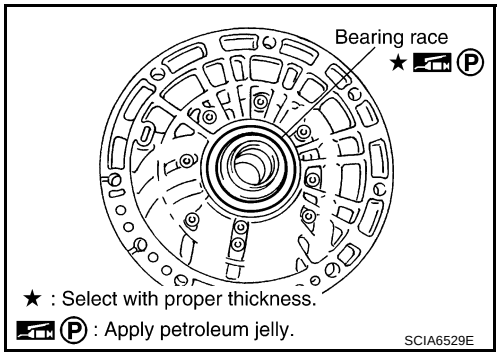
- **Do not reuse O-ring.**
- **Apply ATF to O-ring.**



2. Install bearing race to oil pump assembly.

CAUTION:

Apply petroleum jelly to bearing race.



CAN Communication System Description

NJS000GC

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

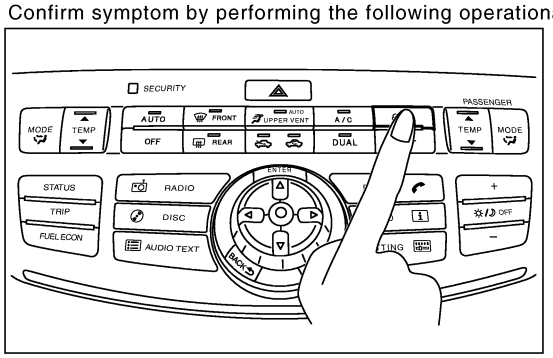
Blower Motor Circuit

NJS000GT

SYMPTOM: Blower motor operation is malfunctioning.

INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK - Blower
a. Press fan (UP :+) switch.
Blower should operate on low speed.
b. Press fan (UP :+) switch,
and continue checking blower speed and fan symbol until all speeds are checked.
If OK (symptom cannot be duplicated), perform complete operational check (*1).
If NG (symptom is confirmed), continue with STEP-2 following.

2. Check for any service bulletins.

3. Perform self-diagnosis STEP-2. (*3)
Code No. 20 should be displayed after approx. 25 seconds.
NG → Go to appropriate malfunctioning sensor circuit. (*5)
OK

4. Perform self-diagnosis STEP-4. (*4)
Does blower motor speed change according to each code No.?
NO → Go to Blower Motor Circuit. (*6)

Code No.	41	42	43	44	45	46
Blower motor duty ratio	37%	91%	65%			91%

YES

5. Is engine coolant temperature below 56˚C (133˚F)?
NO → Blower motor operation is normal.
YES

6. Is blower motor operating under starting blower speed control?
NO → Go to Blower Motor Circuit. (*6)
YES **[Cause cannot be confirmed by self-diagnosis.]**
OK → Check engine coolant temperature sensor circuit. (*11)

7. Check ambient sensor circuit. (*8)
OK

8. Check in-vehicle sensor circuit. (*9)
OK

9. Check sunload sensor circuit. (*10)
OK

10. Check intake sensor circuit. (*2)
OK

If the symptom still exists, perform a complete operational check (*1) and check for other symptoms. [Refer to symptom table, (*7).] Does another symptom exist?
YES → Go to Trouble Diagnosis for related symptom.
Another symptom exists.
NO

Replace unified meter and A/C amp. → INSPECTION END

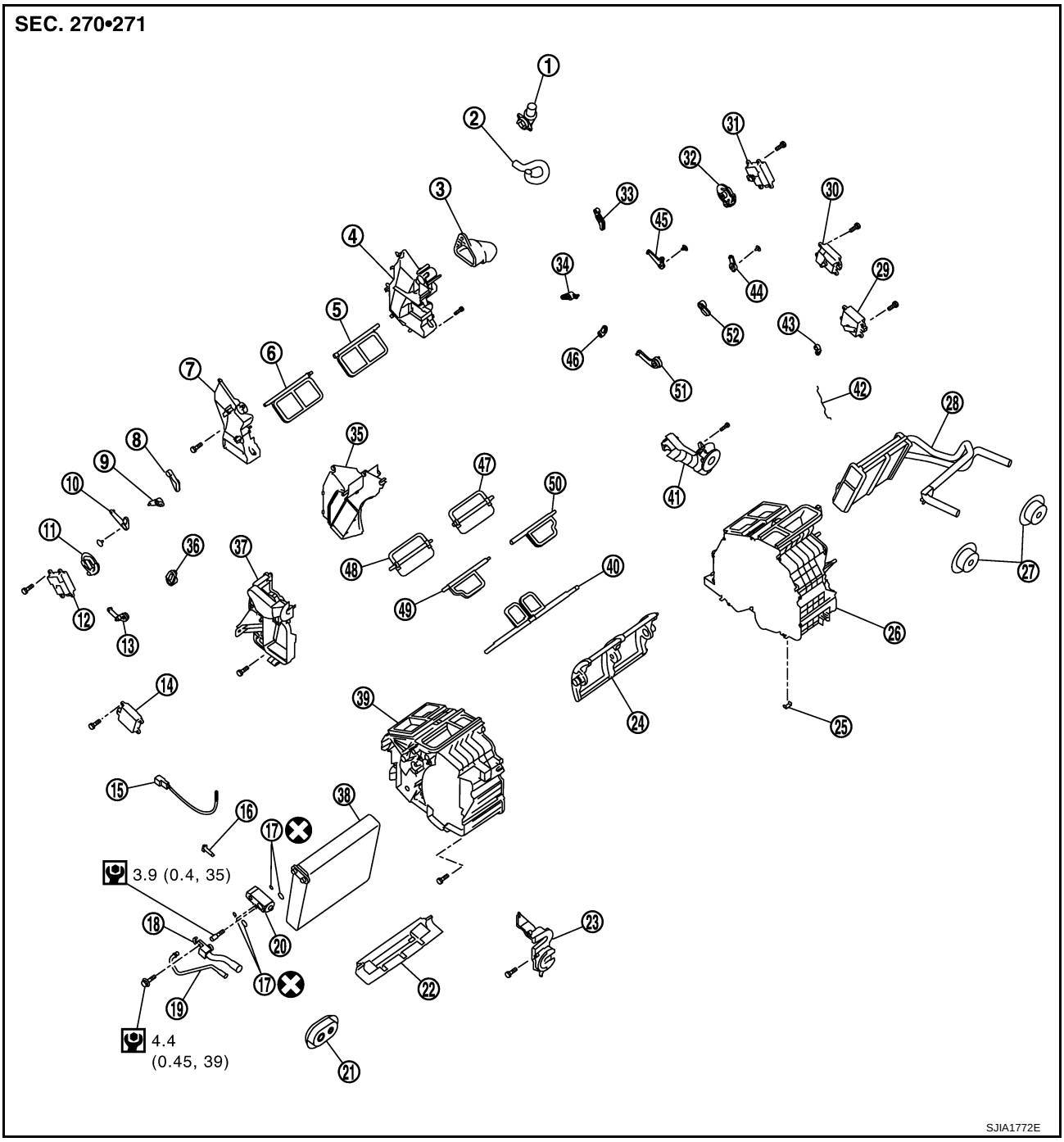
RJIA4069E

*1 ATC-65, "Operational Check"
*2 ATC-121, "Intake Sensor Circuit"
*3 ATC-57, "FUNCTION CONFIRMATION PROCEDURE", see No. 2.
*4 ATC-57, "FUNCTION CONFIRMATION PROCEDURE", see No. 6.
*5 ATC-57, "FUNCTION CONFIRMATION PROCEDURE", see No. 13.
*6 ATC-90, "DIAGNOSIS PROCEDURE FOR BLOWER MOTOR"
*7 ATC-41, "SYMPTOM TABLE"
*8 ATC-112, "Ambient Sensor Circuit"
*9 ATC-115, "In-vehicle Sensor Circuit"
*10 ATC-118, "Sunload Sensor Circuit"
*11 EC-214, "DTC P0117, P0118 ECT SENSOR" (VQ35DE) or EC-926, "DTC P0117, P0118 ECT SENSOR" (VK45DE)

Disassembly and Assembly

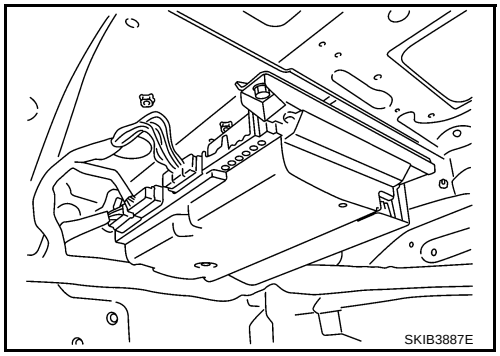
NJS000HG

SEC. 270•271



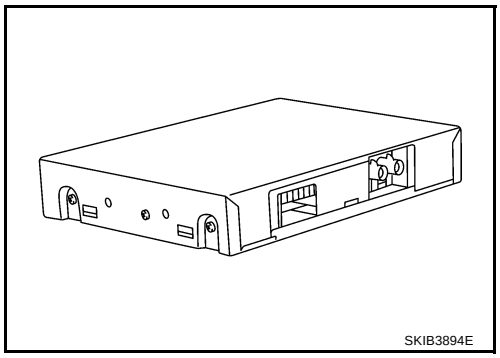
1. Aspirator
2. Aspirator hose
3. Front heater duct (left)
4. Foot duct (left)
5. Ventilator door (left)
6. Ventilator door (right)
7. Foot duct (right)
8. Main link sub (right)
9. Ventilator door lever (right)
10. Ventilator door link (right)
11. Main link (right)
12. Mode door motor (passenger side)
13. Max. cool door link (right)
14. Air mix door motor (passenger side)
15. Intake sensor
16. Intake sensor bracket
17. O-ring
18. Low-pressure pipe 1
19. High-pressure pipe 2
20. Expansion valve
21. Cooler pipe grommet
22. Insulator
23. Evaporator cover adapter
24. Air mix door (Slide door)
25. Clip
26. Heater & cooling unit case (left)
27. Heater pipe grommet
28. Heater core
29. Upper ventilator door motor
30. Air mix door motor (driver side)
31. Mode door motor (driver side)
32. Main link (left)
33. Main link sub (left)
34. Ventilator door lever (left)
35. Center case
36. Max. cool door lever (right)

BOSE Surround 5.1ch System



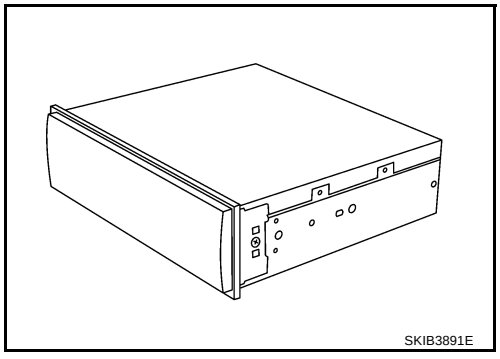
- It amplifies the sound signal from the audio unit and the DVD sound signal from DVD player, and then output them to each speaker.
- It receives the voice guidance signal from AV (NAVI) control unit and output it to the front speaker.
- It controls sound volume of each speaker when outputting TEL voice and voice guidance.
- It subjects to AudioPilot® processing when receiving sound signal from microphone for AudioPilot® .
- It subjects to Centerpoint® processing.

SATELLITE TUNER



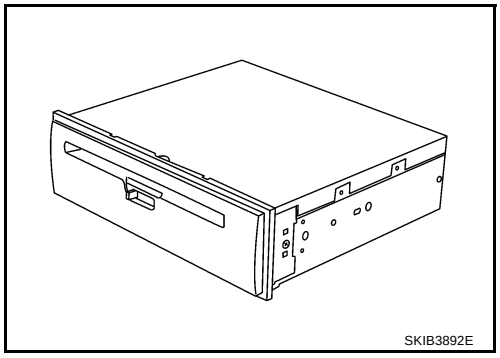
- The satellite tuner is connected with the audio unit via communication line.
- It sends the received sound signal from the satellite radio antenna to the audio unit.

AV CONTROL UNIT (WITHOUT NAVI)



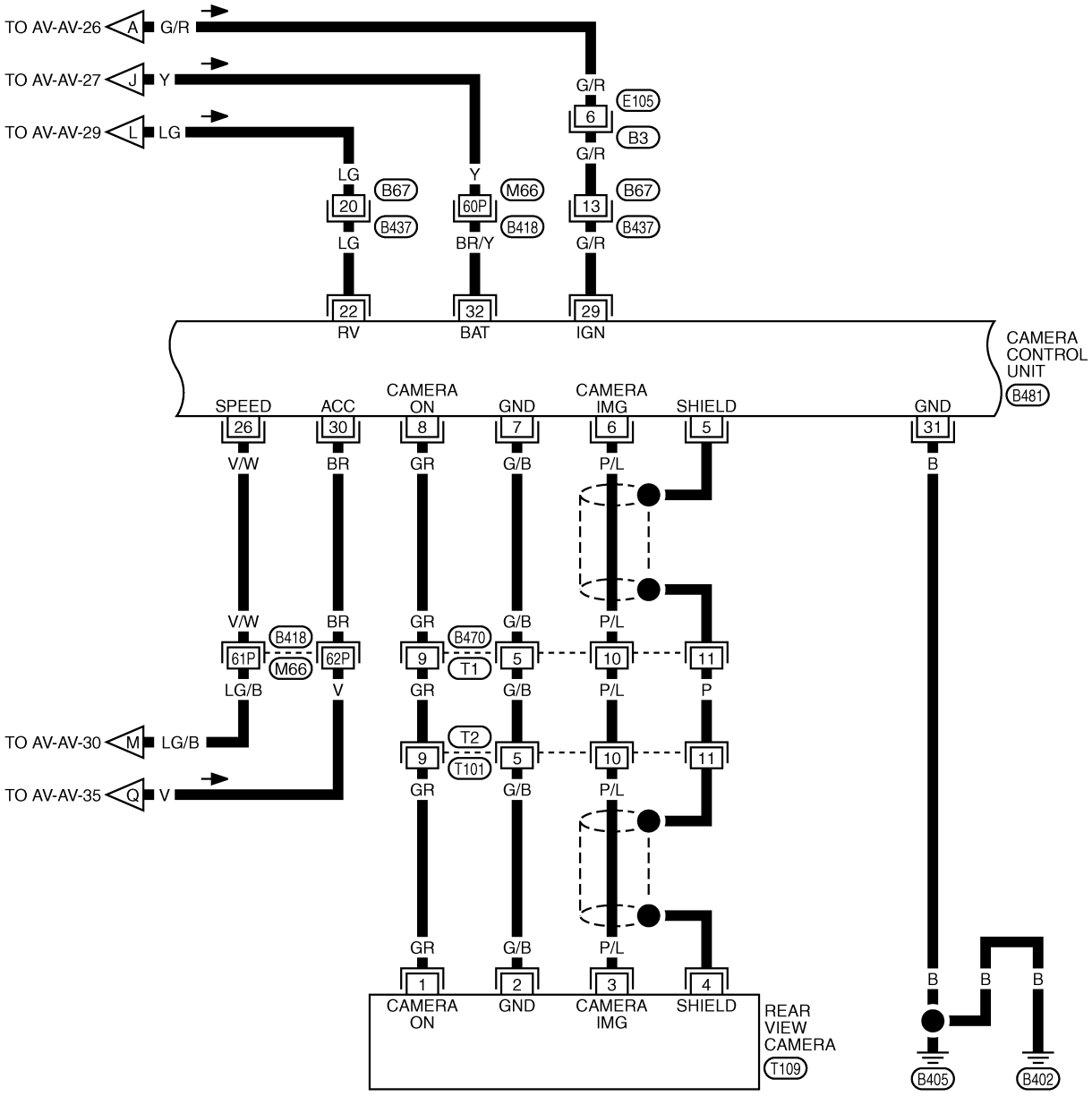
- It controls each unit of the system by the operation signal from the multifunction switch and sends the image signal of operating condition or vehicle information, etc. to the front display unit.
- It receives the TEL input voice or the input voice at voice control from the microphone. It receives the received TEL voice, and then sends it to the audio unit.
- It sends the voice guidance signal to BOSE amp (BOSE system) and audio unit (BASE system).

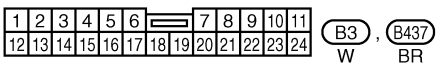
NAVI CONTROL UNIT (WITH NAVI)

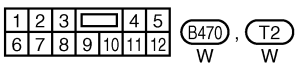


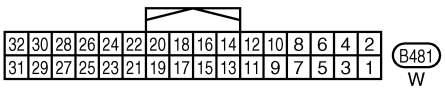
- It controls each unit of the system by the operation signal from the multifunction switch and sends the image signal of operating condition or vehicle information, etc. to the front display unit.
- It receives the TEL input voice or the input voice at voice control from the microphone. It receives the received TEL voice, and then sends it to the audio unit.
- It sends the voice guidance signal to BOSE amp (BOSE system) and audio unit (BASE system).
- Signals are received from the gyro, the vehicle speed sensor, and the GPS antenna. Vehicle location is determined by combining this data with the data contained in the DVD-ROM map. Location information is shown on liquid crystal display panel.

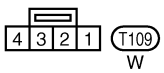
AV-AV-42











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

TKWT5125E

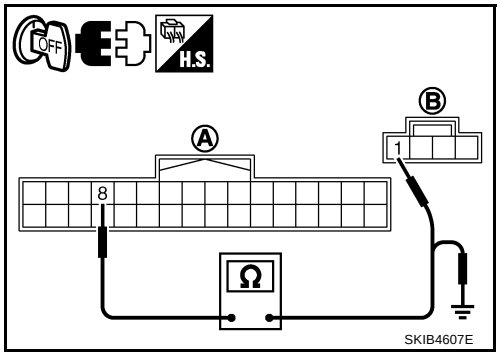
3. CHECK HARNESS BETWEEN CAMERA CONTROL UNIT AND REAR VIEW CAMERA

1. Turn ignition switch OFF.
2. Disconnect camera control unit connector and rear view camera connector.
3. Check continuity between camera control unit harness connector (A) B481 terminal 8 and rear view camera harness connector (B) T109 terminal 1.

8 – 1 : Continuity should exist.

4. Check continuity between camera control unit harness connector (A) B481 terminal 8 and ground.

8 – Ground : Continuity should not exist.



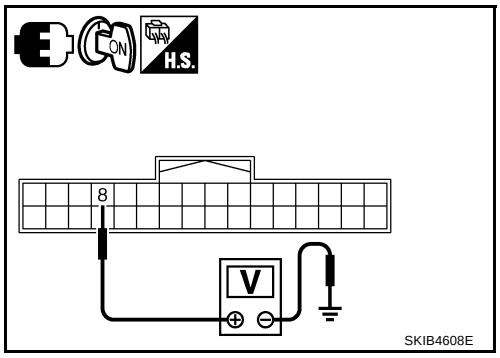
OK or NG

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

4. CHECK REAR VIEW CAMERA POWER SUPPLY

1. Connect camera control unit connector and rear view camera connector.
2. Turn ignition switch ON.
3. Shift the selector lever in R position.
4. Check voltage between camera control unit harness connector B481 terminal 8 and ground.

8 – Ground : Approx. 6 V



OK or NG

OK >> GO TO 5.
NG >> Replace camera control unit.

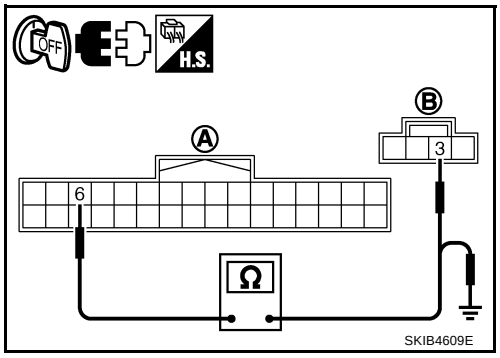
5. CHECK HARNESS BETWEEN CAMERA CONTROL UNIT AND REAR VIEW CAMERA

1. Turn ignition switch OFF.
2. Disconnect camera control unit connector and rear view camera connector.
3. Check continuity between camera control unit harness connector (A) B481 terminal 6 and rear view camera harness connector (B) T109 terminal 3.

6 – 3 : Continuity should exist.

4. Check continuity between camera control unit harness connector (A) B481 terminal 6 and ground.

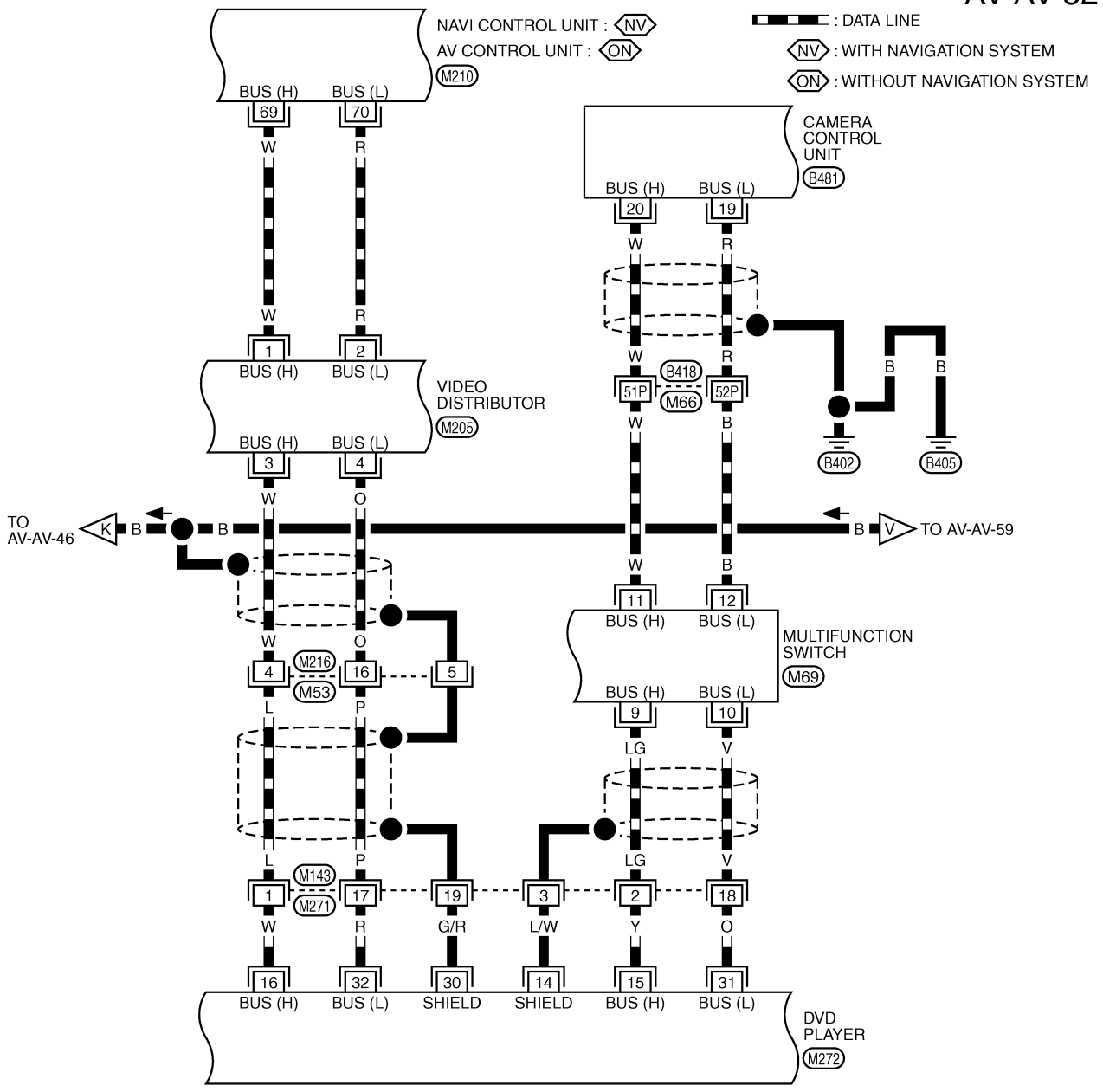
6 – Ground : Continuity should not exist.

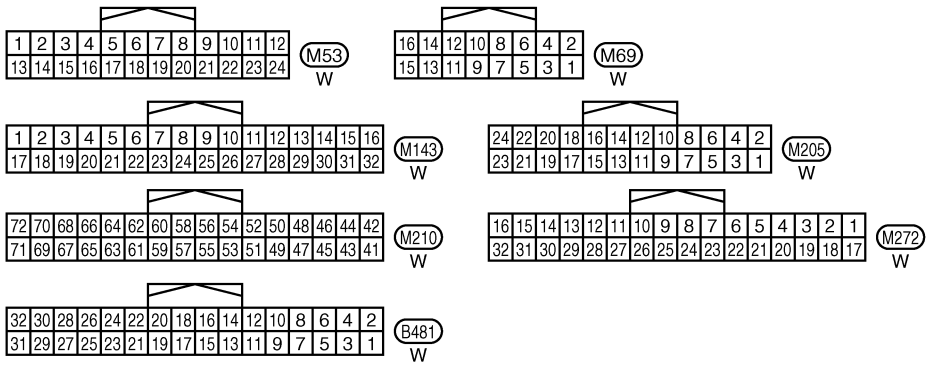


OK or NG

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

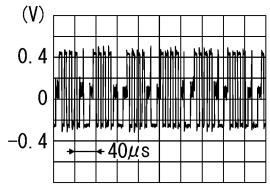
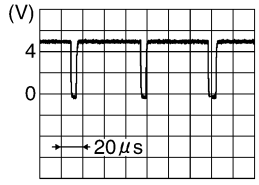
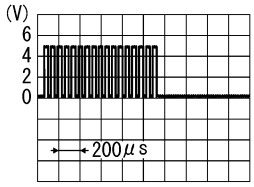
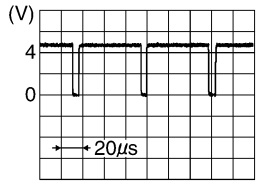
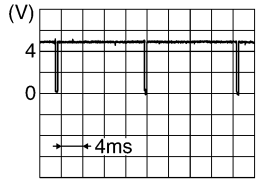
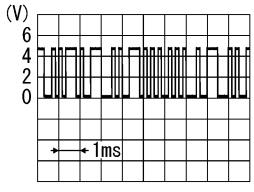
AV-AV-52





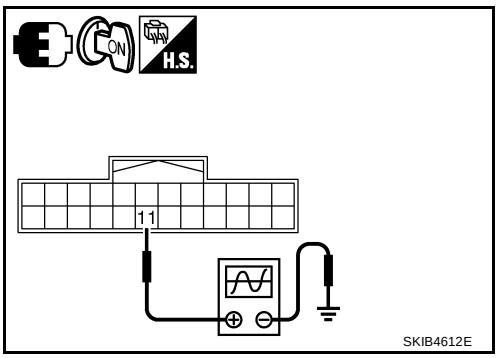
REFER TO THE FOLLOWING.
B418 -SUPER MULTIPLE JUNCTION (SMJ)

TKWT5132E

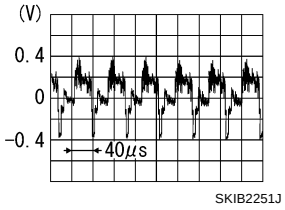
Terminal (Wire color)		Item	Signal Input/ output	Condition		Reference value
+	–			Ignition switch	Operation	
46 (L/Y)	47 (W/L)	RGB signal (B: blue)	Output	ON	Start confirmation/adjustment mode, and then display color bar by selecting “Color Spectrum Bar” on DISPLAY DIAGNOSIS screen.	 SKIB2237J
47 (W/L)	Ground	RGB ground	–	ON	–	Approx. 0 V
48 (B)	Ground	RGB synchronizing signal	Output	ON	–	 SKIB3603E
49	–	Shield	–	–	–	–
50 (G)	Ground	RGB area (YS) signal	Output	ON	When inputting RGB image.	Approx. 5 V
					Set the selector lever in R position, and then display the rear view image.	 PKIB4948J
51 (W)	Ground	Horizontal synchronizing (HP) signal	Input	ON	–	 SKIB3601E
52 (R)	Ground	Vertical synchronizing (VP) signal	Input	ON	–	 SKIB3598E
53 (O/L)	Ground	Communication signal (CONT-DISP)	Input	ON	When adjusting display brightness.	 PKIB5039J

8. CHECK REAR VIEW IMAGE SIGNAL

Check signal between front display unit harness connector M203 terminal 11 and ground.



11 – Ground:



OK or NG

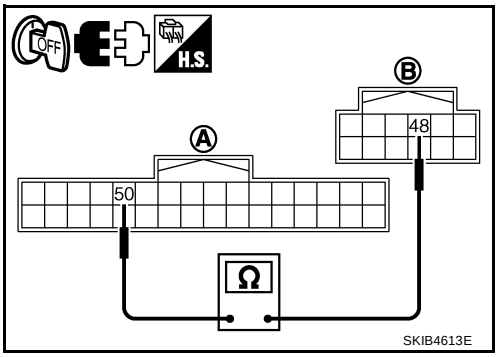
OK >> Replace front display unit.
NG >> Replace camera control unit.

DVD IMAGE IS NOT DISPLAYED

1. CHECK HARNESS BETWEEN AV (NAVI) CONTROL UNIT AND VIDEO DISTRIBUTOR

1. Disconnect AV (NAVI) control unit connector and video distributor connector.
2. Check continuity between AV (NAVI) control unit harness connector (A) M210 terminal 50 and video distributor harness connector (B) M207 terminal 48.

50 – 48 : Continuity should exist.

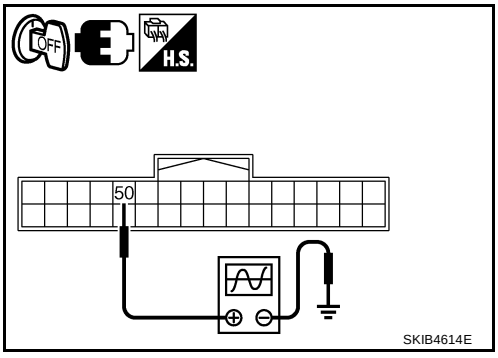


OK or NG

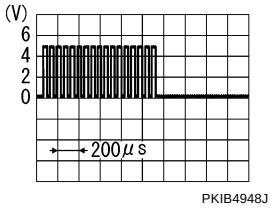
OK >> GO TO 2.
NG >> Repair harness or connector.

2. CHECK RGB AREA SIGNAL FOR AV (NAVI) CONTROL UNIT

1. Connect AV (NAVI) control unit connector and video distributor connector.
2. Turn ignition switch ON.
3. Shift the selector lever in R position.
4. Check signal between AV (NAVI) control unit harness connector M210 terminal 50 and ground.



50 – Ground:



OK or NG

OK >> GO TO 3.
NG >> Replace AV (NAVI) control unit.

Check BCM Power Supply and Ground Circuit

NKS003XM

1. CHECK FUSES AND FUSIBLE LINK

Check for blown fuses and fusible link.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	F
		21
	Ignition switch ON or START position	1
	Ignition switch ACC or ON position	6

Refer to LT-13, "Wiring Diagram — H/LAMP —" .

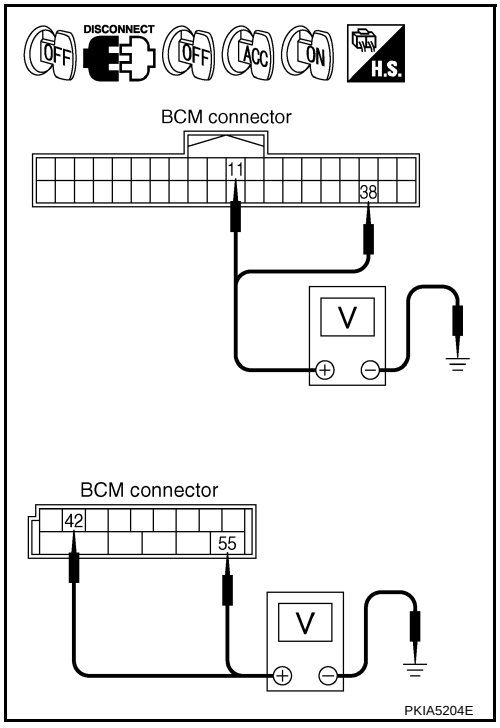
OK or NG

OK >> GO TO 2.
NG >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse or fusible link. Refer to PG-3, "POWER SUPPLY ROUTING CIRCUIT" .

2. CHECK POWER SUPPLY CIRCUIT

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

Terminal			Ignition switch position		
(+)		(-)	OFF	ACC	ON
BCM Connector	Terminal				
M1	11	Ground	Approx. 0 V	Battery voltage	Battery voltage
	38		Approx. 0 V	Approx. 0 V	Battery voltage
M2	42		Battery voltage	Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage	Battery voltage



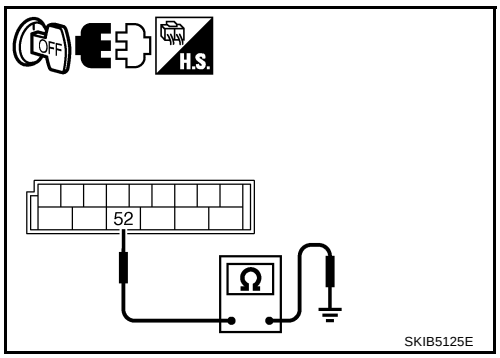
OK or NG

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

3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

Terminal			Continuity
BCM Connector	Terminal	Ground	Yes
M2	52		



OK or NG

OK >> INSPECTION END
NG >> Repair harness or connector.

System Description

NIS001X8

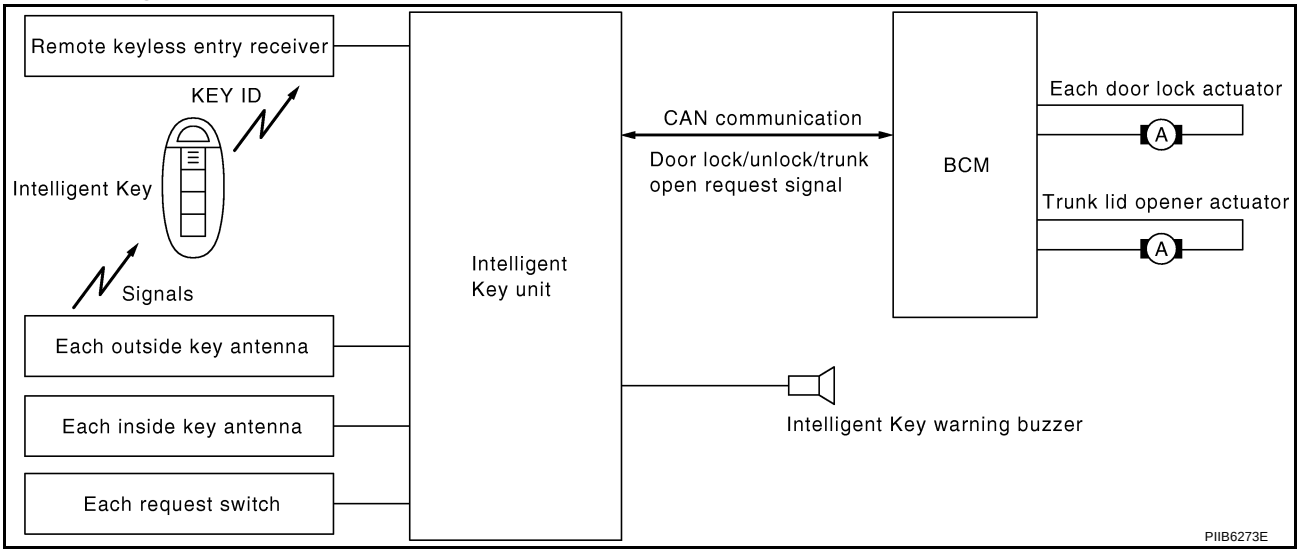
- The Intelligent Key system is a system that makes it possible to lock and unlock the door locks (door lock/unlock function), open the trunk (trunk open function), and start the engine (engine start function) by carrying around the Intelligent Key (without some key operation), which operates based on the results of electronic ID verification using two-way communications between the Intelligent Key and the vehicle (Intelligent Key unit).

  CAUTION:
  The driver should always carry the Intelligent Key
- Operation of the remote controller buttons on the Intelligent Key also provides the same functions as the remote controller entry system. (Remote keyless entry functions)
- If an action that does not meet the operating conditions of the Intelligent Key system is taken, the buzzer goes off to inform the driver. (Warning chime functions)
- When a door lock is locked, unlocked or trunk open with request switch or remote controller button operation, the hazard lamps flash and the Intelligent Key warning buzzer or horn sounds (Hazard and buzzer/horn reminder function).
- Even if the Intelligent Key battery is completely discharged, the door locks can be locked and unlocked with the mechanical key built into the Intelligent Key, and then initiates engine by inserting Intelligent Key into key slot.
- The settings for each function can be changed with the CONSULT-II.
- If an Intelligent Key is lost, a new Intelligent Key can be registered. A maximum of 4 Intelligent Keys can be registered.
- It has been made possible to diagnose the system and register an Intelligent Key with the CONSULT-II.

DOOR LOCK/UNLOCK/TRUNK OPEN FUNCTION

Only when pressing the request switch, it is possible to lock and unlock the door and open the trunk by carrying around the Intelligent Key (without some key operation).

System Diagram



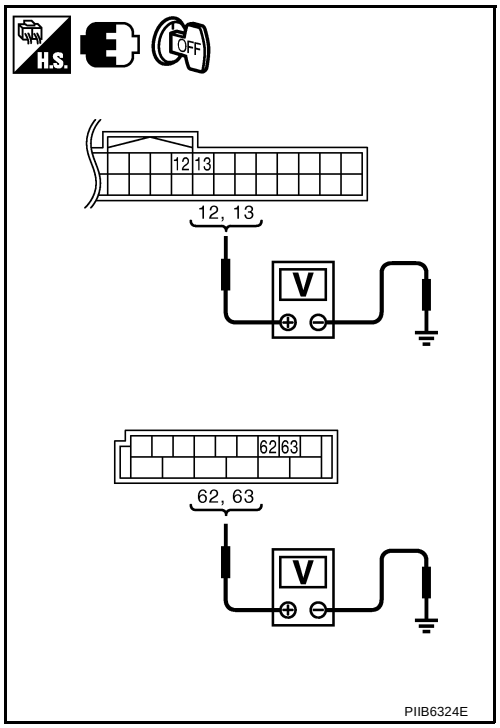
Operation Description/Door Lock/Unlock

- When the Intelligent Key unit detects that each door request switch is pressed, it starts the outside key antenna and inside key antenna corresponding to the pressed door request switch and sends the request signal to the Intelligent Key. And then, make sure that the Intelligent Key is near the door.
- If the Intelligent Key is within the outside key antenna detection area, it receives the request signal and sends the key ID signal to the Intelligent Key unit via remote keyless entry receiver.
- Intelligent Key unit receives the key ID signal and compares it with the registered key ID.
- If the key ID check result is OK, the Intelligent Key unit sends the door lock/unlock request signal to BCM (Body control module) via CAN communication line.
- Intelligent Key unit sends the door lock/unlock signal and sounds Intelligent Key buzzer warning (lock: 1 time, unlock: 2 times) at the same time.

4. CHECK BCM OUTPUT SIGNAL

1. Connect BCM connector.
2. Check voltage between BCM connector and ground.

Terminals			Voltage (V) (Approx.)
(+)		(–)	
BCM connector	Terminal		
M1	12	Ground	Battery voltage
	13		
M3	62		
	63		



OK or NG

OK >> Check the condition of harness and connector.
NG >> Replace BCM.

Terminals and Reference Value for Steering Lock Unit

NIS001YF

Terminal No.	Wire color	Item	Signal Input/ Output	Condition		Voltage (V) (Approx.)
				Push-button ignition switch position	Operation or conditions	
1	GR	PDU signal	Input	LOCK	Press push-button ignition switch with Intelligent Key inside vehicle	0 → Battery voltage → 0 (Battery voltage is detected when pressing the push-button ignition switch)
3	O	Condition signal-1	Output	LOCK	Steering lock: Lock	0
				ACC	Steering lock: Unlock	Battery voltage
				ON		Battery voltage
4	P/B	Intelligent Key unit signal	Input/ Output	LOCK	Steering lock: Lock	Battery voltage
				ACC	Steering lock: Unlock	0
				ON		0
5	B	Ground	—	—	—	0
6	B	Ground	—	—	—	0
7	LG	Power source	Input	LOCK	—	Battery voltage
8	L/Y	Condition signal-2	Output	LOCK	Steering lock: Lock	Battery voltage
				ACC	Steering lock: Unlock	0
				ON		0

Terminals and Reference Value for BCM

NIS001YG

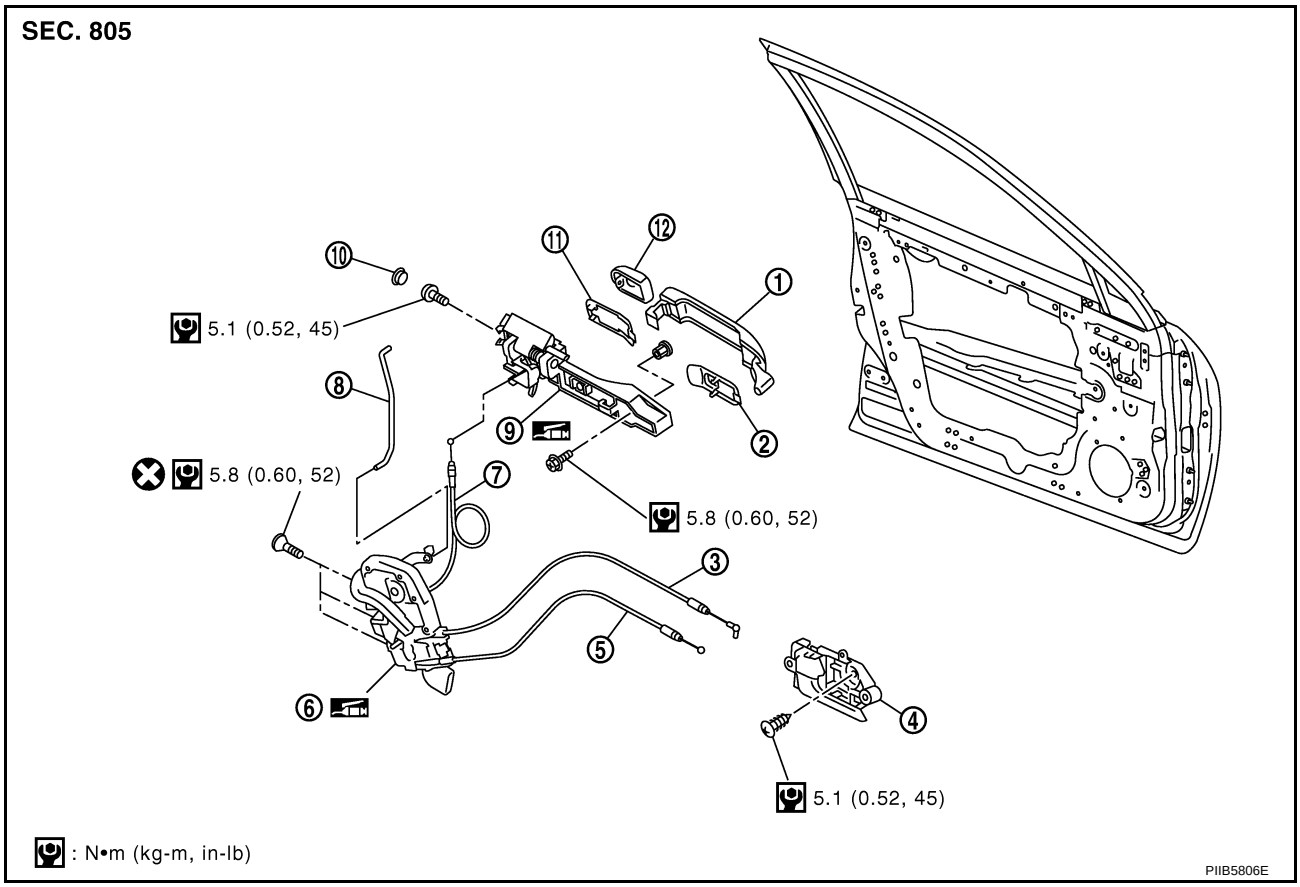
Terminal No.	Wire color	Item	Signal Input/ Output	Condition		Voltage (V) (Approx.)
				Push-button ignition switch position	Operation or conditions	
23	W/V	Security indicator	Output	LOCK	Intelligent Key is removed from key slot and power supply position is in LOCK position	Battery voltage → 0 (Every 2.4 seconds)
37	LG	Key slot (Key switch signal)	Input	LOCK	Intelligent Key is removed from key slot	0
					Intelligent Key is inserted into key slot	Battery voltage
38	W	Ignition power supply (ON or START)	Input	ON	Power supply position is in ON position	Battery voltage
39	L	CAN-H	Input/ Output	—	—	—
40	P	CAN-L	Input/ Output	—	—	—
42	P	Power source (fuse)	Input	—	—	Battery voltage
52	B	Ground	—	—	—	0
55	W	Power source (Fusillade link)	Input	—	—	Battery voltage

FRONT DOOR LOCK

PFP:80502

Component Structure

NIS001ZD



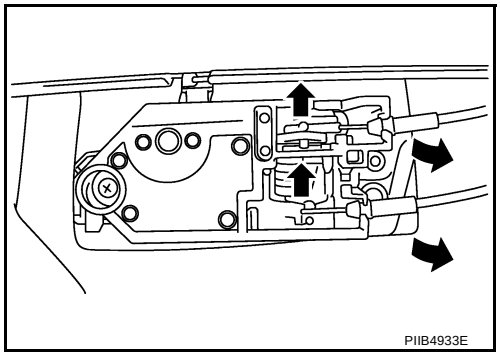
1. Outside handle
2. Front gasket
3. Lock knob cable
4. Inside handle
5. Inside handle knob cable
6. Door lock assembly
7. Outside handle cable
8. Key cylinder rod (Driver side only)
9. Outside handle bracket
10. Grommet
11. Rear gasket
12. Door key cylinder assembly (Driver side)
    Outside handle escutcheon (Passenger side)

Removal and Installation

NIS001ZE

REMOVAL

1. Remove the front door finisher. Refer toEI-34, "Removal and Installation" .
2. Disconnect the inside handle knob cable and lock knob cable from the back side of the front door finisher.



3. Remove the front door window and front door module assembly. Refer toGW-61, "FRONT DOOR GLASS AND REGULATOR" .
4. Remove door side grommet, and remove door key cylinder assembly (driver side) and outside handle escutcheon (passenger side) bolts from grommet hole.

Diagnostic Procedure 5

NIS00209

VEHICLE SECURITY HEADLAMP ALARM CHECK

1. CHECK HEADLAMP OPERATION

Check if headlamp operate by lighting switch.

Does headlamp come on when turning switch “ON”?

YES >> Headlamp circuit is OK.

NO >> Check headlamp system. Refer to LT-42, "HEADLAMP (FOR USA) - XENON TYPE -" , LT-8, "HEADLAMP (FOR USA) - CONVENTIONAL TYPE -" or LT-78, "HEADLAMP (FOR CANADA) - DAYTIME LIGHT SYSTEM -" .

Diagnostic Procedure 6

NIS0020A

DOOR LOCK AND UNLOCK SWITCH CHECK

1. CHECK DOOR LOCK AND UNLOCK SWITCH INPUT SIGNAL

Check if power door lock operated by door lock and unlock switch.

Do doors lock / unlock when using each door lock and unlock switches?

YES >> Door lock and unlock switch is OK.

NO >> Check door lock and unlock switch. Refer to BL-35, "Check Door Lock and Unlock Switch"

Diagnostic Procedure 7

NIS0020B

VEHCLE SECURITY HAZARD LAMP ALARM CHECK

1. CHECK HAZARD WARNING LAMP

Does hazard warning lamp flash with hazard switch?

YES or NO

YES >> Hazard warning lamp circuit is OK.

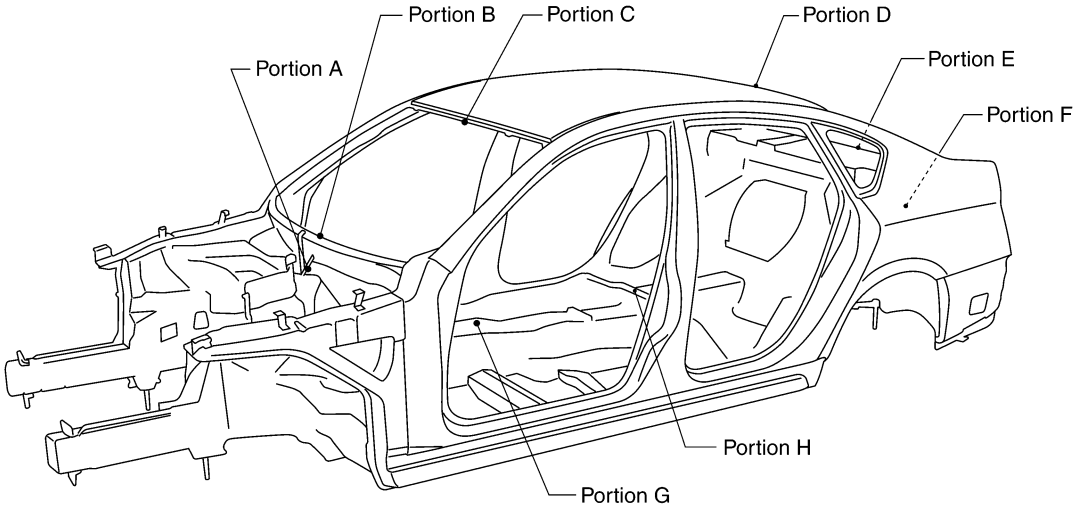
NO >> Check hazard circuit. Refer to LT-212, "TURN SIGNAL AND HAZARD WARNING LAMPS" .

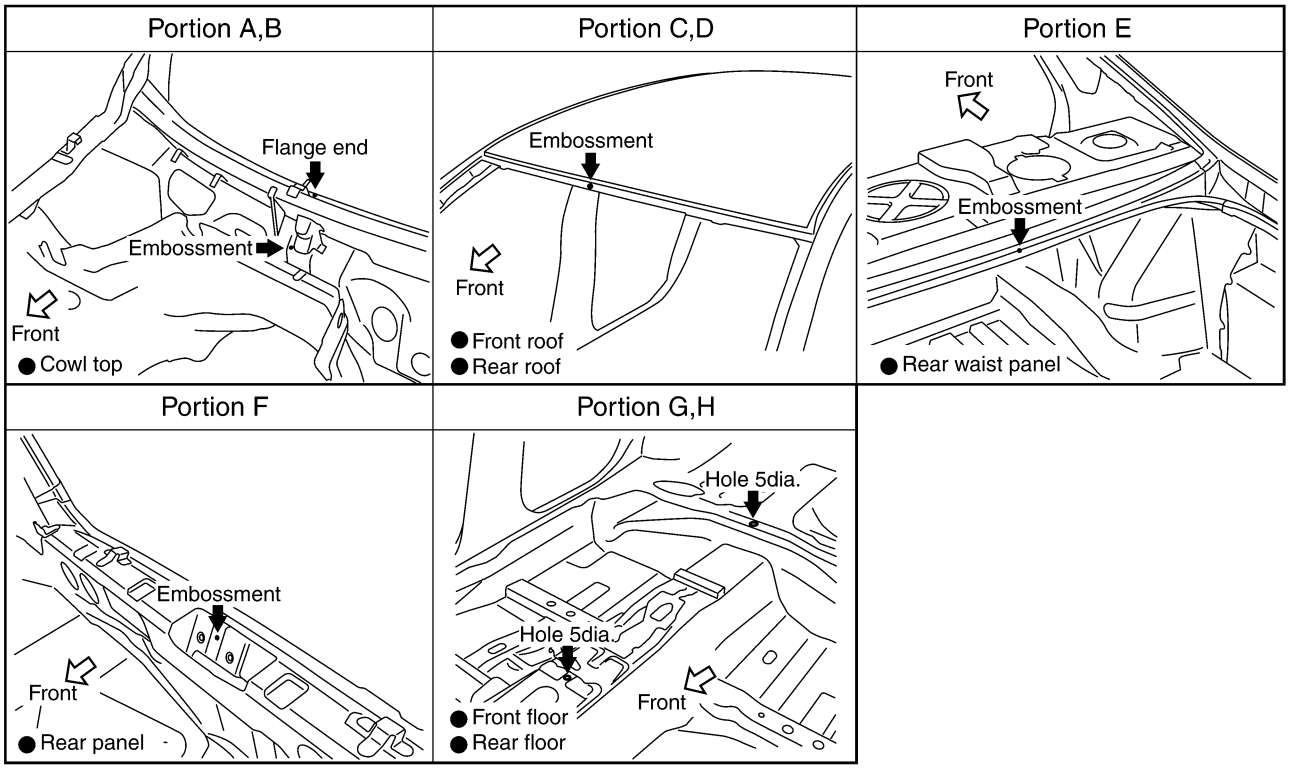
Body Alignment

NIS00212

BODY CENTER MARKS

A mark has been placed on each part of the body to indicate the vehicle center. When repairing parts damaged by an accident which might affect the vehicle frame (members, pillars, etc.), more accurate and effective repair will be possible by using these marks together with body alignment specifications.





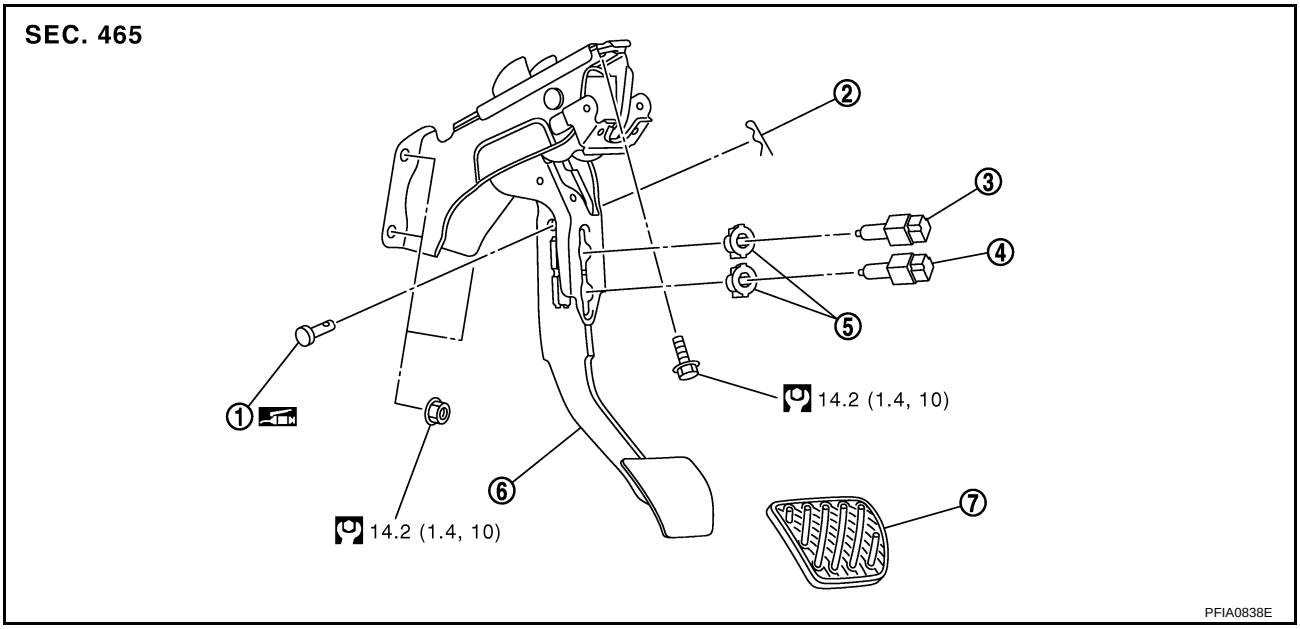
SIIA2459E

Removal and Installation

NFS000RU

COMPONENTS

WITHOUT PRE-CRASH SEAT BELT

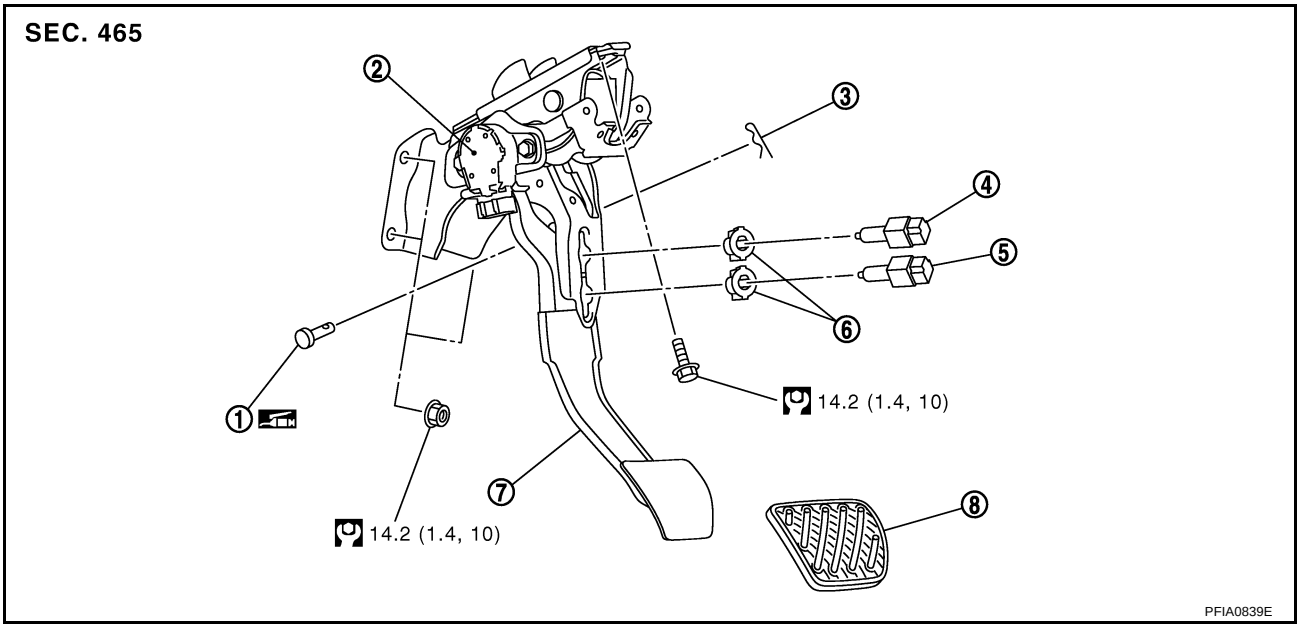


1. Clevis pin
2. Snap pin
3. Stop lamp switch
4. Brake switch
5. Clip
6. Brake pedal assembly
7. Brake pedal pad

Refer to GI-11, "Components" and the followings for the symbols in the figure.

: Apply Multi-purpose grease.

WITH PRE-CRASH SEAT BELT



1. Clevis pin
2. Brake pedal stroke sensor
3. Snap pin
4. Stop lamp switch
5. Brake switch
6. Clip
7. Brake pedal assembly
8. Brake pedal pad

Refer to GI-11, "Components" and the followings for the symbols in the figure.

: Apply Multi-purpose grease.

NOTE:
Clevis pin can be installed from both left and right.

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

ENGINE COOLANT

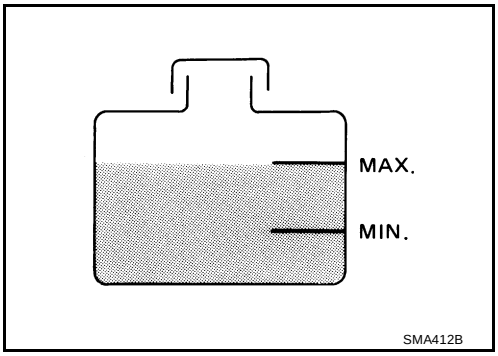
PFP:KQ100

Inspection

NBS004QQ

LEVEL CHECK

- Check if the reservoir tank engine coolant level is within the “MIN” to “MAX” when the engine is cool.
- Adjust the engine coolant level as necessary.



LEAK CHECK

- To check for leaks, apply pressure to the cooling system with the radiator cap tester (commercial service tool) (A) and radiator cap tester adapter (commercial service tool) (B).

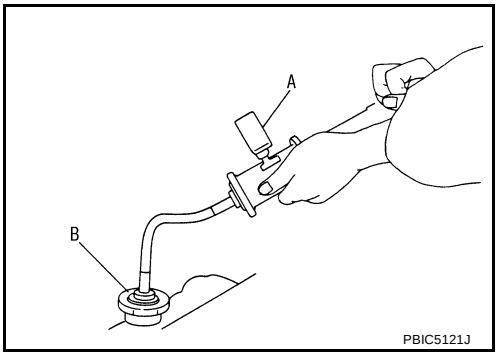
  Testing pressure

  : 157 kPa (1.6 kg/cm^2 , 23 psi)

  WARNING:
  Do not remove radiator cap when engine is hot. Serious burns could occur from high-pressure engine coolant escaping from radiator.

  CAUTION:
  Higher test pressure than specified may cause radiator damage.

  NOTE:
  In a case that engine coolant decreases, replenish radiator with engine coolant.



- If anything is found, repair or replace damaged parts.

Changing Engine Coolant

NBS004QR

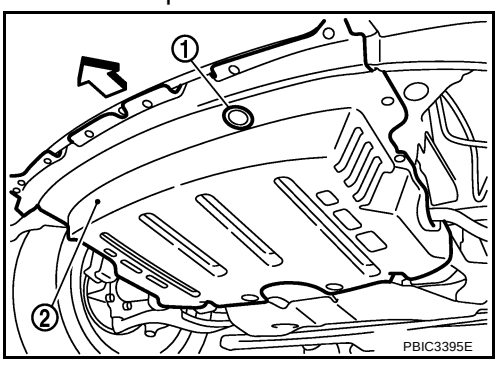
WARNING:

- **To avoid being scalded, do not change engine coolant when the engine is hot.**
- **Wrap a thick cloth around radiator cap and carefully remove radiator cap. First, turn radiator cap a quarter of a turn to release built-up pressure. Then turn radiator cap all the way.**

DRAINING ENGINE COOLANT

1. Remove engine room cover (RH and LH). Refer to EM-15, "ENGINE ROOM COVER" .
2. Remove air duct (inlet). Refer to EM-19, "AIR CLEANER AND AIR DUCT" .
3. Open radiator drain plug at the bottom of radiator, and then remove radiator cap.

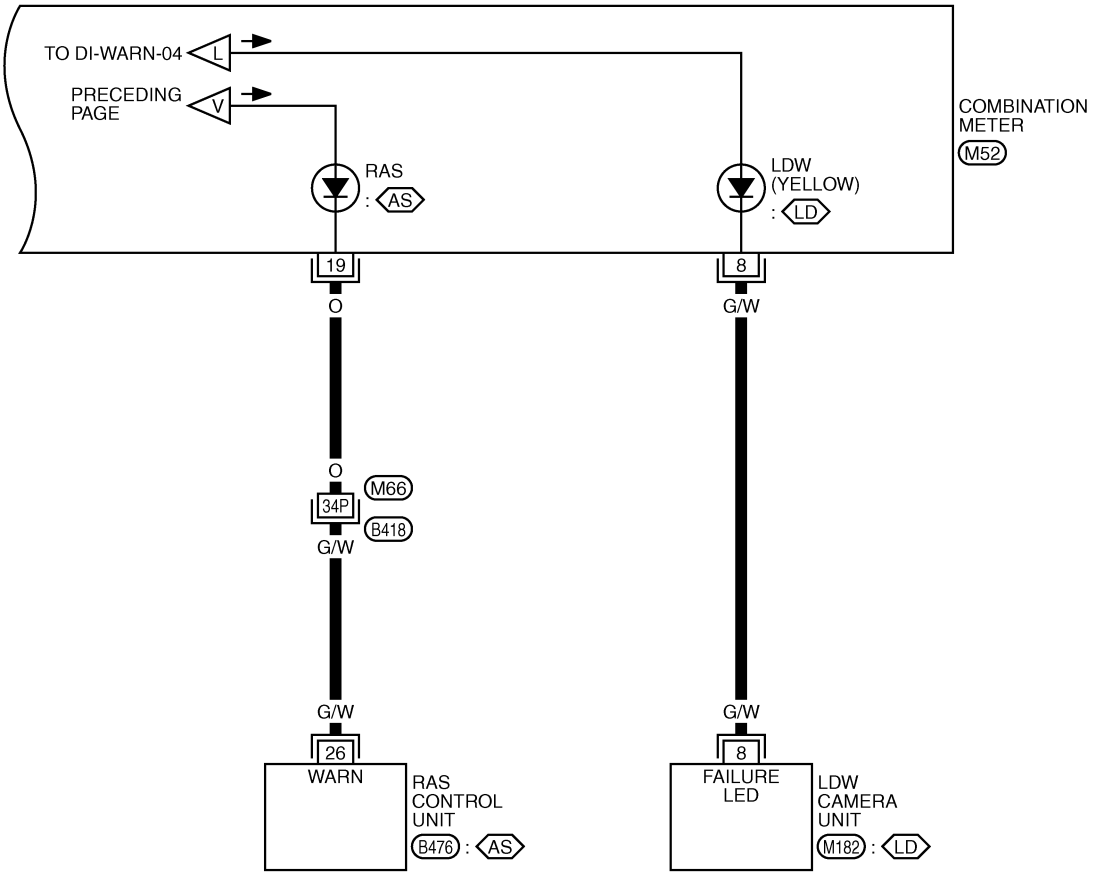
1 : Radiator drain plug hole
2 : Front engine under cover
⇦ : Engine front

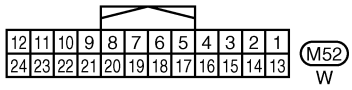


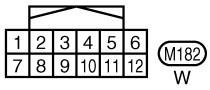
When draining all of engine coolant in the system, open water drain plugs on cylinder block. Refer to EM-125, "DISASSEMBLY" .

DI-WARN-10

AS : WITH RAS
LD : WITH LANE DEPARTURE WARNING







REFER TO THE FOLLOWING.
B418 -SUPER MULTIPLE JUNCTION (SMJ)
B476 -ELECTRICAL UNITS

TKWT5284E

Turn Signal Input Inspection

NKS003VY

1. CHECK TURN SIGNAL INPUT

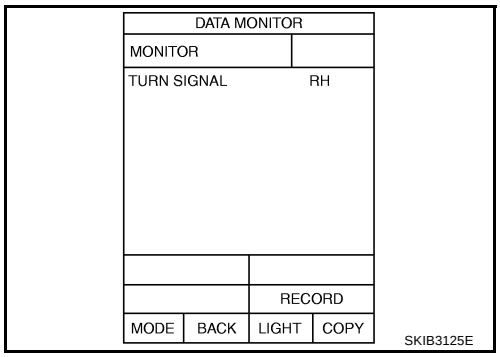
Check turn signal input “TURN SIGNAL” in “DATA MONITOR” mode with CONSULT-II.

“TURN SIGNAL”

When lighting switch is in TURN RH position : RH

When lighting switch is in TURN LH position : LH

When hazard switch is turned ON : RH/LH



OK or NG

OK >> Turn signal input is OK. Return to DI-93, "SYMPTOM CHART" .

NG >> Check turn signal and hazard warning lamps system, and repair or replace corresponding parts. Refer to LT-221, "How to Perform Trouble Diagnoses" .

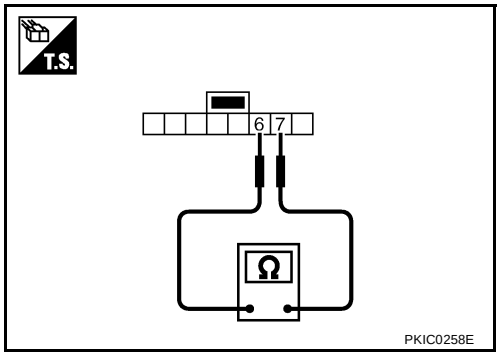
Electrical Component Inspection

NKS003VZ

LDW SWITCH

Check continuity between terminals 6 and 7.

Terminal		Condition	Continuity
6	7	When LDW switch is pushed.	Yes
		When LDW switch is released.	No

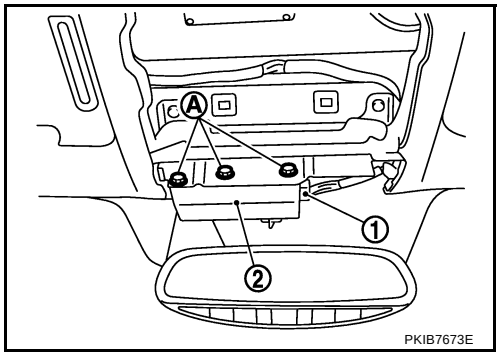


Removal and Installation for LDW Camera Unit

NKS003W0

REMOVAL

1. Remove roof console. Refer to EI-52, "HEADLINING" .
2. Disconnect LDW camera unit connector (1).
3. Remove the bolts (A), and remove LDW camera unit (2).



INSTALLATION

Installation is the reverse order of removal.

CAUTION:

- **Remove the camera lens cap for replacement.**
- **Never give an impact to the LDW camera unit.**
- **Adjust the camera aiming every time the LDW camera unit is removed or installed. Refer to DI-78, "Camera Aiming Adjustment" .**

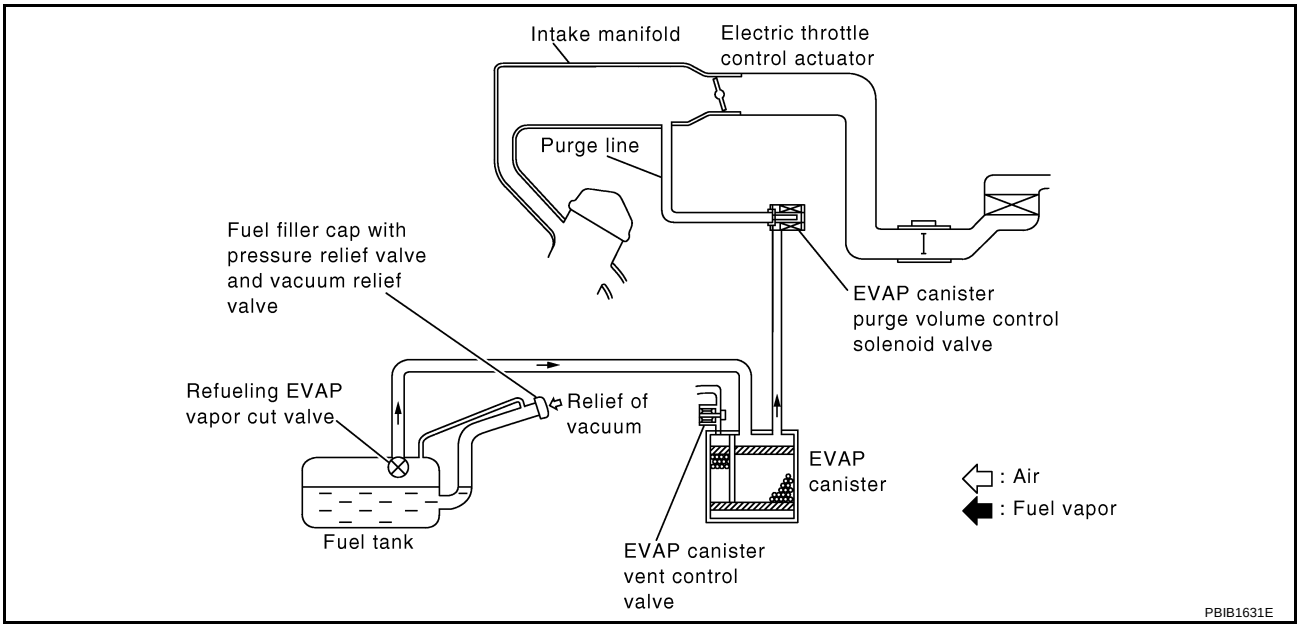
EVAPORATIVE EMISSION SYSTEM

PFP:14950

Description

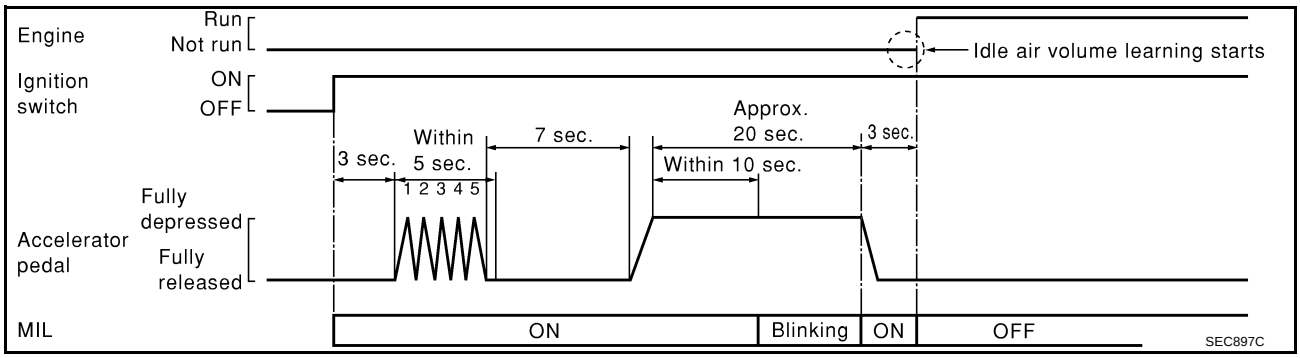
NBS004SB

SYSTEM DESCRIPTION



The evaporative emission system is used to reduce hydrocarbons emitted into the atmosphere from the fuel system. This reduction of hydrocarbons is accomplished by activated charcoals in the EVAP canister.
The fuel vapor in the sealed fuel tank is led into the EVAP canister which contains activated carbon and the vapor is stored there when the engine is not operating or when refueling to the fuel tank.
The vapor in the EVAP canister is purged by the air through the purge line to the intake manifold when the engine is operating. EVAP canister purge volume control solenoid valve is controlled by ECM. When the engine operates, the flow rate of vapor controlled by EVAP canister purge volume control solenoid valve is proportionally regulated as the air flow increases.
EVAP canister purge volume control solenoid valve also shuts off the vapor purge line during decelerating and idling.

11. Wait 20 seconds.



12. Rev up the engine two or three times and make sure that idle speed and ignition timing are within the specifications.

ITEM	SPECIFICATION
Idle speed	650 ± 50 rpm (in P or N position)
Ignition timing	15 ± 5° BTDC (in P or N position)

13. If idle speed and ignition timing are not within the specification, Idle Air Volume Learning will not be carried out successfully. In this case, find the cause of the incident by referring to the DIAGNOSTIC PROCEDURE below.

DIAGNOSTIC PROCEDURE

If idle air volume learning cannot be performed successfully, proceed as follows:

1. **Check that throttle valve is fully closed.**
2. **Check PCV valve operation.**
3. **Check that downstream of throttle valve is free from air leakage.**
4. **When the above three items check out OK, engine component parts and their installation condition are questionable. Check and eliminate the cause of the incident.**
   It is useful to perform EC-143, "TROUBLE DIAGNOSIS - SPECIFICATION VALUE" .
5. **If any of the following conditions occur after the engine has started, eliminate the cause of the incident and perform Idle Air Volume Learning all over again:**

- **Engine stalls.**
- **Erroneous idle.**

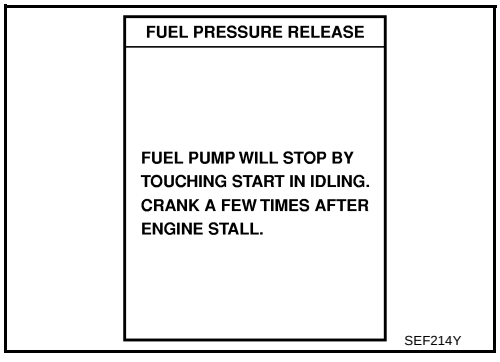
Fuel Pressure Check

NBS004SX

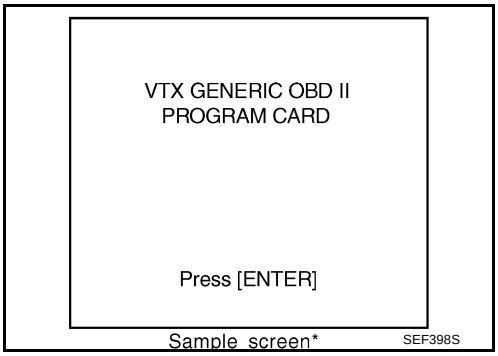
FUEL PRESSURE RELEASE

With CONSULT-II

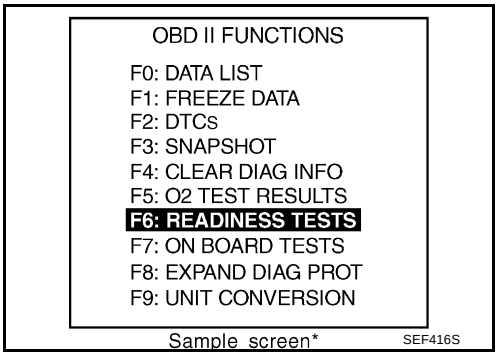
1. Turn ignition switch ON.
2. Perform “FUEL PRESSURE RELEASE” in “WORK SUPPORT” mode with CONSULT-II.
3. Start engine.
4. After engine stalls, crank it two or three times to release all fuel pressure.
5. Turn ignition switch OFF.



3. Turn ignition switch ON.
4. Enter the program according to instruction on the screen or in the operation manual.
(*: Regarding GST screens in this section, sample screens are shown.)



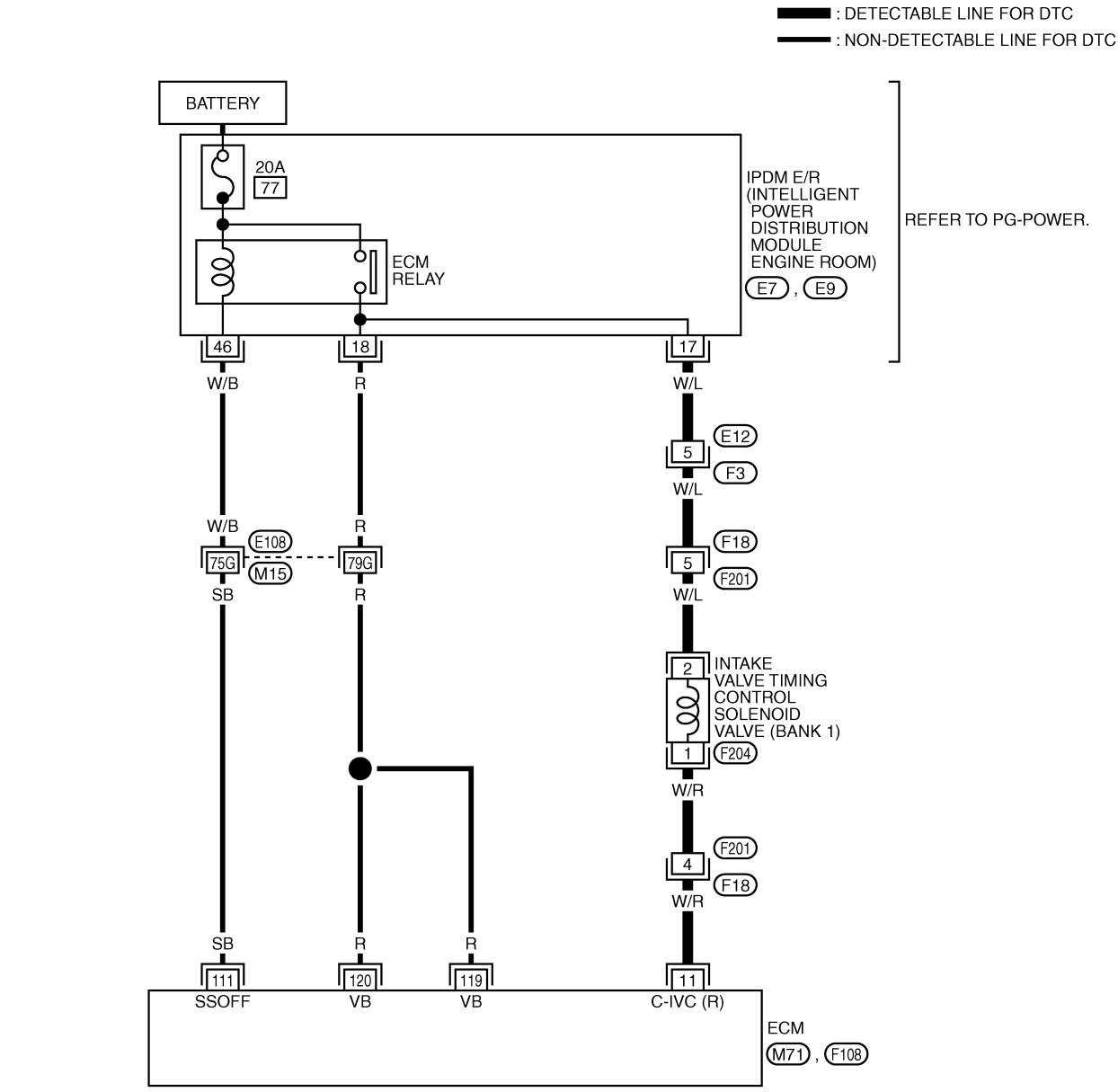
5. Perform each diagnostic mode according to each service procedure.
For further information, see the GST Operation Manual of the tool maker.

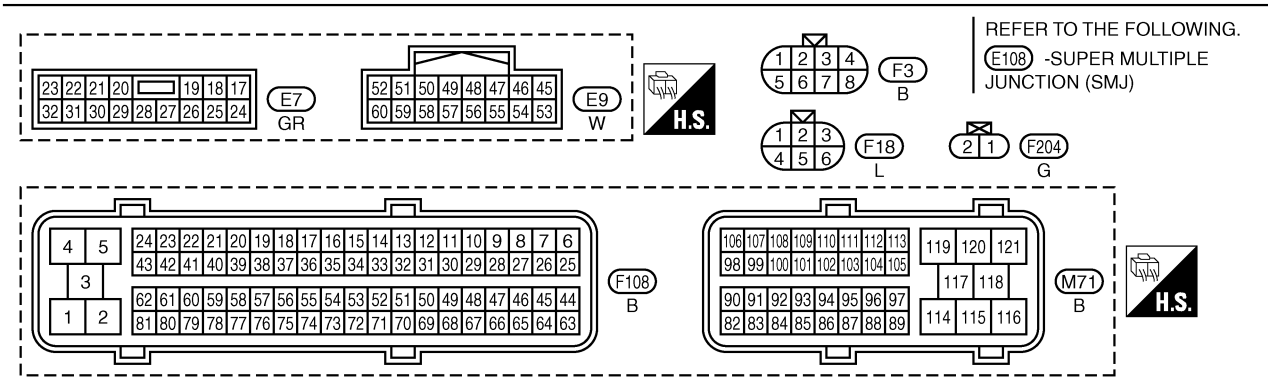


Wiring Diagram
BANK 1

NBS004UK

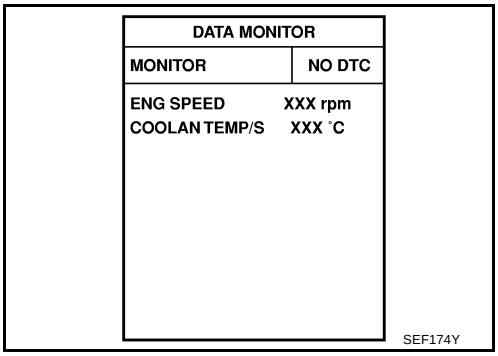
EC-IVCB1-01





TBWT0971E

2. Select “DATA MONITOR” mode with CONSULT-II.
3. Let engine idle for 2 minutes.
4. If 1st trip DTC is detected, go to EC-240, "Diagnostic Procedure" .



With GST

Follow the procedure “With CONSULT-II” above.

PROCEDURE FOR MALFUNCTION B

CAUTION:

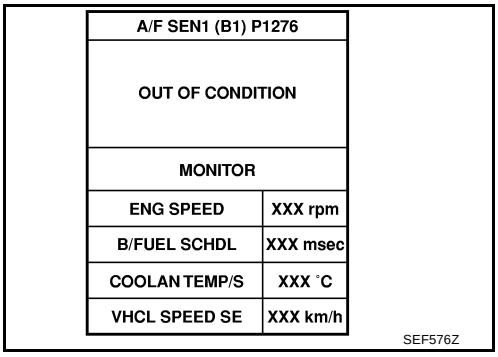
Always drive vehicle at a safe speed.

With CONSULT-II

1. Start engine and warm it up to normal operating temperature.
2. Select “A/F SEN1 (B1)” or “A/F SEN1 (B2)” in “DATA MONITOR” mode with CONSULT-II.
3. Check “A/F SEN1 (B1)” or “A/F SEN1 (B2)” indication.
   If the indication is constantly approx. 1.5V and does not fluctuates, go to EC-240, "Diagnostic Procedure" .
   If the indication fluctuates around 1.5V, go to next step.
4. Select “A/F SEN1 (B1) P1276” (for DTC P0130) or “A/F SEN1 (B2) P1286” (for DTC P0150) of “A/F SEN1” in “DTC WORK SUPPORT” mode with CONSULT-II.
5. Touch “START”.
6. When the following conditions are met, “TESTING” will be displayed on the CONSULT-II screen.

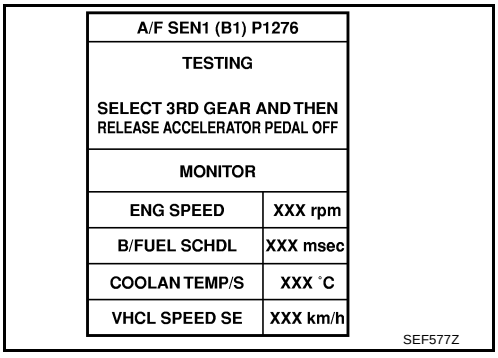
ENG SPEED	1,100 - 3,200 rpm
VHCL SPEED SE	More than 64 km/h (40 MPH)
B/FUEL SCHDL	1.0 - 8.0 msec
Shift lever	D position

If “TESTING” is not displayed after 20 seconds, retry from step 2.



7. Release accelerator pedal fully.

   NOTE:
   Never apply brake during releasing the accelerator pedal.



Removal and Installation

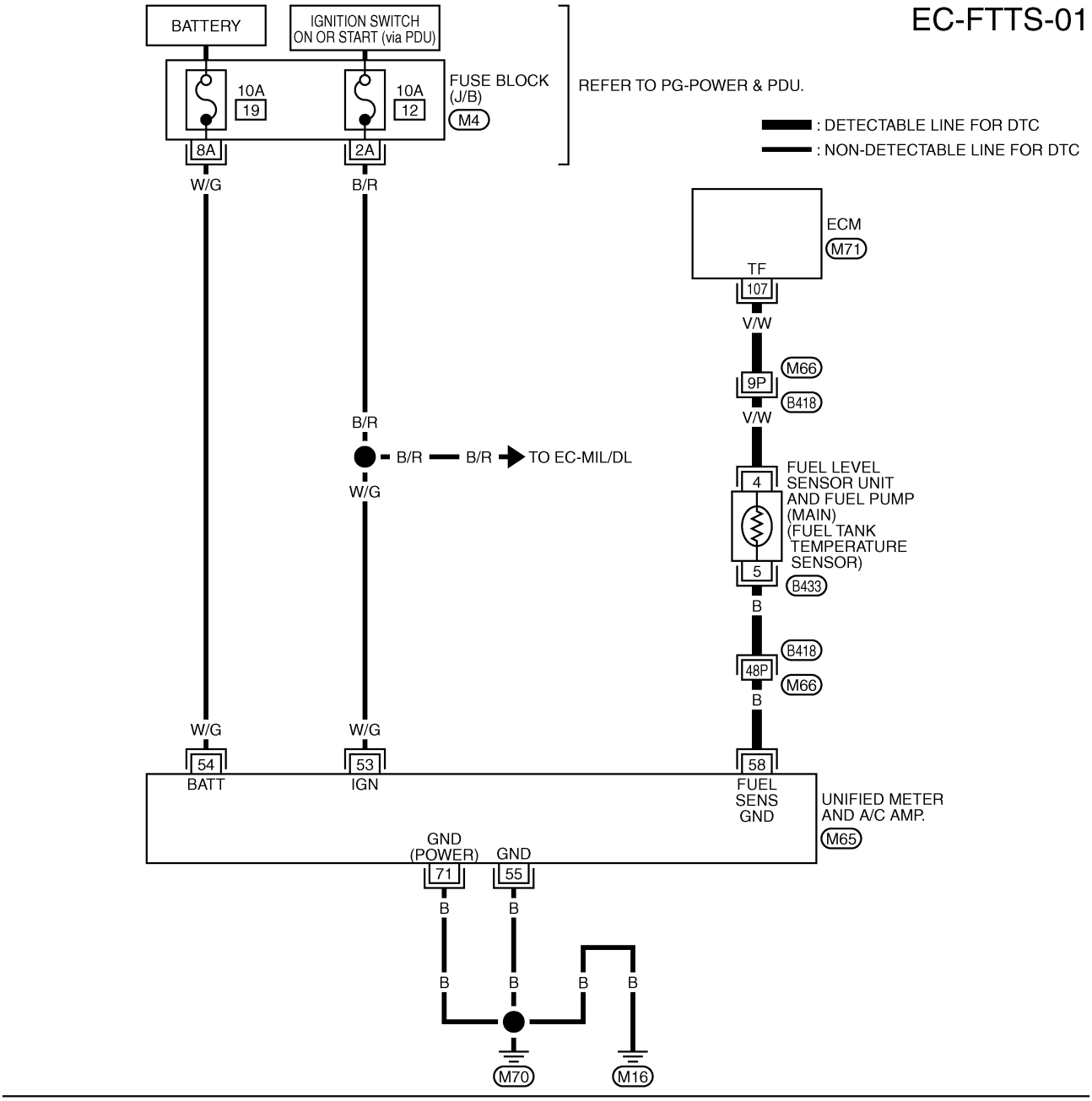
NBS004X9

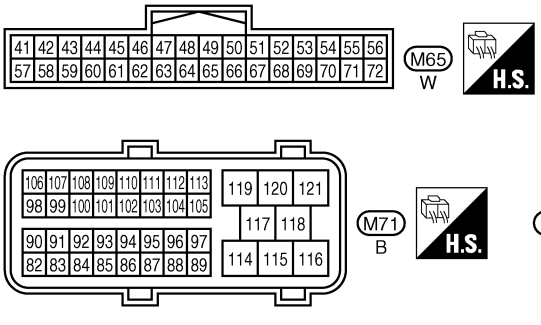
HEATED OXYGEN SENSOR 2

Refer to EM-28, "EXHAUST MANIFOLD" .

Wiring Diagram

NBS004Y3





REFER TO THE FOLLOWING.

B418 -SUPER MULTIPLE JUNCTION (SMJ)

M4 -FUSE BLOCK-JUNCTION BOX (J/B)

TBWT1531E

Diagnostic Procedure

NBS004ZF

1. CHECK EXHAUST SYSTEM

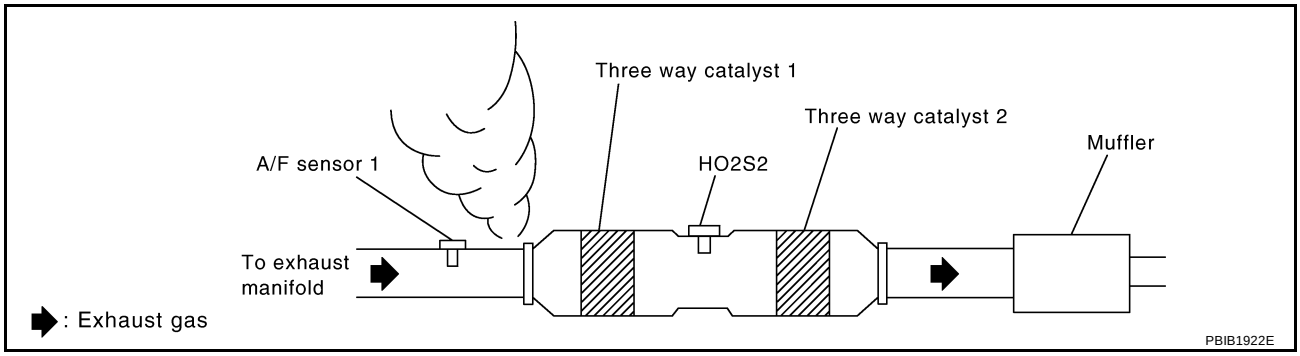
Visually check exhaust tubes and muffler for dent.

OK or NG

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

2. CHECK EXHAUST GAS LEAK

1. Start engine and run it at idle.
2. Listen for an exhaust gas leak before the three way catalyst 1.



OK or NG

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

3. CHECK INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

OK or NG

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

4. CHECK IGNITION TIMING

Check the following items. Refer to EC-78, "Basic Inspection" .

Items	Specifications
Target idle speed	650 ± 50 rpm (in P or N position)
Ignition timing	15 ± 5° BTDC (in P or N position)

OK or NG

OK >> GO TO 5.
NG >> Follow the EC-78, "Basic Inspection" .

DTC P0452 EVAP CONTROL SYSTEM PRESSURE SENSOR

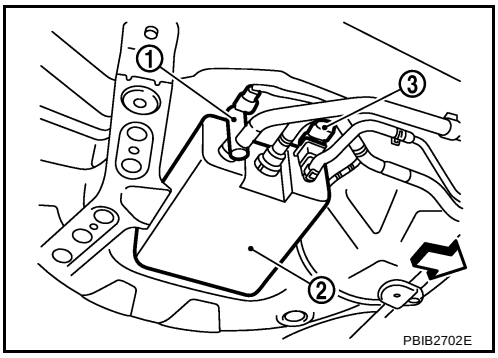
PFP:25085

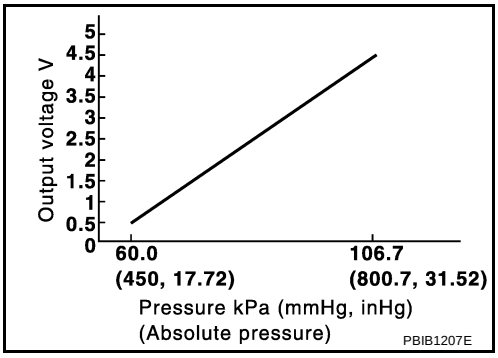
Component Description

NBS0050O

The EVAP control system pressure sensor (3) detects pressure in the purge line. The sensor output voltage to the ECM increases as pressure increases.

- Illustration shows the view from under the vehicle.
- ⇦: Vehicle front
- EVAP canister vent control valve (1)
- EVAP canister (2)





CONSULT-II Reference Value in Data Monitor Mode

NBS0050P

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
EVAP SYS PRES	● Ignition switch: ON	Approx. 1.8 - 4.8V

On Board Diagnosis Logic

NBS0050Q

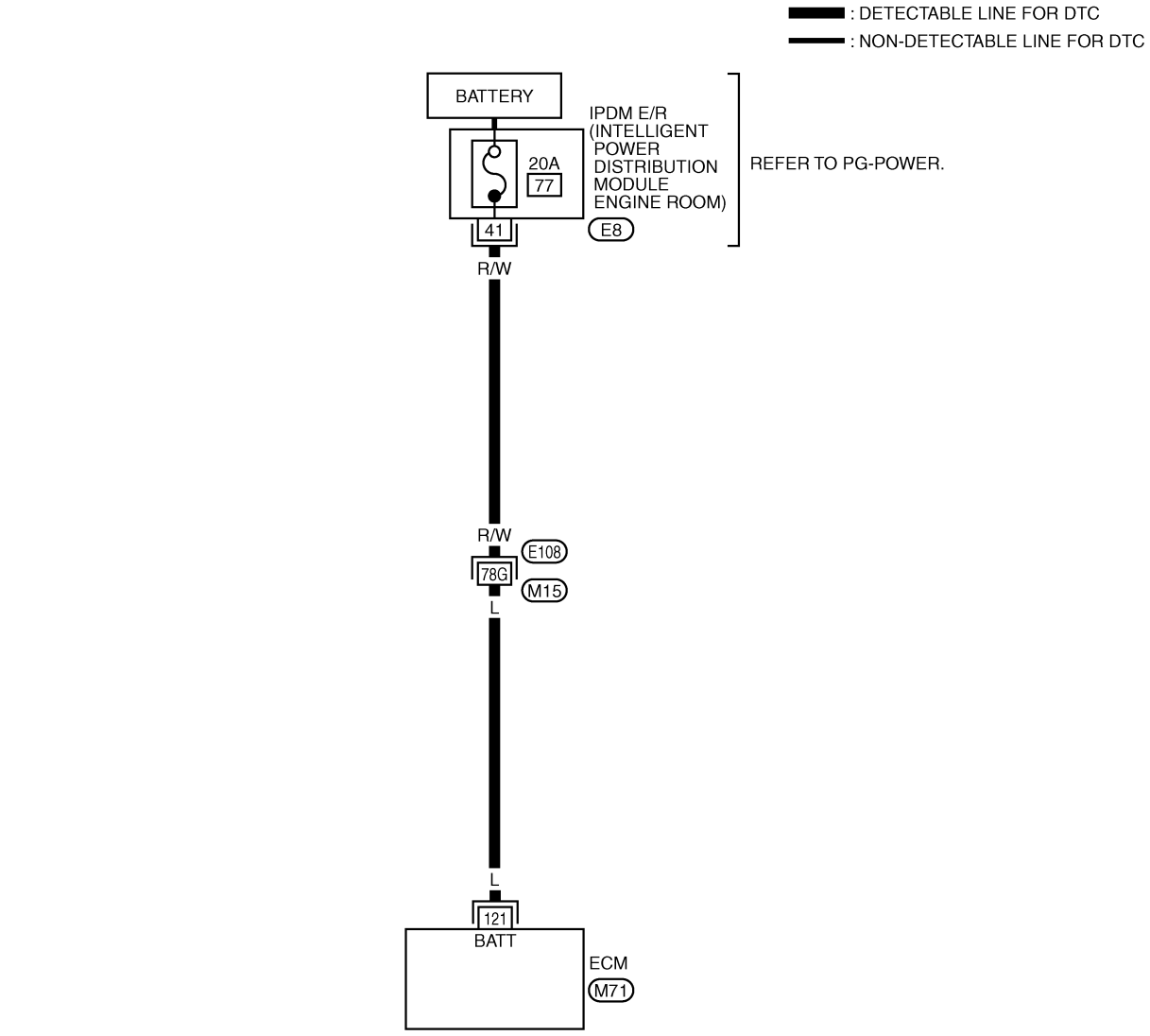
NOTE:
If DTC P0452 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-486, "DTC P0643 SENSOR POWER SUPPLY" .

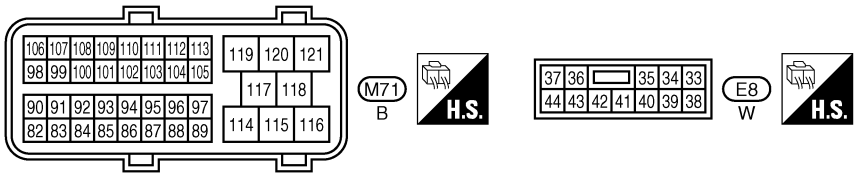
DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0452 0452	EVAP control system pressure sensor low input	An excessively low voltage from the sensor is sent to ECM.	● Harness or connectors (The sensor circuit is open or shorted.) ● EVAP control system pressure sensor

Wiring Diagram

NBS0052C

EC-ECM/PW-01





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

TBWT0970E

6. CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check harness continuity between battery current sensor terminal 3 and ECM terminal 71. Refer to Wiring Diagram.

Continuity should exist.

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

OK or NG

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

7. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E10, F1
- Harness for open or short between battery current sensor and ECM

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

8. CHECK BATTERY CURRENT SENSOR

Refer to EC-529, "Component Inspection" .

OK or NG

OK >> GO TO 9.
NG >> Replace battery negative cable assembly.

9. CHECK INTERMITTENT INCIDENT

Refer to EC-153, "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT" .

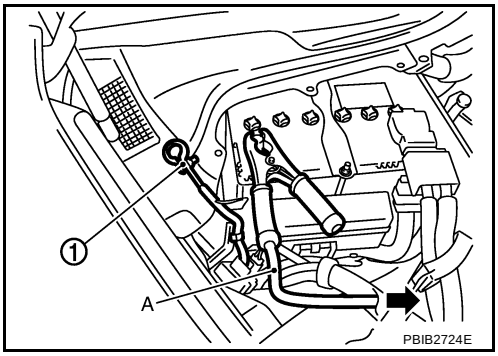
>> **INSPECTION END**

Component Inspection

NBS0053X

BATTERY CURRENT SENSOR

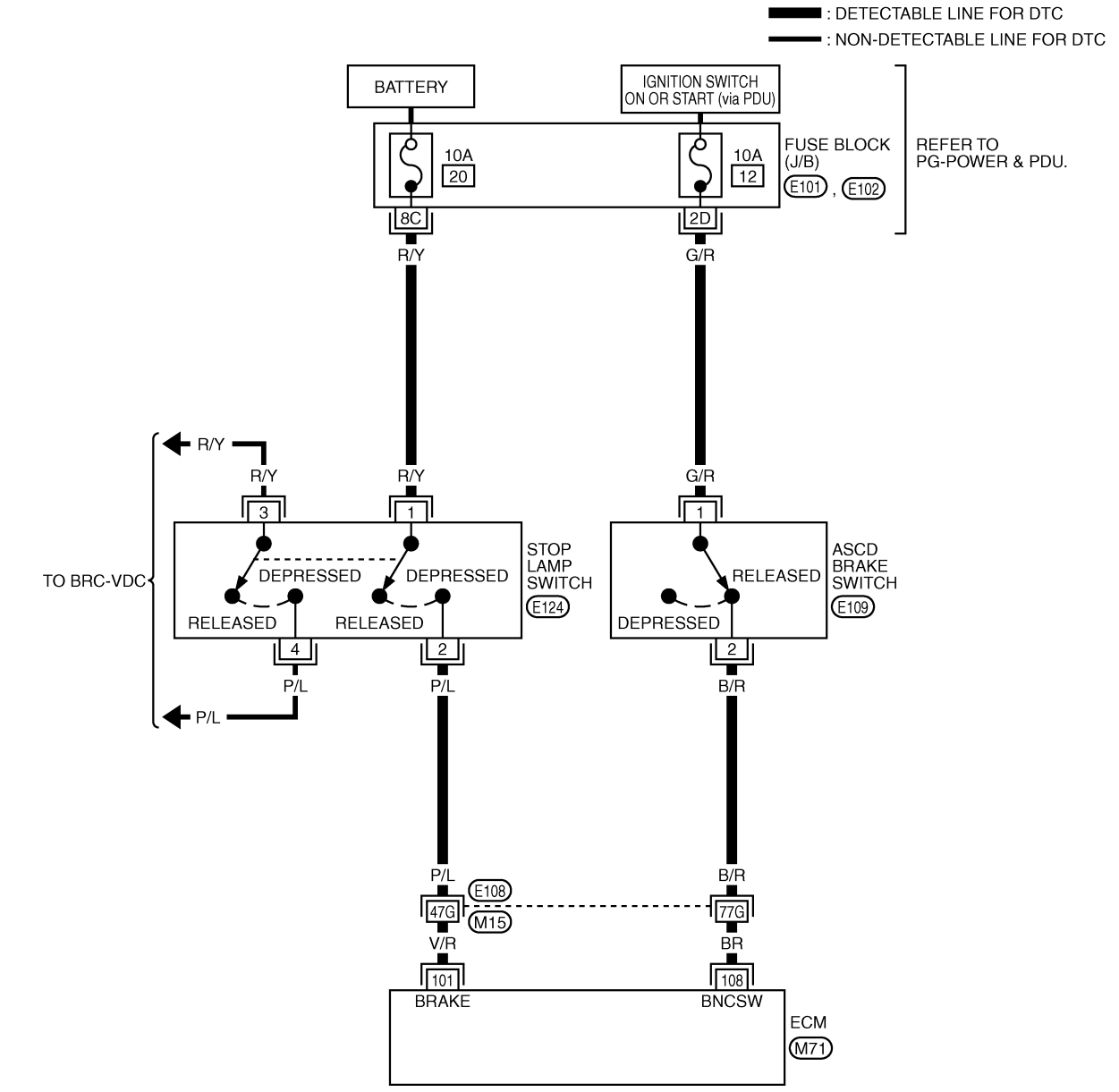
1. Reconnect harness connectors disconnected.
2. Disconnect battery negative cable (1).
   - ⬅: To body ground
3. Install jumper cable (A) between battery negative terminal and body ground.
4. Turn ignition switch ON.

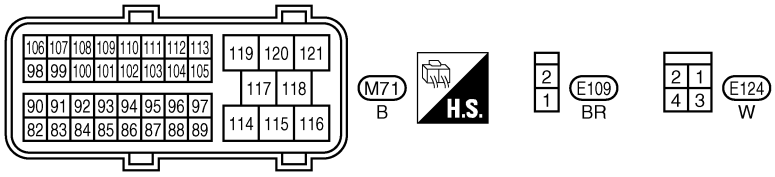


Wiring Diagram

NBS0055B

EC-ASC/BS-01





REFER TO THE FOLLOWING.
E108 -SUPER MULTIPLE JUNCTION (SMJ)
E101, E102 -FUSE BLOCK-JUNCTION BOX (J/B)

TBWT0983E

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

CAUTION:

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

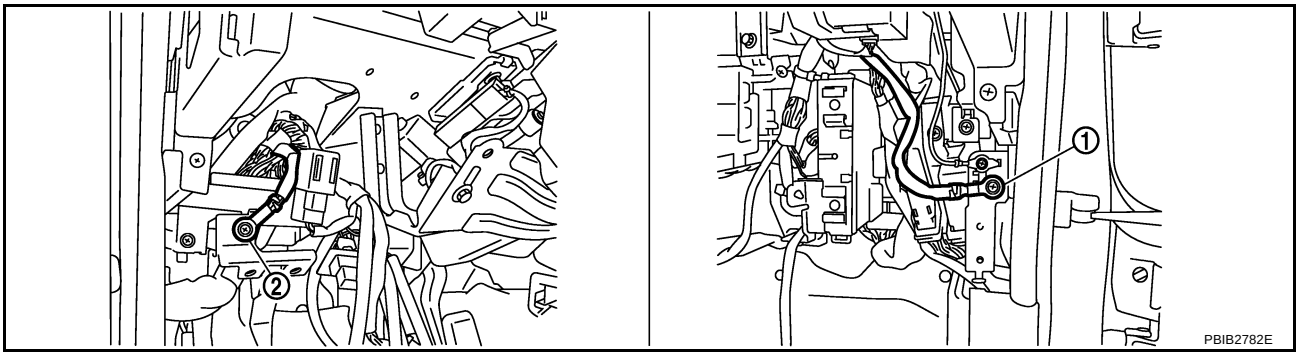
TERMINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
47	G	Sensor power supply (Throttle position sensor)	**[Ignition switch: ON]**	Approximately 5V
82	W	Sensor ground (APP sensor 1)	**[Engine is running]** ● **Warm-up condition** ● Idle speed	Approximately 0V
83	P	Sensor ground (APP sensor 2)	**[Engine is running]** ● **Warm-up condition** ● Idle speed	Approximately 0V
90	L	Sensor power supply (APP sensor 1)	**[Ignition switch: ON]**	Approximately 5V
91	BR	Sensor power supply (APP sensor 2)	**[Ignition switch: ON]**	Approximately 5V
98	R	Accelerator pedal position sensor 2	**[Ignition switch: ON]** ● Engine stopped ● Accelerator pedal: Fully released	0.20 - 0.55V
			[Ignition switch: ON] ● Engine stopped ● Accelerator pedal: Fully depressed	1.85 - 2.40V
106	LG	Accelerator pedal position sensor 1	**[Ignition switch: ON]** ● Engine stopped ● Accelerator pedal: Fully released	0.4 - 1.1V
			[Ignition switch: ON] ● Engine stopped ● Accelerator pedal: Fully depressed	3.7 - 4.8V

Diagnostic Procedure

NBS0056Y

1. CHECK GROUND CONNECTIONS

1. Turn ignition switch OFF.
2. Loosen and retighten two ground screws on the body.
   Refer to EC-160, "Ground Inspection" .



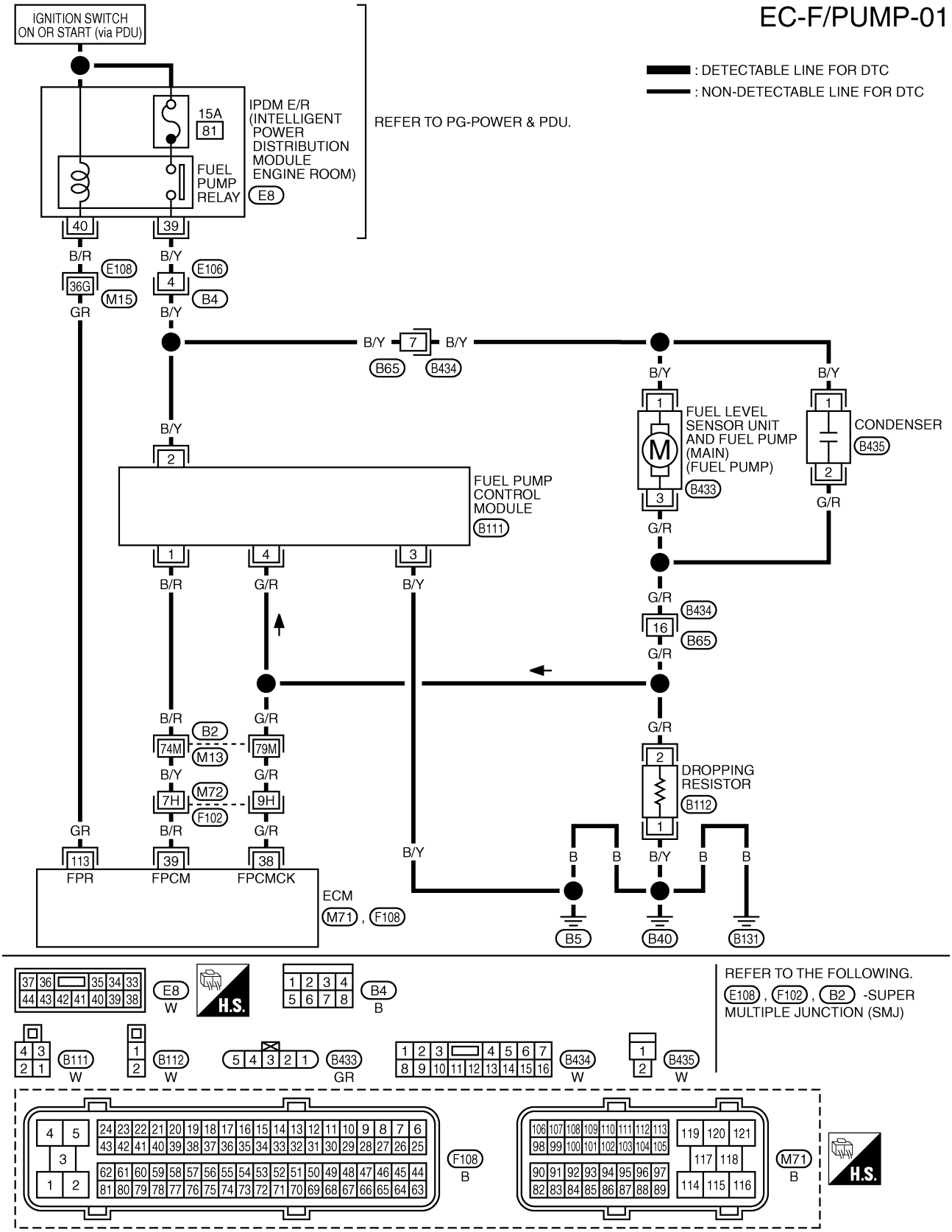
1. Body ground M70
2. Body ground M16

OK or NG

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

Wiring Diagram

NBS00581

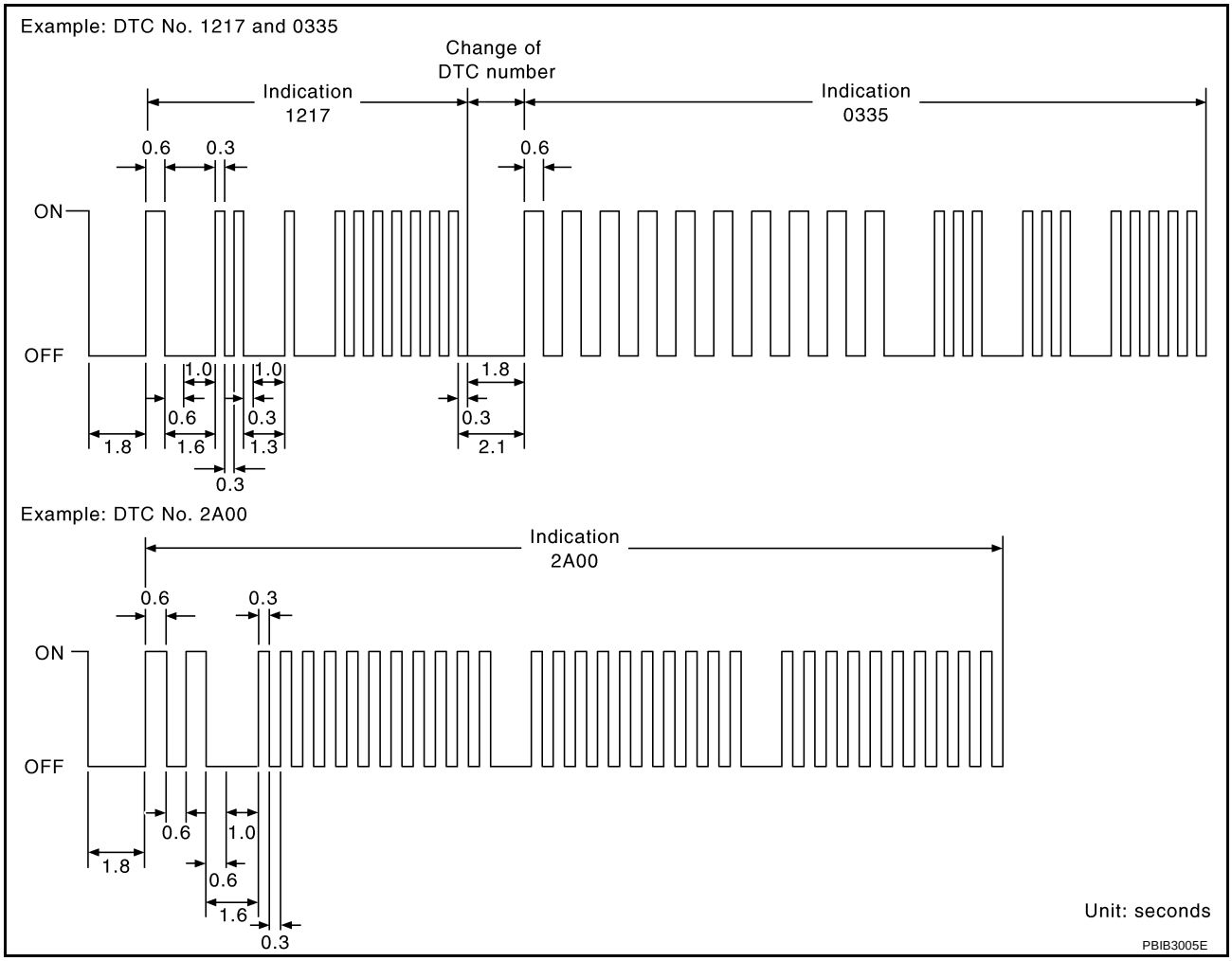


TBWT1535E

Items (CONSULT-II screen terms)	DTC*1		Reference page
	CONSULT-II GST*2	ECM*3	
MULTI CYL MISFIRE	P0300	0300	EC-1061
NATS MALFUNCTION	P1610 - P1615	1610 - 1615	EC-755
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	**P0000**	**0000**	—
P-N POS SW/CIRCUIT	P0850	0850	EC-1198
PNP SW/CIRC	P0705	0705	AT-113
PURG VOLUME CONT/V	P0443	0443	EC-1108
PURG VOLUME CONT/V	P0444	0444	EC-1116
PURG VOLUME CONT/V	P0445	0445	EC-1116
PW ST P SEN/CIRC	P0550	0550	EC-1181
SENSOR POWER/CIRC	P0643	0643	EC-1193
TCC SOLENOID/CIRC	P0740	0740	AT-126
TCM	P0700	0700	AT-112
TCS/CIRC	P1212	1212	EC-1213
TCS C/U FUNCTN	P1211	1211	EC-1212
THERMSTAT FNCTN	P0128	0128	EC-945
TP SENSOR	P2135	2135	EC-1350
TP SEN 1/CIRC	P0222	0222	EC-1054
TP SEN 1/CIRC	P0223	0223	EC-1054
TP SEN 2/CIRC	P0122	0122	EC-932
TP SEN 2/CIRC	P0123	0123	EC-932
TURBINE SENSOR	P0717	0717	AT-117
TW CATALYST SYS-B1	P0420	0420	EC-1089
TW CATALYST SYS-B2	P0430	0430	EC-1089
VEH SPD SEN/CIR AT*5	P0720	0720	AT-119
VEH SPEED SEN/CIRC*5	P0500	0500	EC-1175
VENT CONTROL VALVE	P0447	0447	EC-1123
VENT CONTROL VALVE	P0448	0448	EC-1130
VIAS S/V CIRC	P1800	1800	EC-1302

*1: 1st trip DTC No. is the same as DTC No.
*2: This number is prescribed by SAE J2012.
*3: In Diagnostic Test Mode II (Self-diagnostic results), this number is controlled by NISSAN.
*4: The troubleshooting for this DTC needs CONSULT-II.
*5: When the fail-safe operations for both self-diagnoses occur, the MIL illuminates.
*6: Models with ICC.

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 unidentified codes can be identified by using the CONSULT-II or GST. A DTC will be used as an example for how to read a code.



A particular trouble code can be identified by the number of four-digit numeral flashes. The “zero” is indicated by the number of ten flashes. The “A” is indicated by the number of eleven flash. The length of time the 1,000th-digit numeral flashes on and off is 1.2 seconds consisting of an ON (0.6-second) - OFF (0.6-second) cycle.
The 100th-digit numeral and lower digit numerals consist of a 0.3-second ON and 0.3-second OFF cycle.
A change from one digit numeral to another occurs at an interval of 1.0-second OFF. In other words, the later numeral appears on the display 1.3 seconds after the former numeral has disappeared.
A change from one trouble code to another occurs at an interval of 1.8-second OFF.
In this way, all the detected malfunctions are classified by their DTC numbers. The DTC 0000 refers to no malfunction. (See EC-718, "INDEX FOR DTC")

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

The DTC can be erased from the back up memory in the ECM by depressing accelerator pedal. Refer to EC-773, "How to Erase Diagnostic Test Mode II (Self-diagnostic Results)" .

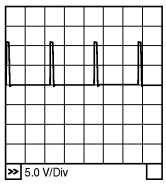
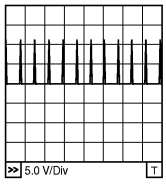
- **If the battery is disconnected, the DTC will be lost from the backup memory within 24 hours.**
- **Be careful not to erase the stored memory before starting trouble diagnoses.**

OBD System Operation Chart

NBS005A5

RELATIONSHIP BETWEEN MIL, 1ST TRIP DTC, DTC, AND DETECTABLE ITEMS

- When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data are stored in the ECM memory.

TER-MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
68	L/Y	Sensor power supply (Power steering pressure sensor)	**[Ignition switch: ON]**	Approximately 5V
69	R	Throttle position sensor 2	**[Ignition switch: ON]** ● Engine: Stopped ● Selector lever: D ● Accelerator pedal: Fully released	Less than 4.75V
			[Ignition switch: ON] ● Engine: Stopped ● Selector lever: D ● Accelerator pedal: Fully depressed	More than 0.36V
70	L/R	Refrigerant pressure sensor	**[Engine is running]** ● **Warm-up condition** ● Both A/C switch and blower fan motor switch: ON (Compressor operates)	1.0 - 4.0V
71	L/R	Battery current sensor	**[Engine is running]** ● Battery: Fully charged* ● Idle speed	Approximately 2.6 - 3.5V
72	L	Intake valve timing control position sensor (bank 1)	**[Engine is running]** ● **Warm-up condition** ● Idle speed	0 - 1.0V★  PBIB2734E
			[Engine is running] ● Engine speed: 2,000rpm	0 - 1.0V★  PBIB2735E
73	Y/B	Engine coolant temperature sensor	**[Engine is running]**	Approximately 0 - 4.8V Output voltage varies with engine coolant temperature.
74	W	Heated oxygen sensor 2 (bank 2)	**[Engine is running]** ● Revving engine from idle to 3,000 rpm quickly after the following conditions are met – Engine: After warming-up – Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load	0 - Approximately 1.0V
78	B	Sensor ground (Heated oxygen sensor 2)	**[Engine is running]** ● **Warm-up condition** ● Idle speed	Approximately 0V
82	W	Sensor ground (APP sensor 1)	**[Engine is running]** ● **Warm-up condition** ● Idle speed	Approximately 0V

DTC Confirmation Procedure

NBS005BC

CAUTION:
Always drive at a safe speed.

NOTE:

- **If DTC P0011 or P0021 is displayed with DTC P0075, P0081, P1140 or P1145, first perform the trouble diagnosis for EC-899, "DTC P0075, P0081 IVT CONTROL SOLENOID VALVE" or EC-1203, "DTC P1140, P1145 IVT CONTROL POSITION SENSOR" .**
- If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

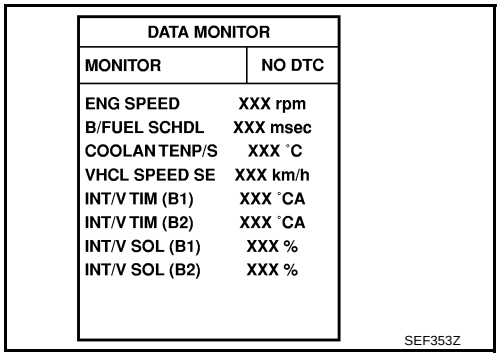
TESTING CONDITION:
Before performing the following procedure, confirm that battery voltage is between 10V and 16V at idle.

PROCEDURE FOR MALFUNCTION A

With CONSULT-II

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode with CONSULT-II.
3. Maintain the following conditions for at least 10 consecutive seconds.

ENG SPEED	More than 2,000 rpm (A constant rotation is maintained.)
COOLAN TEMP/S	More than 70°C (158°F)
Selector lever	1st or 2nd position
Driving location uphill	Driving vehicle uphill (Increased engine load will help maintain the driving conditions required for this test.)



4. Maintain the following conditions for at least 20 consecutive seconds.

ENG SPEED	Idle
COOLAN TEMP/S	More than 70°C (158°F)
Selector lever	P or N position

5. If the 1st trip DTC is detected, go to EC-877, "Diagnostic Procedure" .

With GST

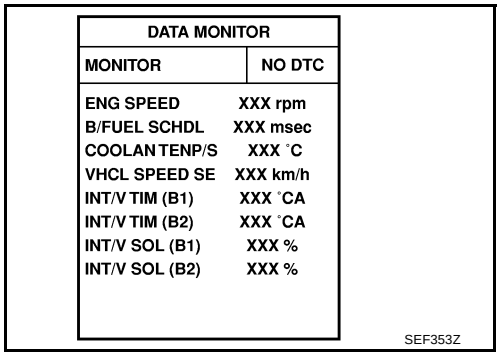
Follow the procedure “With CONSULT-II” above.

PROCEDURE FOR MALFUNCTION B

With CONSULT-II

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode with CONSULT-II.
3. Maintain the following conditions for at least 10 consecutive seconds.

ENG SPEED	1,700 - 3,175 rpm (A constant rotation is maintained.)
COOLAN TEMP/S	70 - 105°C (158 - 221°F)
Selector lever	1st or 2nd position
Driving location uphill	Driving vehicle uphill (Increased engine load will help maintain the driving conditions required for this test.)



4. If the 1st trip DTC is detected, go to EC-877, "Diagnostic Procedure" .

With GST

Follow the procedure “With CONSULT-II” above.

a. Check for the cause of uneven air flow through mass air flow sensor. Refer to following.
- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system parts

b. If NG, repair or replace malfunctioning part and perform step 2 to 4 again.
If OK, go to next step.

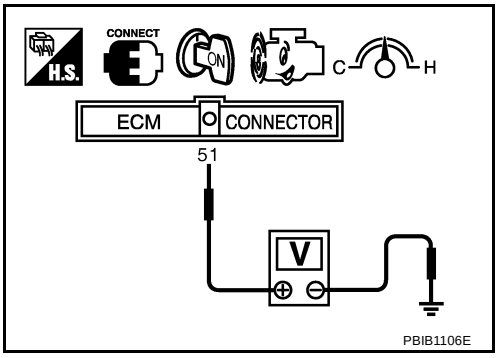
6. Turn ignition switch OFF.
7. Disconnect mass air flow sensor harness connector and reconnect it again.
8. Perform step 2 to 4 again.
9. If NG, clean or replace mass air flow sensor.

Without CONSULT-II

1. Reconnect all harness connectors disconnected.
2. Start engine and warm it up to normal operating temperature.
3. Check voltage between ECM terminal 51 (Mass air flow sensor signal) and ground.

Condition	Voltage V
Ignition switch ON (Engine stopped.)	Approx. 0.4
Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2
2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.6 - 1.9
Idle to about 4,000 rpm	0.9 - 1.2 to Approx. 2.4*

*: Check for linear voltage rise in response to engine being increased to about 4,000 rpm.



4. If the voltage is out of specification, proceed the following.

a. Check for the cause of uneven air flow through mass air flow sensor. Refer to following.
- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system parts

b. If NG, repair or replace malfunctioning part and perform step 2 to 3 again.
If OK, go to next step.

5. Turn ignition switch OFF.
6. Disconnect mass air flow sensor harness connector and reconnect it again.
7. Perform step 2 and 3 again.
8. If NG, clean or replace mass air flow sensor.

Removal and Installation

NBS005CL

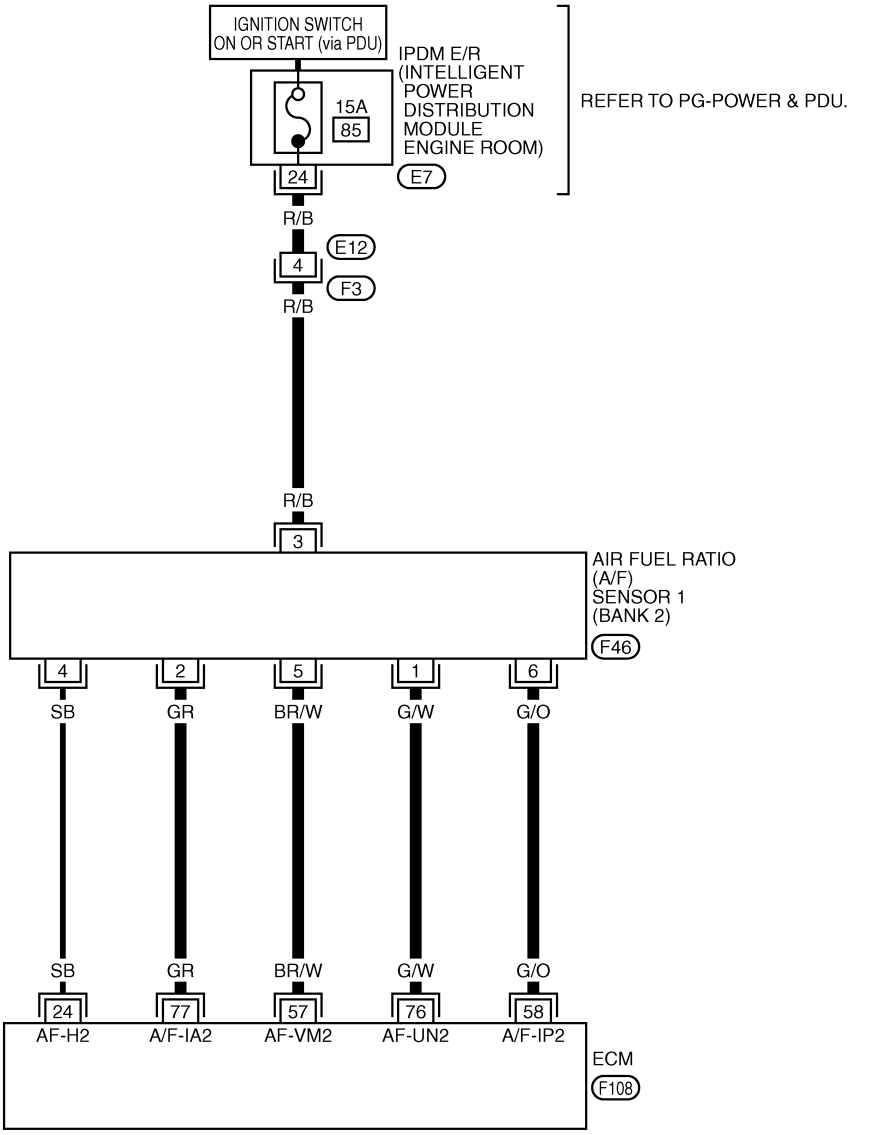
MASS AIR FLOW SENSOR

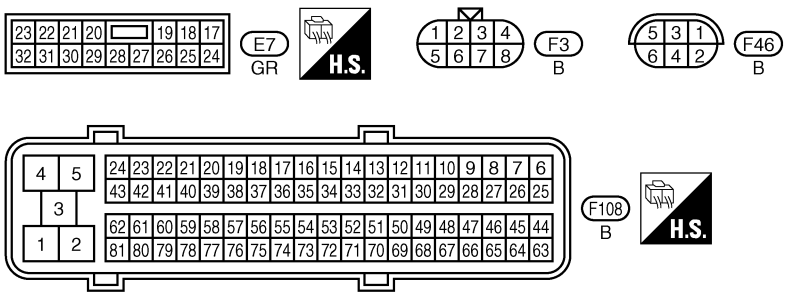
Refer to EM-177, "AIR CLEANER AND AIR DUCT" .

BANK 2

EC-AF1B2-01

: DETECTABLE LINE FOR DTC
: NON-DETECTABLE LINE FOR DTC

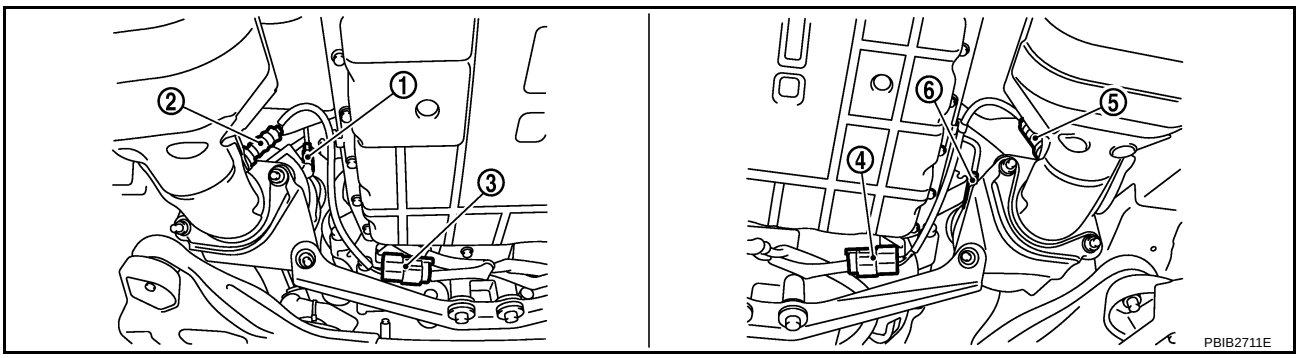




TBWT1047E

3. CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

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



1. Air fuel ratio (A/F) sensor 1 (bank 1)
2. Heated oxygen sensor 2 (bank 1)
3. Heated oxygen sensor 2 (bank 1) harness connector
4. Heated oxygen sensor 2 (bank 2) harness connector
5. Heated oxygen sensor 2 (bank 2)
6. Air fuel ratio (A/F) sensor 1 (bank 2)

3. Disconnect ECM harness connector.
4. Check harness continuity between ECM terminal 78 and HO2S2 terminal 4. 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 4.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

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

DTC	Terminals		Bank
	ECM	Sensor	
P0139	55	1	1
P0159	74	1	2

Continuity should exist.

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

DTC	Terminals		Bank
	ECM	Sensor	
P0139	55	1	1
P0159	74	1	2

Continuity should not exist.

3. Also check harness for short to power.

OK or NG

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

14. CHECK A/F SENSOR 1 HEATER

Refer to EC-889, "Component Inspection" .

OK or NG

OK >> GO TO 16.
NG >> GO TO 15.

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

Replace malfunctioning A/F sensor 1.

CAUTION:

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

>> **INSPECTION END**

16. CHECK MASS AIR FLOW SENSOR

With CONSULT-II

1. Start engine and warm it up to normal operating temperature.
2. Check mass air flow sensor signal in “DATA MONITOR” mode with CONSULT-II.

2.0 - 6.0 g·m/sec: at idling
7.0 - 20.0 g·m/sec: at 2,500 rpm

With GST

1. Start engine and warm it up to normal operating temperature.
2. Check mass air flow sensor signal in Service $01 with GST.

2.0 - 6.0 g·m/sec: at idling
7.0 - 20.0 g·m/sec: at 2,500 rpm

OK or NG

OK >> GO TO 17.
NG >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or ground. Refer to EC-906, "DTC P0101 MAF SENSOR" .

17. CHECK SYMPTOM MATRIX CHART

Check items on the rough idle symptom in EC-801, "Symptom Matrix Chart" .

OK or NG

OK >> GO TO 18.
NG >> Repair or replace.

18. ERASE THE 1ST TRIP DTC

Some tests may cause a 1st trip DTC to be set.
Erase the 1st trip DTC from the ECM memory after performing the tests. Refer to EC-770, "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION" .

>> GO TO 19.

On Board Diagnosis Logic

NBS005HE

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0444 0444	EVAP canister purge volume control solenoid valve circuit open	An excessively low voltage signal is sent to ECM through the valve	● Harness or connectors (The solenoid valve circuit is open or shorted.) ● EVAP canister purge volume control solenoid valve
P0445 0445	EVAP canister purge volume control solenoid valve circuit shorted	An excessively high voltage signal is sent to ECM through the valve	● Harness or connectors (The solenoid valve circuit is shorted.) ● EVAP canister purge volume control solenoid valve

DTC Confirmation Procedure

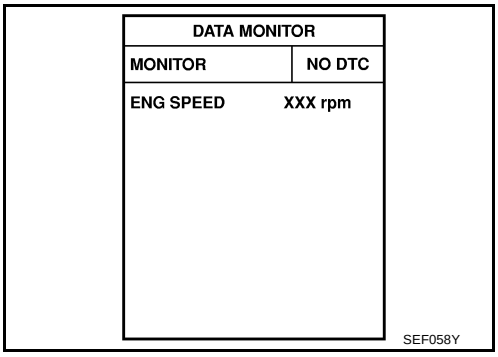
NBS005HF

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 battery voltage is more than 11V 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 at least 13 seconds.
4. If 1st trip DTC is detected, go to EC-1120, "Diagnostic Procedure" .



WITH GST

Follow the procedure “WITH CONSULT-II” above.

10. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.0 kg (4.4 lb).

OK or NG

OK (With CONSULT-II)>>GO TO 12.
OK (Without CONSULT-II)>>GO TO 13.
NG >> GO TO 11.

11. DETECT MALFUNCTIONING PART

Check the following.

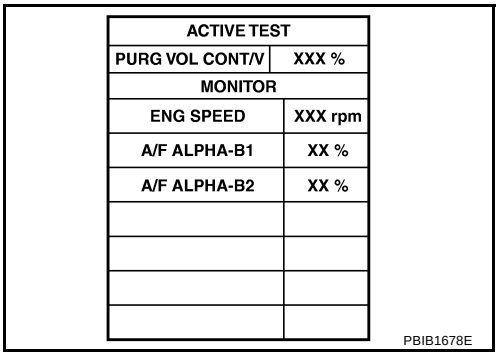
- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection

>> Repair hose or replace EVAP canister.

12. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

With CONSULT-II

1. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
2. Start engine.
3. Perform “PURG VOL CONT/V” in “ACTIVE TEST” mode.
4. Touch “Qu” on CONSULT-II screen to increase “PURG VOL CONT/V” opening to 100%.
5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.



OK or NG

OK >> GO TO 15.
NG >> GO TO 14.

13. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

Without CONSULT-II

1. Start engine and warm it up to normal operating temperature.
2. Stop engine.
3. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
4. Start engine and let it idle for at least 80 seconds.
5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

Vacuum should exist.

OK or NG

OK >> GO TO 15.
NG >> GO TO 14.

14. CHECK VACUUM HOSE

Check vacuum hoses for clogging or disconnection. Refer to EC-814, "Vacuum Hose Drawing" .

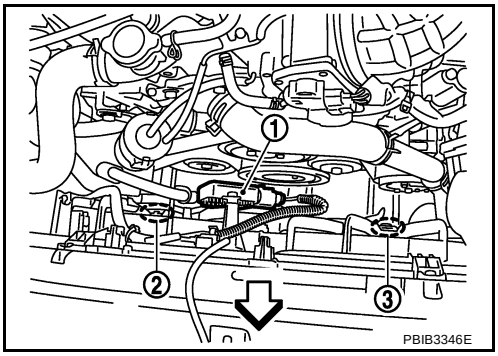
OK or NG

OK >> GO TO 15.
NG >> Repair or reconnect the hose.

Cooling Fan Motor

Cooling fan motor receives cooling fan motor operating voltage from cooling fan control module (1). The revolution speed of cooling fan motor is controlled by duty cycle of the voltage.

- ⇦: Vehicle front
- Cooling fan motor-2 (2)
- Cooling fan motor-1 (3)



CONSULT-II Reference Value in Data Monitor Mode

NBS005KR

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
FAN DUTY	● Engine: Running	0 - 100%

On Board Diagnosis Logic

NBS005KS

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 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 control module ● Cooling fan motor ● Radiator hose ● Radiator ● Radiator cap ● Water pump ● Thermostat ● Water control valve For more information, refer to EC-1223, "Main 13 Causes of Overheating" .

CAUTION:
When a malfunction is indicated, be sure to replace the coolant. Refer to CO-40, "Changing Engine Coolant" . Also, replace the engine oil. Refer to LU-28, "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-13, "Anti-Freeze Coolant Mixture Ratio" .**
2. **After refilling coolant, run engine to ensure that no water-flow noise is emitted.**

Overall Function Check

NBS005KT

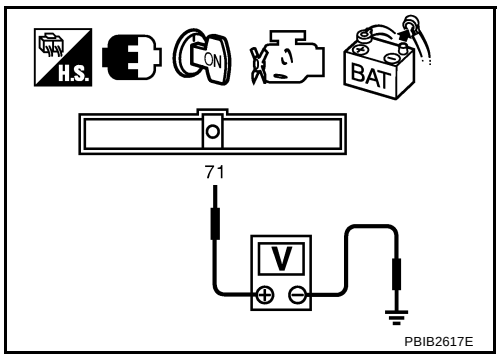
Use this procedure to check the overall function of the cooling fan. During this check, a DTC might not be confirmed.

WARNING:
Never remove the radiator cap when the engine is hot. Serious burns could be caused by high pressure fluid escaping from the radiator.
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.

5. Check voltage between ECM terminal 71 (battery current sensor signal) and ground.

   Voltage: Approximately 2.5V

6. If NG, replace battery negative cable assembly.



ASCD MODELS

1. CHECK STOP LAMP SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Check the stop lamp when depressing and releasing the brake pedal.

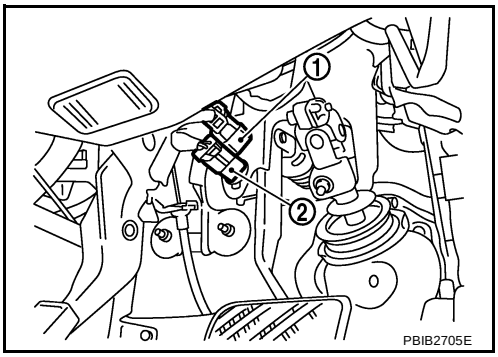
Brake pedal	Stop lamp
Fully released	Not illuminated
Slightly depressed	Illuminated

OK or NG

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

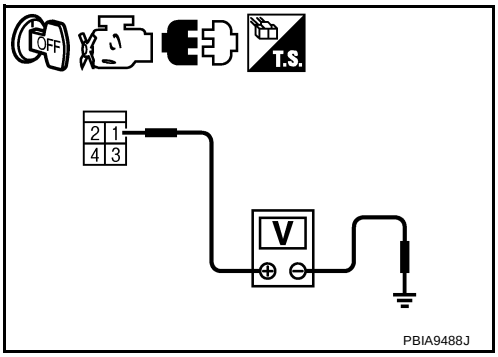
2. CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

1. Disconnect stop lamp switch (1) harness connector.
- ASCD brake switch (2)



2. Check voltage between stop lamp switch terminal 1 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.

- Fuse block (J/B) connector E101
- 10A fuse
- Harness for open or short between stop lamp switch and battery

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

5. CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-II

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check harness continuity between APP sensor terminal 5 and ECM terminal 91. Refer to Wiring Diagram.

Continuity should exist.

OK or NG

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

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E108, M15
- Harness for open or short between ECM and accelerator pedal position sensor

>> Repair open circuit.

7. CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-III

Check harness for short to power and short to ground, between the following terminals.

ECM terminal	Sensor terminal	Reference Wiring Diagram
91	APP sensor terminal 4	EC-1359
47	Electric throttle control actuator terminal 1	EC-1352

OK or NG

OK >> GO TO 8.
NG >> Repair short to ground or short to power in harness or connectors.

8. CHECK THROTTLE POSITION SENSOR

Refer to EC-1356, "Component Inspection" .

OK or NG

OK >> GO TO 16.
NG >> GO TO 9.

9. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

1. Replace the electric throttle control actuator.
2. Perform EC-788, "Throttle Valve Closed Position Learning" .
3. Perform EC-788, "Idle Air Volume Learning" .

>> **INSPECTION END**

IGNITION SIGNAL

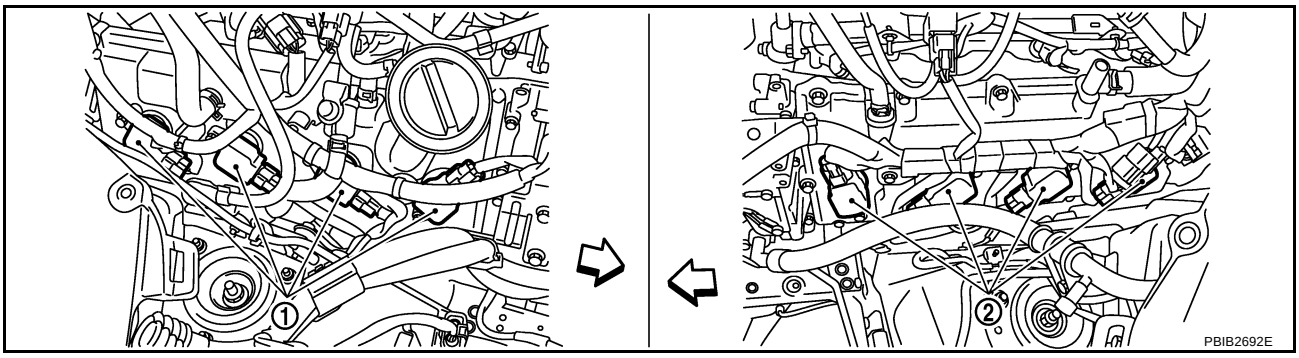
PFP:22448

Component Description

NBS005PQ

IGNITION COIL & POWER TRANSISTOR

The ignition signal from the ECM is sent to and amplified by the power transistor. The power transistor turns ON and OFF the ignition coil primary circuit. This ON/OFF operation induces the proper high voltage in the coil secondary circuit.



⇦ : Vehicle front

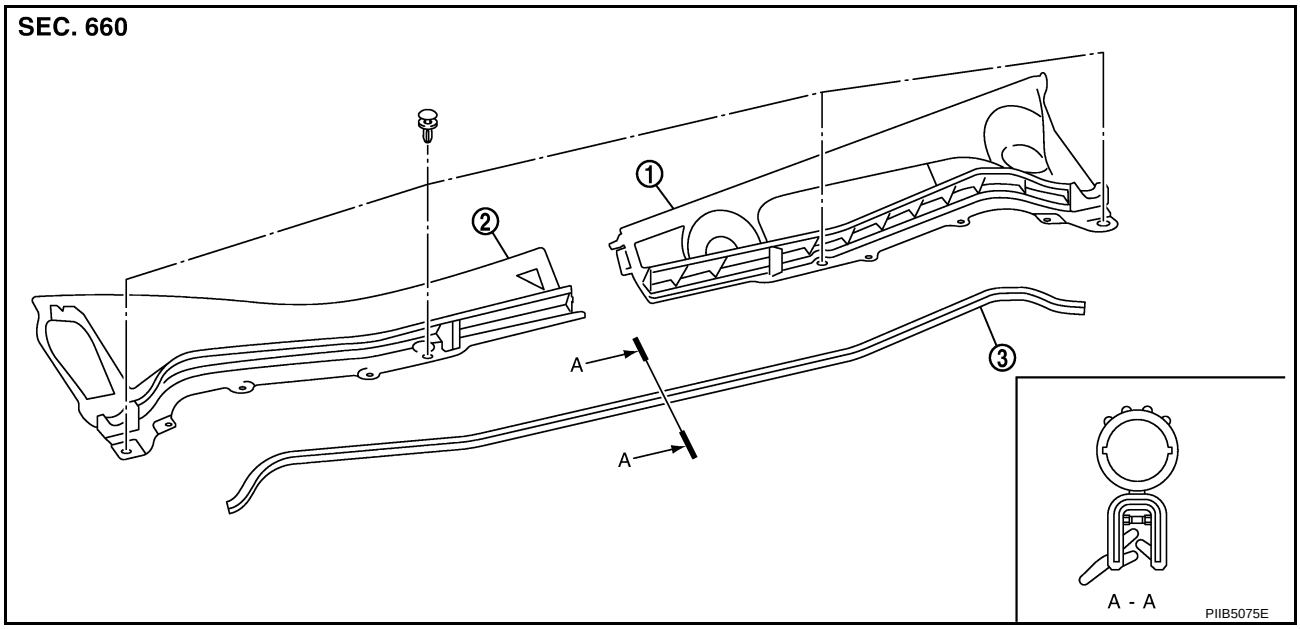
1. Ignition coil (with power transistor) (bank 2)
2. Ignition coil (with power transistor) (bank 1)

COWL TOP

PFP:66100

Removal and Installation

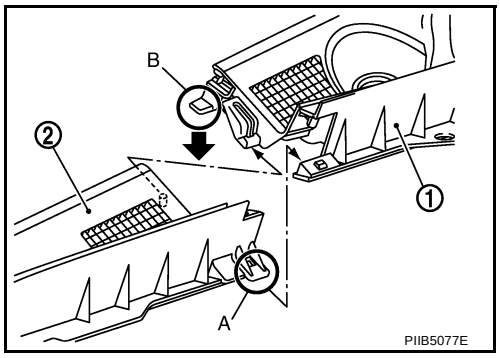
NIS0024I



1. Cowl top cover (LH)
2. Cowl top cover (RH)
3. Cowl top seal rubber

REMOVAL

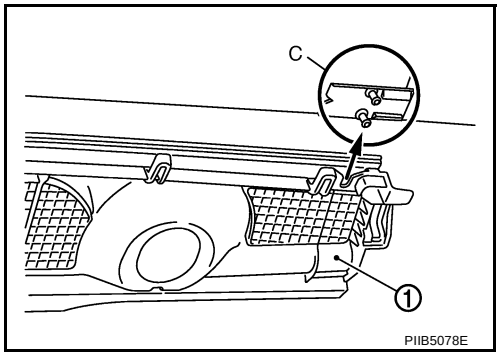
1. Remove front wiper arm (LH/RH) from vehicle. Refer to WW-43, "Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location" .
2. Remove engine room cover (LH/RH), battery cover and brake master cylinder cover. Refer to EM-15, "ENGINE ROOM COVER" (VQ35 engine model), EM-173, "ENGINE ROOM COVER" (VK45 engine model).
3. Remove cowl top seal rubber.
4. Remove cowl top cover mounting clips (LH/RH).
5. Plastic pawl A is pull up and cowl top cover RH (2) is removed ahead of vehicles.
6. Plastic pawl B is push down and cowl top cover LH (1) is removed ahead of vehicles.



INSTALLATION

Note the following, and install in the reverse order of removal.

- Install cowl top cover LH (1) with C (pin from front windshield glass) aligned with concave part.

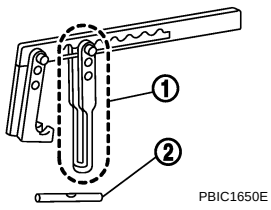
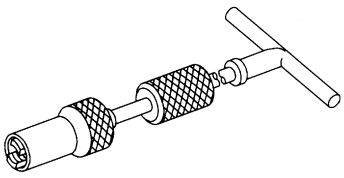
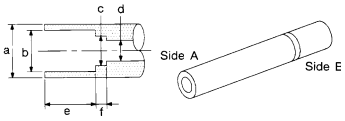
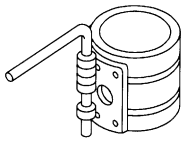
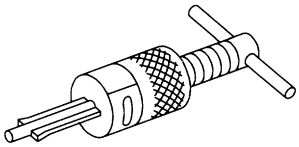
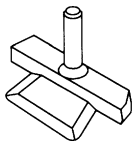
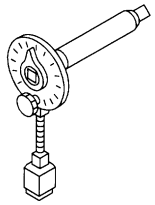


PREPARATION

PFP:00002

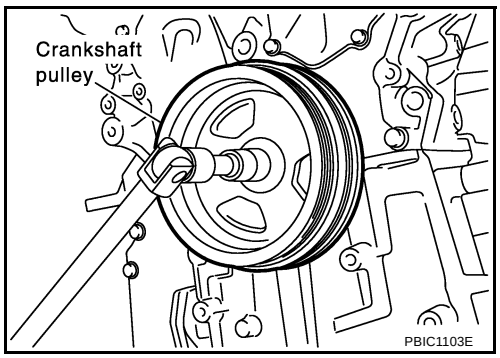
Special Service Tools

NBS004MO

Tool number (Kent-Moore No.) Tool name	Description
KV10116200 (J26336-A) Valve spring compressor 1. KV10115900 (J26336-20) Attachment 2.KV10109220 (—) Adapter	 PBIC1650E Disassembling valve mechanism Part (1) is a component of KV10116200 (J26336-A), but Part (2) is not so.
KV10107902 (J38959) Valve oil seal puller	 NT011 Replacing valve oil seal
KV10115600 (J-38958) Valve oil seal drift	 S-NT603 Installing valve oil seal **Use side A.** **a: 20 (0.79) dia.** **d: 8 (0.31) dia.** **b: 13 (0.51) dia.** **e: 10.7 (0.421)** **c: 10.3 (0.406) dia.** **f: 5 (0.20)** Unit: mm (in)
EM03470000 (J8037) Piston ring compressor	 NT044 Installing piston assembly into cylinder bore
ST16610001 (J23907) Pilot bushing puller	 NT045 Removing pilot converter
KV10111100 (J37228) Seal cutter	 NT046 Removing oil pan (lower and upper), front and rear timing chain case, etc.
KV10112100 (BT8653-A) Angle wrench	 NT014 Tightening bolts for connecting rod bearing cap, cylinder head, etc. in angle

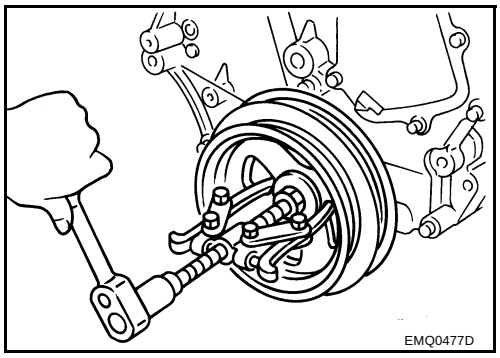
b. Loosen crankshaft pulley bolt and locate bolt seating surface as 10 mm (0.39 in) from its original position.

CAUTION:
Do not remove crankshaft pulley bolt as it will be used as a supporting point for suitable puller.

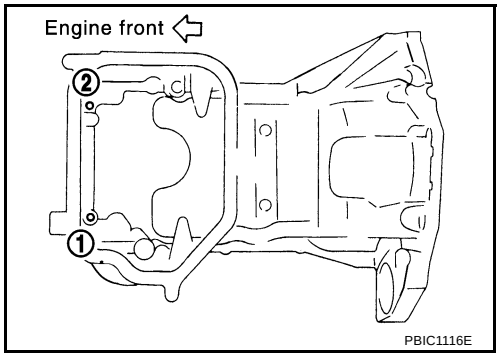


c. Place suitable puller tab on holes of crankshaft pulley, and pull crankshaft pulley through.

CAUTION:
Do not put suitable puller tab on crankshaft pulley periphery, as this will damage internal damper.

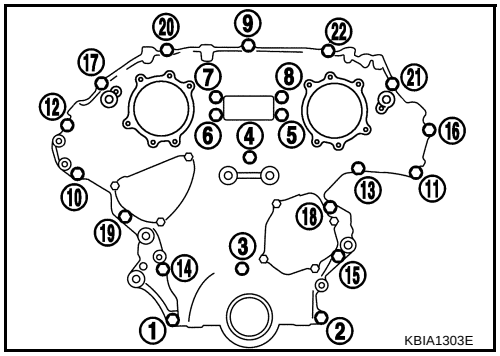


22. Remove oil pan (lower). Refer to EM-31, "OIL PAN AND OIL STRAINER" .
23. Loosen two mounting bolts in front of oil pan (upper) with power tool in reverse order shown in figure.



24. Remove front timing chain case as follows:

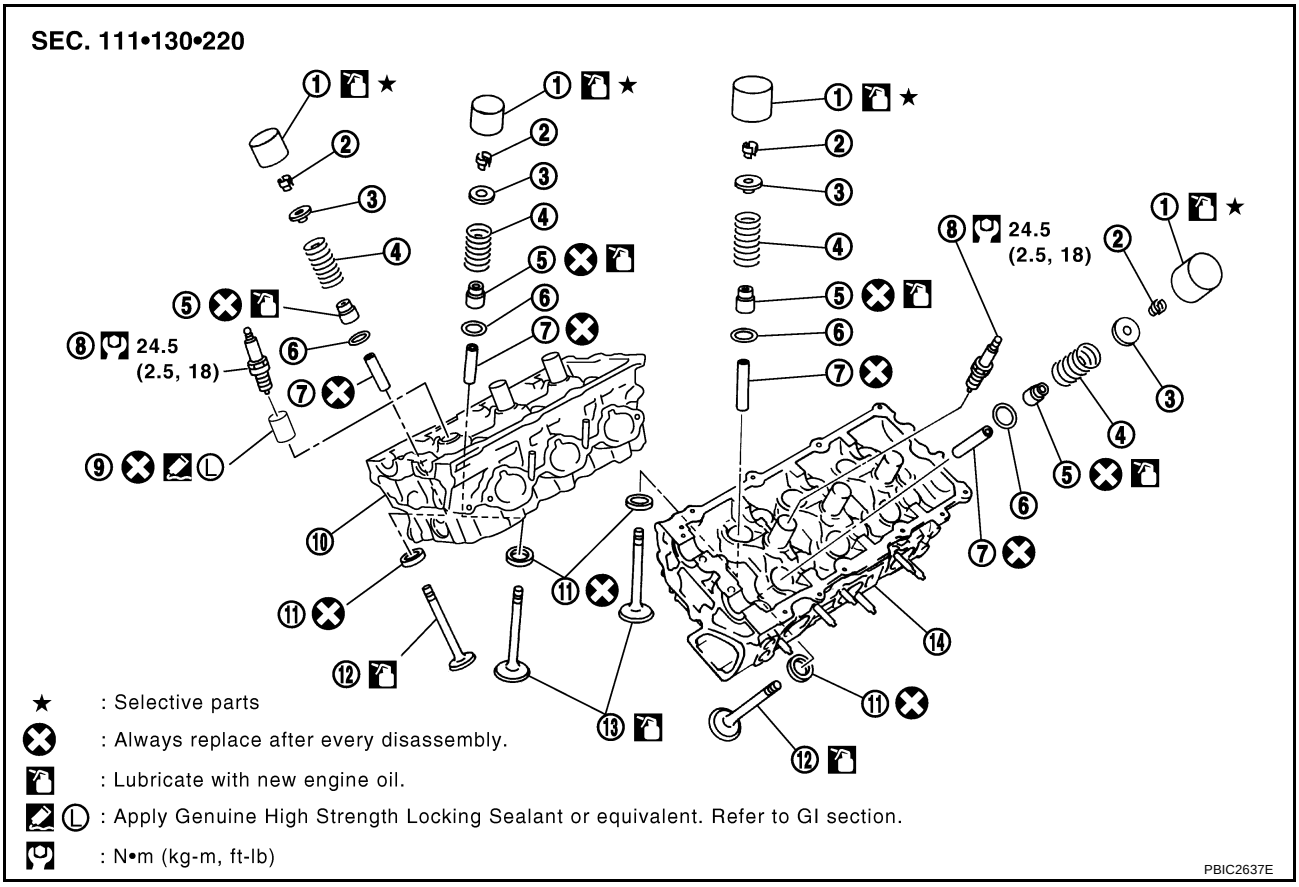
a. Loosen mounting bolts with power tool in reverse order as shown in the figure.



Disassembly and Assembly

NBS004NU

COMPONENTS

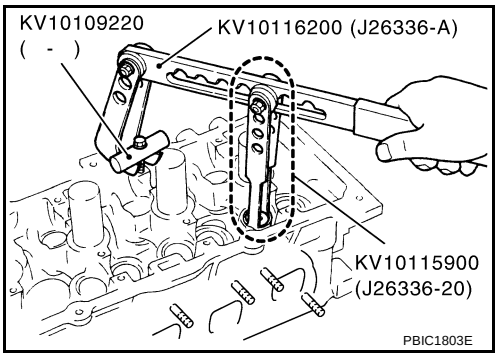


1. Valve lifter
2. Valve collet
3. Valve spring retainer
4. Valve spring
5. Valve oil seal
6. Valve spring seat
7. Valve guide
8. Spark plug
9. Spark plug tube
10. Cylinder head (right bank)
11. Valve seat
12. Valve (EXH)
13. Valve (INT)
14. Cylinder head (left bank)

DISASSEMBLY

1. Remove spark plug with spark plug wrench (commercial service tool).
2. Remove valve lifter.
   - Identify installation positions, and store them without mixing them up.
3. Remove valve collet.
   - Compress valve spring with the valve spring compressor, the attachment and the adapter (SST). Remove valve collet with a magnet hand.

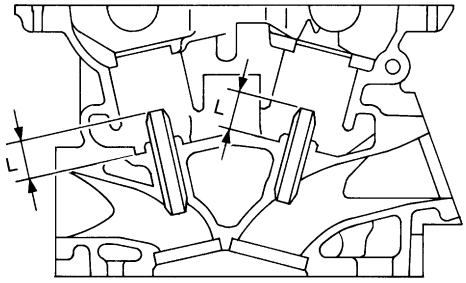
   CAUTION:
   When working, take care not to damage valve lifter holes.



4. Remove valve spring retainer, valve spring and valve spring seat.
5. Push valve stem to combustion chamber side, and remove valve.
   - Identify installation positions, and store them without mixing them up.

Valve Guide

Unit: mm (in)



SEM950E

Items		Standard	Oversize (Service) [0.2 (0.008)]
Valve guide	Outer diameter	10.023 - 10.034 (0.3946 - 0.3950)	10.223 - 10.234 (0.4025 - 0.4029)
	Inner diameter (Finished size)	6.000 - 6.018 (0.2362 - 0.2369)	
Cylinder head valve guide hole diameter		9.975 - 9.996 (0.3927 - 0.3935)	10.175 - 10.196 (0.4006 - 0.4014)
Interference fit of valve guide		0.027 - 0.059 (0.0011 - 0.0023)	
Items		Standard	Limit
Valve guide clearance	Intake	0.020 - 0.053 (0.0008 - 0.0021)	0.08 (0.003)
	Exhaust	0.030 - 0.063 (0.0012 - 0.0025)	0.09 (0.004)
Projection length “L”		12.6 - 12.8 (0.496 - 0.504)	

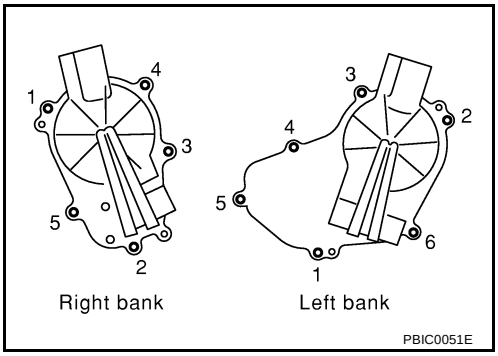
5. Remove intake valve timing control cover as follows:

a. Loosen and remove mounting bolts in the reverse order as shown in the figure.

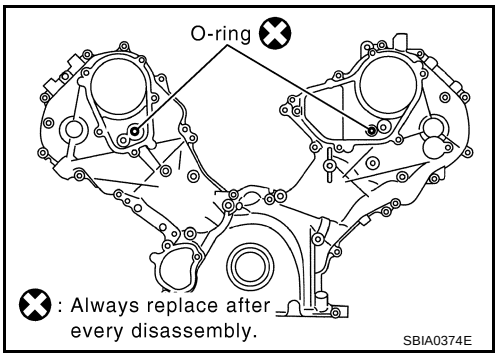
b. Use seal cutter [SST: KV10111100 (J37228)] to cut liquid gasket for removal.

CAUTION:

- **Exercise care not to damage mating surfaces.**
- **Pull out cover keeping levelness without an angle, as inner part of cover is engaged with the center of camshaft sprocket (INT).**

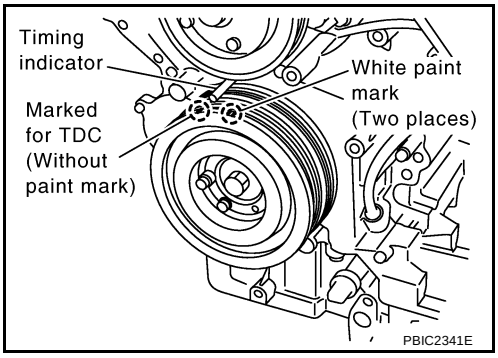


6. Remove O-rings from front cover.



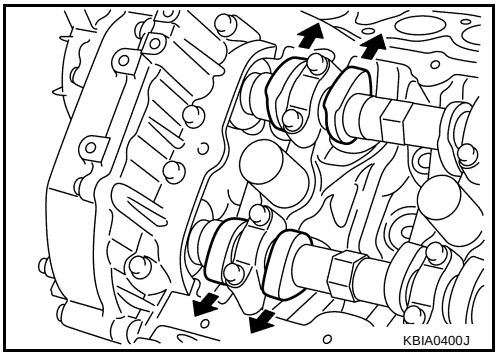
7. Obtain No. 1 cylinder at TDC of its compression stroke as follows:

a. Rotate crankshaft pulley clockwise to align the TDC identification notch (without paint mark) with timing indicator on front cover.



b. Make sure that both intake and exhaust cam noses of No. 1 cylinder (engine front side of left bank) are located as shown in the figure.

- If not, turn crankshaft one revolution (360 degrees) and align as shown in the figure.

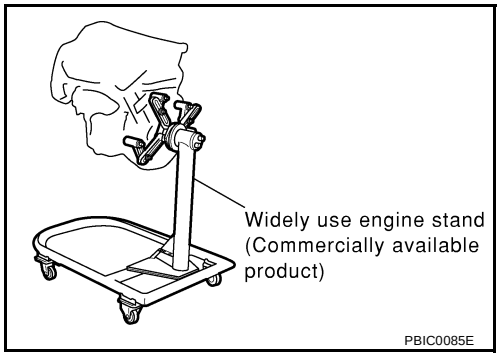


8. Remove crankshaft pulley as follows:

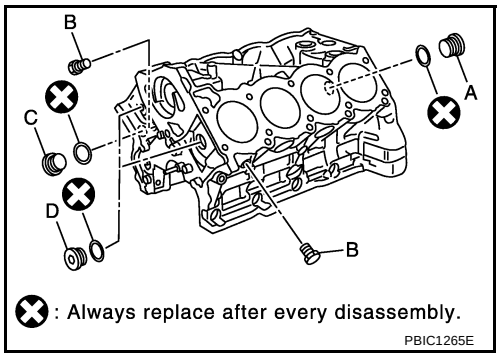
- Fuel tube and fuel injector assembly: Refer to EM-193, "FUEL INJECTOR AND FUEL TUBE" .
- Ignition coil: Refer to EM-190, "IGNITION COIL" .
- Rocker cover: Refer to EM-199, "ROCKER COVER" .
- Other removable brackets

NOTE:
The figure shows an example of widely use engine stand that can hold mating surface of transmission with drive plate and rear plate removed.

CAUTION:
Before removing the hanging chains, make sure the engine stand is stable and there is no risk of overturning.



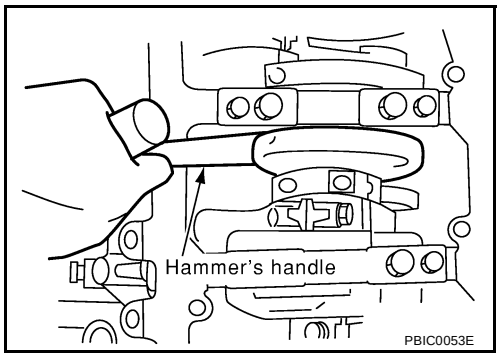
4. Drain engine oil. Refer to LU-28, "Changing Engine Oil" .
5. Drain engine coolant from inside engine by removing water drain plugs “B” as shown in the figure.



6. Remove oil pan and oil strainer: Refer to EM-187, "OIL PAN AND OIL STRAINER" .
7. Remove crankshaft pulley as follows:

a. Lock crankshaft with a hammer handle or similar tool to loosen crankshaft bolt.
b. Pull crankshaft pulley with both hands to remove it.

CAUTION:
- **Do not remove crankshaft pulley bolt. Keep loosened crankshaft pulley bolt in place to protect removed crankshaft pulley from dropping.**
- **Do not remove balance weight (inner hexagon bolt) at the front of crankshaft pulley.**



8. Remove the following parts and related parts (The parts listed in step 3 are not included here).
   - Front cover and timing chain: Refer to EM-203, "TIMING CHAIN" .
   - Camshaft: Refer to EM-215, "CAMSHAFT" .
   - Cylinder head: Refer to EM-235, "CYLINDER HEAD" .
9. Remove knock sensor.

CAUTION:
Carefully handle sensor, avoiding shocks.

10. Remove piston and connecting rod assembly as follows:
    - Before removing piston and connecting rod assembly, check the connecting rod side clearance. Refer to EM-269, "CONNECTING ROD SIDE CLEARANCE" .

a. Position crankshaft pin corresponding to connecting rod to be removed onto the bottom dead center.
b. Remove connecting rod bearing cap.

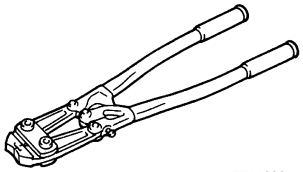
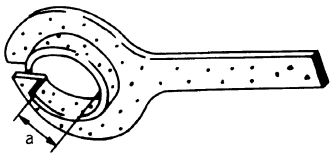
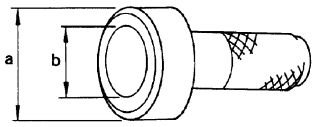
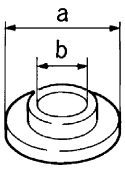
PREPARATION

PFP:00002

Special Service Tools [SST]

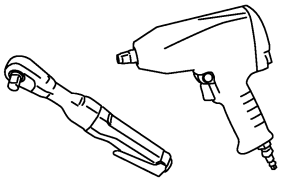
NDS000FC

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

Tool number (Kent-Moore No.) Tool name		Description
KV40107300 (–) Boot band crimping tool	 ZZA1229D	Installing boot band
KV40107500 (–) Drive shaft attachment	 ZZA1230D	Removing drive shaft (RH side)
KV38107900 (–) Protector a: 32 mm (1.26 in) dia.	 ZZA0835D	Installing drive shaft (RH side)
KV38100500 (–) Drift a: 80 mm (3.15 in) dia. b: 60 mm (2.36 in) dia.	 ZZA0701D	Installing drive shaft plug
KV38102200 (–) Drift a: 90 mm (3.54 in) dia. b: 31 mm (1.22 in) dia.	 ZZA0920D	Installing drive shaft plug

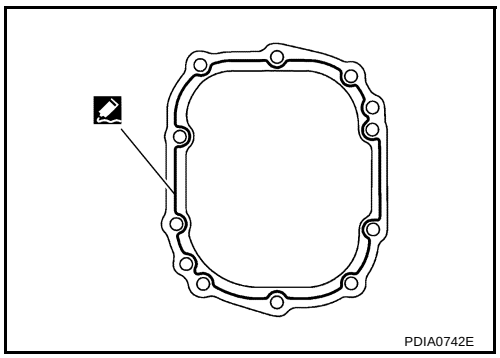
Commercial Service Tools

NDS000FD

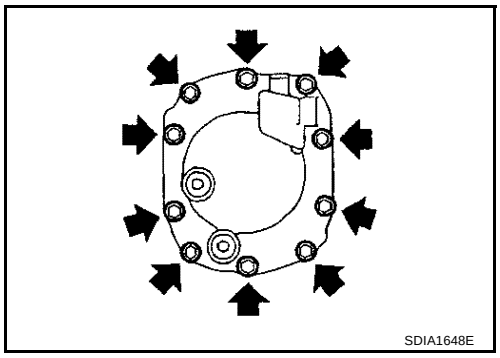
Tool name		Description
Power tool	 PBIC0190E	Loosening bolts and nuts

23. Apply sealant to mating surface of carrier cover.
    - **Use Genuine Silicone RTV or equivalent. Refer to GI-47, "Recommended Chemical Products and Sealants" .**

    CAUTION:
    Remove old sealant adhering to mounting surfaces. Also remove any moisture, oil, or foreign material adhering to application and mounting surfaces.



24. Install carrier cover on gear carrier and tighten mounting bolts with the specified torque. Refer to FFD-15, "COMPONENTS" .



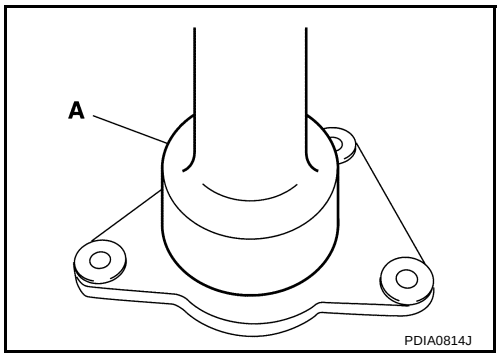
Side Shaft Assembly

1. Using the drift, install side shaft oil seal.

    Tool number **A: KV38100200 (—)**

    CAUTION:
    - **Do not reuse oil seal.**
    - **When installing, do not incline oil seal.**
    - **Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.**

2. Install dust sealed.

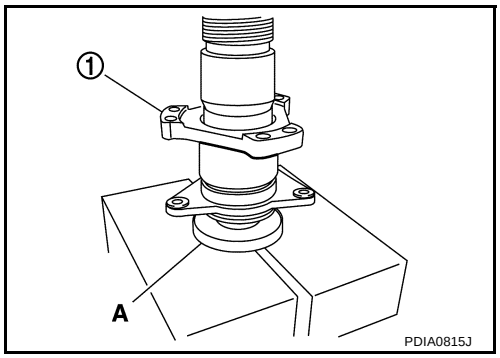


3. Support side shaft bearing with the drift, then press side shaft (1) into the side shaft bearing using a press.

    Tool number **A: ST30032000 (J-26010-01)**

4. Apply multi-purpose grease to O-ring, and install it to extension tube retainer.

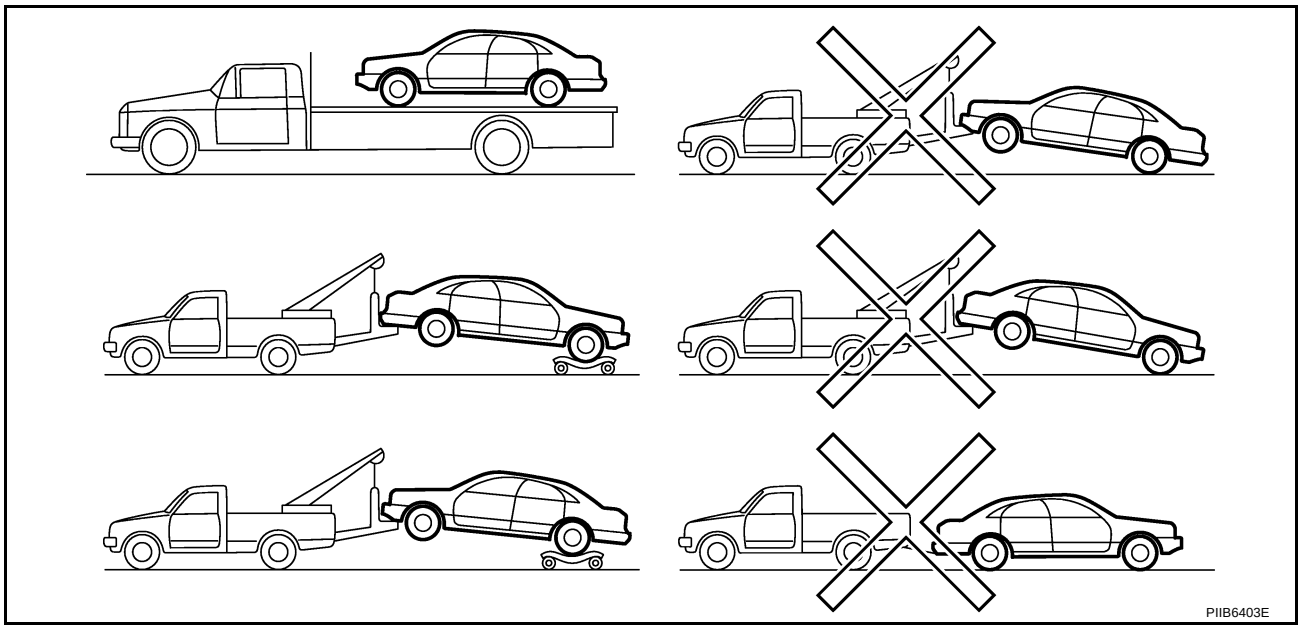
    CAUTION:
    Do not reuse O-ring.



INSTALLATION

- Installation is the reverse order of removal. For tightening torque, refer to FSU-26, "Components" .
- Perform final tightening of bolts and nuts at the front suspension member installation position and the shock absorber lower side (rubber bushing) under unladen conditions with tires on level ground. Check wheel alignment. Refer to FSU-24, "Wheel Alignment Inspection" .
- Adjust neutral position of steering angle sensor after checking wheel alignment. Refer to BRC-6, "Adjustment of Steering Angle Sensor Neutral Position" .

AWD MODELS



INFINITI recommends that a dolly be used as illustrated when towing AWD models.

CAUTION:

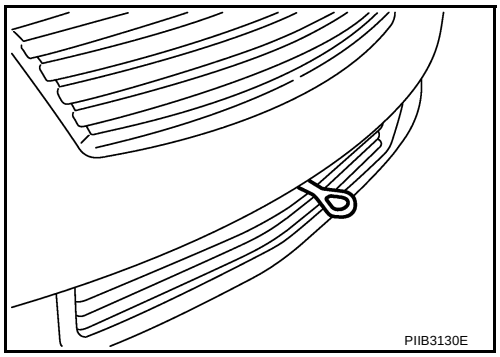
Never tow AWD models with any of the wheels on the ground as this may cause serious and expensive damage to the powertrain.

Vehicle Recovery (Freeing a Stuck Vehicle)

NAS00082

FRONT

Securely install the vehicle recovery hook stored with jacking tools. Make sure that the hook is properly secured in the stored place after use.



WARNING:

- **Stand clear of a stuck vehicle.**
- **Do not spin your tires at high speed. This could cause them to explode and result in serious injury. Parts of your vehicle could also overheat and be damaged.**

CAUTION:

- **Tow chains or cables must be attached only to the vehicle recovery hooks or main structural members of the vehicle. Otherwise, the vehicle body will be damaged.**
- **Do not use the vehicle tie downs to free a vehicle stuck in sand, snow, mud, etc. Never tow the vehicle using the vehicle tie downs or recovery hooks.**
- **Always pull the cable straight out from the front of the vehicle. Never pull on the hook at an angle.**
- **Pulling devices should be routed so they do not touch any part of the suspension, steering, brake or cooling systems.**
- **Pulling devices such as ropes or canvas straps are not recommended for use in vehicle towing or recovery.**

REAR

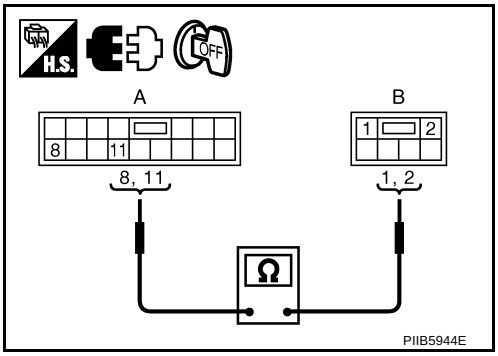
WARNING:

- **Rear hook is not available.**

2. CHECK HARNESS CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect power window main switch and power window motor (front driver side) connector.
3. Check continuity between power window main switch connector and power window motor (front driver side).

A		B		Continuity
Power window main switch connector	Terminal	Power window motor (front driver side) connector	Terminal	
D10	8	D12	2	Yes
	11		1	



OK or NG

OK >> Replace power window motor (front driver side).
NG >> Repair or replace harness.

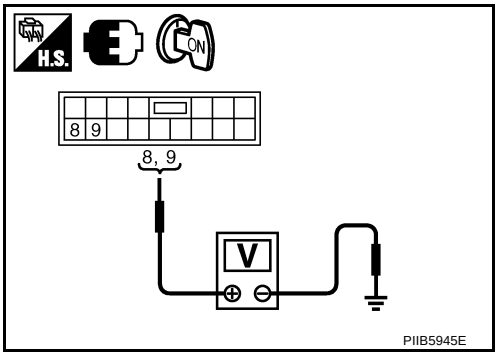
Check power Window Motor (Front Passenger Side) Circuit

NIS0021W

1. CHECK POWER WINDOW SUB-SWITCH (FRONT PASSENGER SIDE) OUTPUT SIGNAL

1. Turn ignition switch ON.
2. Check voltage between power window sub-switch (front passenger side) connector and ground.

Terminal			Window condition	Voltage (V) (Approx.)
(+)		(–)		
Power window sub-switch (front passenger side) connector	Terminal			
D46	8	Ground	UP	Battery voltage
			DOWN	0
	9		UP	0
			DOWN	Battery voltage



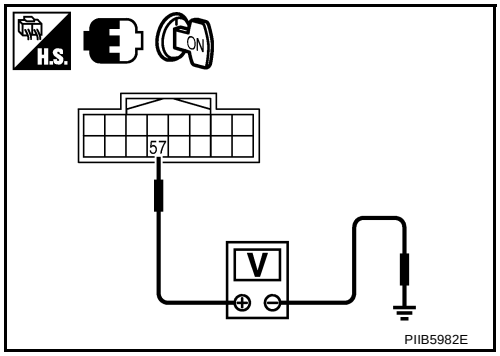
OK or NG

OK >> GO TO 2.
NG >> Replace front power window sub-switch (front passenger side).

6. CHECK REAR WINDOW DEFOGGER RELAY OUTPUT SIGNAL

1. Connect IPDM E/R connector and rear window defogger relay.
2. Turn ignition switch ON.
3. Check voltage between IPDM E/R connector and ground.

Terminals			Voltage (V) (Approx.)
(+)		(–)	
IPDM E/R connector	Terminal		
E9	57	Ground	Battery voltage



OK or NG

OK >> Check condition of harness and connector.
NG >> Replace IPDM E/R.

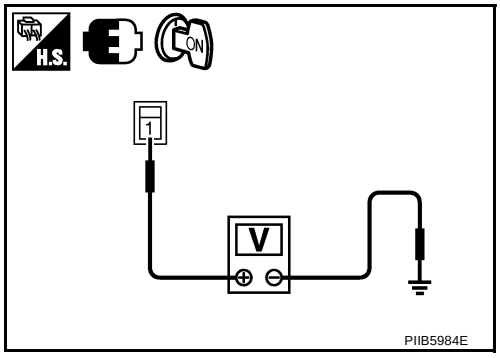
Check Rear Window Defogger Circuit

NIS0022U

1. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch ON.
2. Check voltage between rear window defogger connector and ground.

Terminals			Condition of rear window defogger switch	Voltage (V) (Approx.)
(+)		(–)		
Rear window defogger connector	Terminal			
B604	1	Ground	ON	Battery voltage
			OFF	0



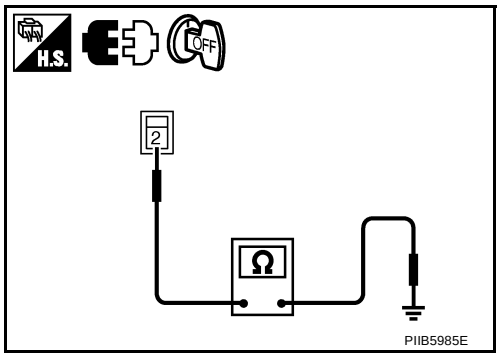
OK or NG

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

2. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect rear window defogger connector.
3. Check continuity between rear window defogger connector and ground.

Rear window defogger connector	Terminal	Ground	Continuity
B701	2		Yes



OK or NG

OK >> Check filament. Refer to GW-92, "Check Filament"
- If filament is OK, check condition of harness and connector.
- If filament is NG, repair filament.

NG >> Repair or replace harness between rear window defogger and ground.

TRUNK

Trunk noises are often caused by a loose jack or loose items put into the trunk by the owner.
In addition look for:

1. Trunk lid dumpers out of adjustment
2. Trunk lid striker out of adjustment
3. The trunk lid torsion bars knocking together
4. A loose license plate or bracket

Most of these incidents can be repaired by adjusting, securing or insulating the item(s) or component(s) causing the noise.

SUNROOF/HEADLINING

Noises in the sunroof/headlining area can often be traced to one of the following:

1. Sunroof lid, rail, linkage or seals making a rattle or light knocking noise
2. Sunvisor shaft shaking in the holder
3. Front or rear windshield touching headlining and squeaking

Again, pressing on the components to stop the noise while duplicating the conditions can isolate most of these incidents. Repairs usually consist of insulating with felt cloth tape.

SEATS

When isolating seat noise it's important to note the position the seat is in and the load placed on the seat when the noise is present. These conditions should be duplicated when verifying and isolating the cause of the noise.
Cause of seat noise include:

1. Headrest rods and holder
2. A squeak between the seat pad cushion and frame
3. The rear seatback lock and bracket

These noises can be isolated by moving or pressing on the suspected components while duplicating the conditions under which the noise occurs. Most of these incidents can be repaired by repositioning the component or applying urethane tape to the contact area.

UNDERHOOD

Some interior noise may be caused by components under the hood or on the engine wall. The noise is then transmitted into the passenger compartment.
Causes of transmitted underhood noise include:

1. Any component mounted to the engine wall
2. Components that pass through the engine wall
3. Engine wall mounts and connectors
4. Loose radiator mounting pins
5. Hood bumpers out of adjustment
6. Hood striker out of adjustment

These noises can be difficult to isolate since they cannot be reached from the interior of the vehicle. The best method is to secure, move or insulate one component at a time and test drive the vehicle. Also, engine RPM or load can be changed to isolate the noise. Repairs can usually be made by moving, adjusting, securing, or insulating the component causing the noise.

4. Search for the possible cause using CAN communication signal chart using information from the interview with the customer.

NOTE:
For the details of CAN communication signal, refer to LAN-52, "CAN Communication Signal Chart" .

a. ABS warning lamp turned ON and speedometer did not move: This means that “ABS warning lamp signal” and “Vehicle speed signal” could not communicate between M&A and ABS (4-a in the figure).

b. The tachometer moved normally: This means that “Engine speed signal” could communicate normally between ECM and M&A (4-b in the figure).

(Example)

First registration: 28, Jan. 2005

CAN system type: Type 20

Symptom (Results from interview with customer)

While driving,
- ABS warning lamp turned ON.
- Speedometer did not move.
- Tachometer moved normally.

CAN Communication Signal Chart

T: Transmit R: Receive

Signal name/Connecting unit	ECM	AFS*1	AV*2	BCM	EPS	I-KEY*3	M&A	STRG*1	ADP*4	ABS	TCM	IPDM-E
A/C compressor request signal	T											R
Accelerator pedal position signal	T										R	
Closed throttle position signal	T										R	
Cooling fan speed request signal	T											R
Engine and CVT integrated control signal	T										R	
	R										T	
Engine coolant temperature signal	T						R				R	
4-b Engine speed signal	T						R				R	
Engine status signal	T		R		R							
Fuel consumption monitor signal	T		R				R					
MI signal	T						R					
Wide open throttle position signal	T										R	
ABS warning lamp signal							R			T		
Brake warning lamp signal							R			T		
4-a Steering angle sensor signal		R						T				
Vehicle speed signal	R				R		R			T	R	
		R		R	R	R	T		R			
Input shaft revolution signal	R										T	
Output shaft revolution signal	R										T	
Shift position indicator signal	R	R	R	R*5			R		R*6		T	
Second position indicator signal							R				T	
Front wiper stop position signal				R								T
High beam status signal	R	R										T
Low beam status signal	R	R										T

SKIB8895E

4. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of pre-crash seat belt control unit.
2. Check the continuity between the harness connector and the pre-crash seat belt control unit harness connector.

Harness connector		Pre-crash seat belt control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B67	1	B142	24	Yes
	12		22	Yes

OK or NG

OK >> ● Present error: Check the following items again.
- Decision of CAN system type.
- Not received CONSULT-II data (SELECT SYSTEM, SELF-DIAG RESULTS, CAN DIAG SUPPORT MNTR).
- Procedure for detecting root cause.

● Past error: Error was detected in the main line between the data link connector and the pre-crash seat belt control unit.

NG >> Replace the body harness.

Main Line Between Data Link Connector and RAS Control Unit

NKS004GX

INSPECTION PROCEDURE

1. CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).

- Harness connector M66
- Harness connector B418

OK or NG

OK >> GO TO 2.
NG >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M66 and B418.
2. Check the continuity between the data link connector and the harness connector.

Data link connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M60	6	M66	38P	Yes
	14		39P	Yes

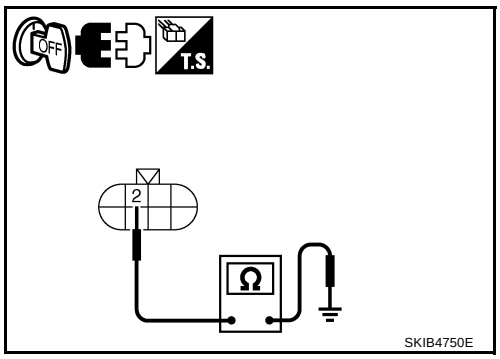
OK or NG

OK >> GO TO 3.
NG >> Repair the main line between the data link connector and the harness connector M66.

3. CHECK HEADLAMP GROUND

1. Turn ignition switch OFF.
2. Check continuity between front combination lamp RH or LH harness connector and ground.

Front combination lamp connector		Terminal	Ground	Continuity
RH	E47	2		Yes
LH	E54	2		



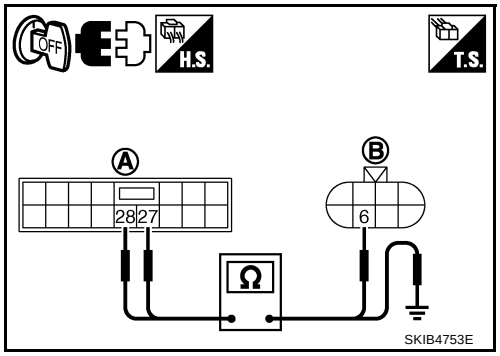
OK or NG

OK >> Check connecting condition headlamp harness and connector.
NG >> Repair harness or connector.

4. CHECK CIRCUIT BETWEEN IPDM E/R AND FRONT COMBINATION LAMP

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front combination lamp RH or LH connector.
3. Check continuity between IPDM E/R harness connector (A) and front combination lamp RH or LH harness connector (B).

Circuit	A		B		Continuity
	Connector	Terminal	Connector	Terminal	
RH	E7	27	E47	6	Yes
LH		28	E54	6	



4. Check continuity between IPDM E/R harness connector (A) and ground.

A		Ground	Continuity
Connector		Terminal	
RH	E7	27	No
LH		28	

OK or NG

OK >> Replace IPDM E/R. Refer to PG-31, "Removal and Installation of IPDM E/R" .
NG >> Repair harness or connector.

High Beam Indicator Lamp Does Not Illuminate

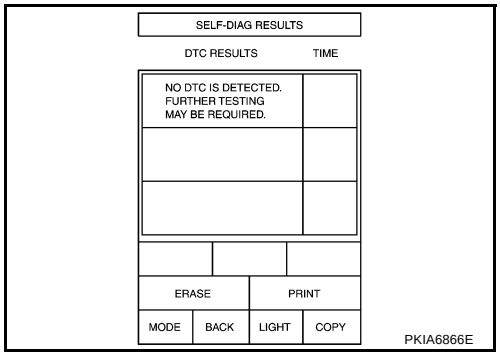
NKS003OC

1. CHECK UNIFIED METER AND A/C AMP.

1. Select “METER A/C AMP” on CONSULT-II, and perform self-diagnosis for “METER A/C AMP”.
2. Check if malfunction is indicated.

Is malfunction indicated?

YES >> Repair or replace malfunctioning parts.
NO >> GO TO 2.



OUTLINE

Power is supplied at all times

- to headlamp high relay, located in IPDM E/R (intelligent power distribution module engine room) and
- to headlamp low relay, located in IPDM E/R, from battery direct,
- through 15A fuse (No. 71, located in IPDM E/R)
- to CPU (central processing unit), located in IPDM E/R,
- through 15A fuse (No. 78, located in IPDM E/R)
- to CPU, located in IPDM E/R,
- through 50A fusible link (letter F, located in fuse and fusible link block)
- to BCM terminal 55,
- through 10A fuse [No. 21, located in fuse block (J/B)]
- to BCM terminal 42 and
- to combination meter terminal 23,
- through 10A fuse (No. 32, located in IPDM E/R)
- to daytime light relay terminals 2 and 5,
- through 10A fuse [No. 19, located in fuse block (J/B)]
- to unified meter and A/C amp. terminal 54,
- through 10A fuse [No. 22, located in fuse block (J/B)]
- to key slot terminal 1.

When the ignition switch is in ON or START position, power is supplied

- to CPU, located in IPDM E/R,
- through 15A fuse [No. 1, located in fuse block (J/B)]
- to BCM terminal 38,
- through 10A fuse [No. 14, located in fuse block (J/B)]
- to combination meter terminal 12,
- through 10A fuse [No. 12, located in fuse block (J/B)]
- to unified meter and A/C amp. terminal 53.

Ground is supplied

- to BCM terminal 52
- to combination meter terminals 9, 10, and 11
- to unified meter and A/C amp. terminal 55 and 71
- to push-button ignition switch (push switch) terminal 1
- to key slot terminal 8
- through grounds M16 and M70,
- to IPDM E/R terminals 38 and 51
- through grounds E22 and E43.

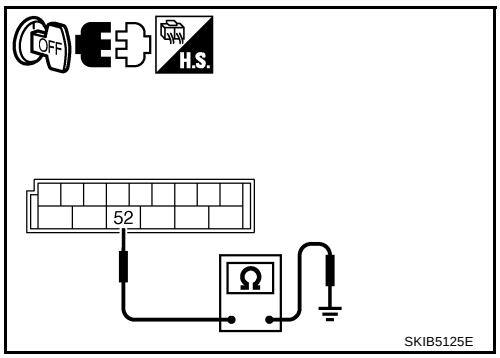
3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM connector	Terminal	Ground	Continuity
M2	52		Yes

OK or NG

OK >> INSPECTION END
NG >> Repair harness or connector.



CONSULT-II Functions (BCM)

NKS003Q9

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

BCM diagnosis part	Diagnosis mode	Description
HEADLAMP	WORK SUPPORT	Changes the setting for each function.
	DATA MONITOR	Displays BCM input data in real time.
	ACTIVE TEST	Operation of electrical loads can be checked by sending drive signal to them.
BCM	SELF-DIAG RESULTS	BCM performs self-diagnosis of CAN communication.
	CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.

CONSULT-II BASIC OPERATION

Refer to GI-38, "CONSULT-II Start Procedure" .

WORK SUPPORT

Operation Procedure

1. Touch “HEAD LAMP” on “SELECT TEST ITEM” screen.
2. Touch “WORK SUPPORT” on “SELECT DIAG MODE” screen.
3. Touch “CUSTOM A/LIGHT SETTING” or “ILL DELAY SET” on “SELECT WORK ITEM” screen.
4. Touch “START”.
5. Touch “MODE 1 - 4” of setting to be changed (CUSTOM A/LIGHT SETTING), Touch “MODE 1 - 8” of setting to be changed (ILL DELAY SET).
6. Touch “CHANGE SET”.
7. The setting will be changed and “CUSTOMIZING COMPLETED” will be displayed.
8. Touch “END”.

Work Support Setting Item

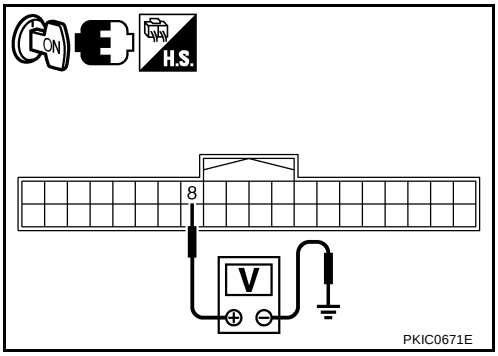
- Customizing Auto Light Setting

Work item	Description
CUSTOM A/LIGHT SETTING	Auto light sensitivity can be changed in this mode. Sensitivity can be adjusted in four modes. ● Mode 1 (Factory settings)/Mode 2 (More sensitive Mode 1)/ Mode 3 (More sensitive than Mode 2)/Mode 4 (Less sensitive than Mode 1)
ILL DELAY SET	Auto light delay off timer period can be changed in this mode. Selects Auto light delay off timer period among eight modes. ● Mode 1 (45 sec.)NOTE /Mode 2 (OFF)/Mode 3 (30 sec.)/Mode 4 (60 sec.)/ Mode 5 (90 sec.)/Mode 6 (120 sec.)/Mode 7 (150 sec.)/Mode 8 (180 sec.)

NOTE:
Factory settings

7. CHECK HEIGHT SENSOR GROUND

Check voltage between AFS control unit harness connector and ground.



Terminals			Voltage (Approx.)
(+)		(-)	
AFS control unit connector	Terminal		
F110	8	Ground	0 V

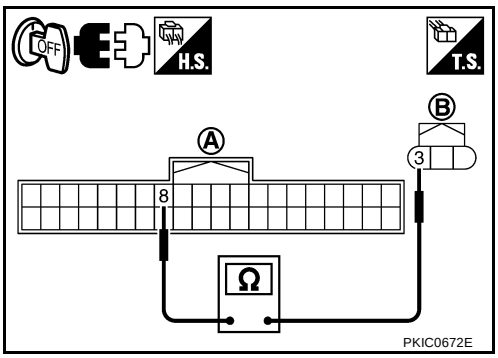
OK or NG

OK >> GO TO 8.

NG >> Check connector for connection, bend and loose fit. If it is normal, replace AFS control unit. Refer to LT-192, "Removal and Installation of AFS Control Unit" .

8. CHECK HEIGHT SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect AFS control unit connector and height sensor connector.
3. Check continuity between AFS control unit harness connector (A) and height sensor harness connector (B).



A		B		Continuity
Connector	Terminal	Connector	Terminal	
F110	8	B468	3	Yes

OK or NG

OK >> Replace height sensor. Refer to LT-193, "Removal and Installation of Height Sensor" .

NG >> Repair harness or connector.

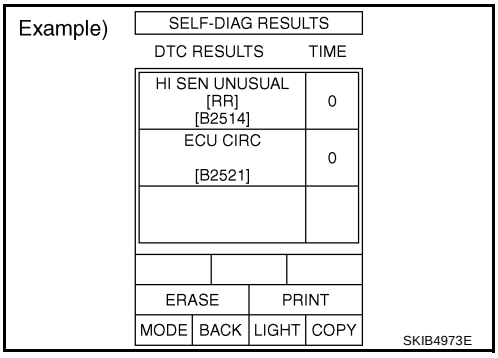
9. CHECK DIAGNOSIS RESULT

Select “ADAPTIVE LIGHT” on CONSULT-II. Select “SELF-DIAG RESULTS” on “SELECT DIAG MODE” screen.

Is DTC B2521 ECU CIRC detected?

YES >> Refer to LT-179, "DTC B2521 ECU CIRC" .

NO >> GO TO 10.



Hazard Warning Lamp Does Not Operate But Turn Signal Lamp Operate

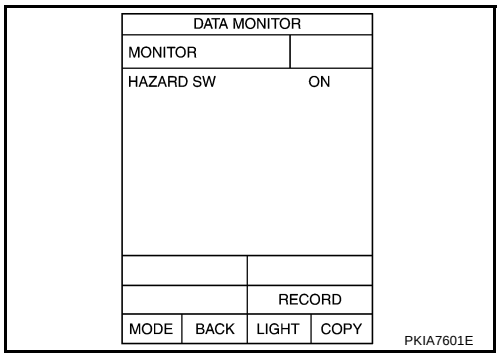
NKS003RV

1. CHECK CIRCUIT BETWEEN HAZARD SWITCH AND BCM

With CONSULT-II

1. Select “BCM” on CONSULT-II. Select “FLASHER” on “SELECT TEST ITEM” screen.
2. Select “DATA MONITOR” on “SELECT DIAG MODE” screen. Make sure “HAZARD SW” turns ON-OFF linked with operation of multifunction switch (hazard switch).

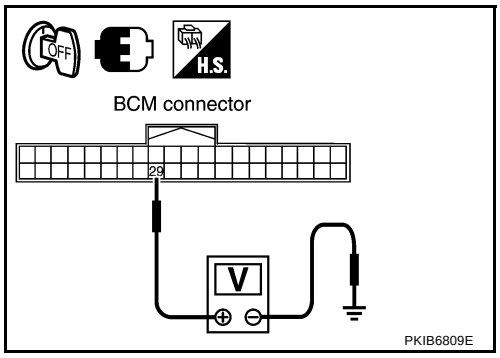
When hazard switch is ON position : HAZARD SW ON



Without CONSULT-II

Check voltage between BCM harness connector and ground.

Terminal			Condition	Voltage (Approx.)
(+)		(-)		
Connector	Terminal			
M1	29	Ground	Hazard switch is ON.	0 V
			Hazard switch is OFF.	Battery Voltage



OK or NG

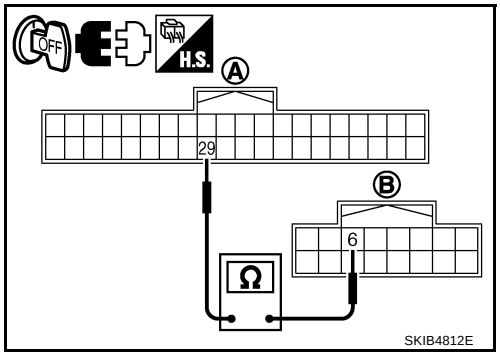
OK >> Replace BCM. Refer to BCS-15, "Removal and Installation of BCM" .

NG >> GO TO 2.

2. CHECK HAZARD SWITCH BCM CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector and multifunction switch connector.
3. Check continuity between BCM harness connector (A) and multifunction switch harness connector (B).

A		B		Continuity
Connector	Terminal	Connector	Terminal	
M1	29	M69	6	Yes

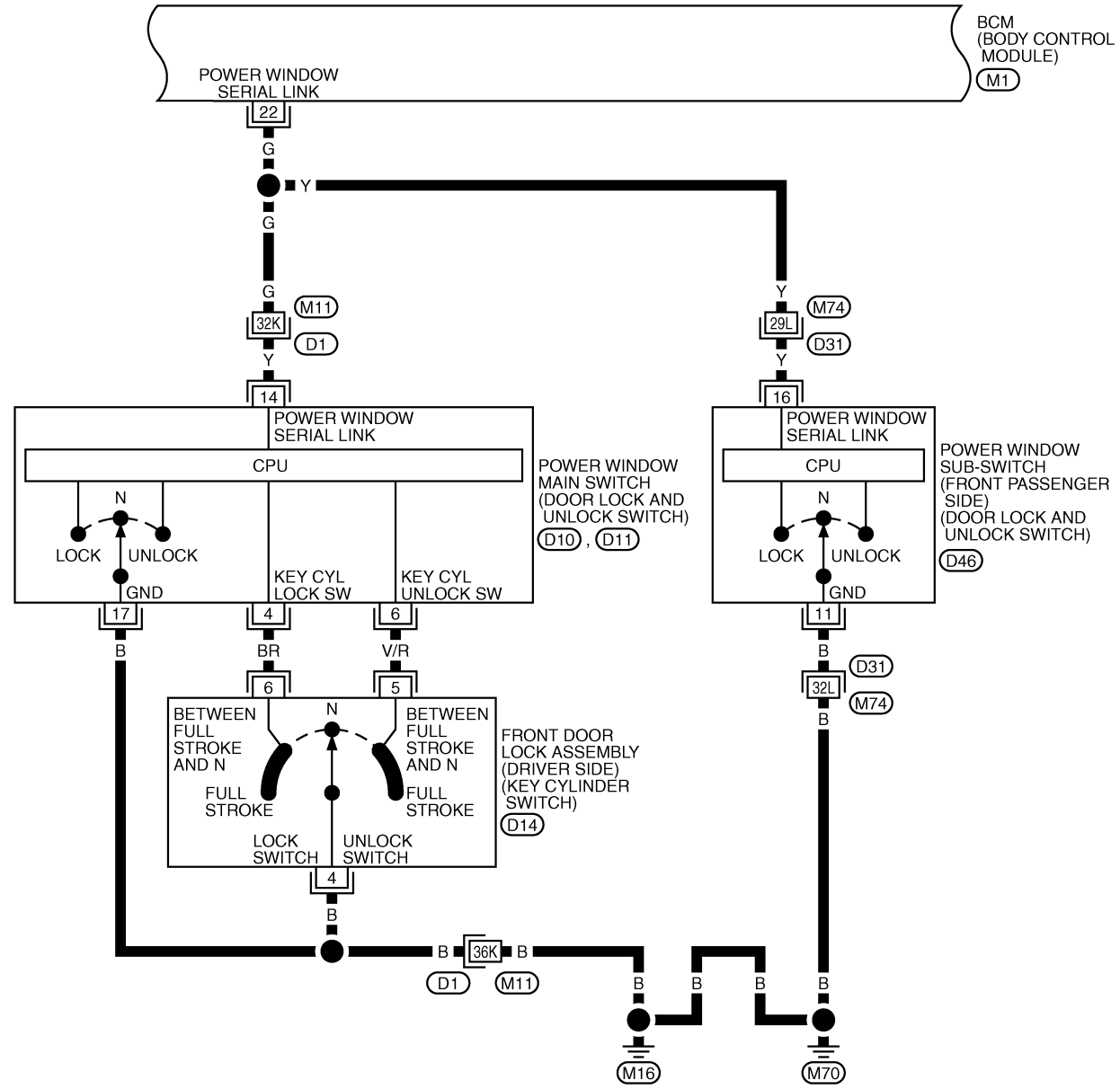


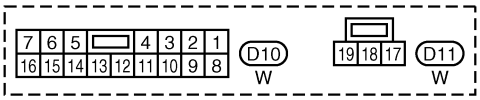
OK or NG

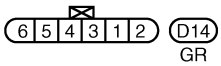
OK >> GO TO 3.

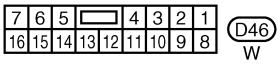
NG >> Repair harness or connector.

LT-ROOM/L-03









REFER TO THE FOLLOWING.

D1 , D31 -SUPER MULTIPLE JUNCTION (SMJ)

M1 -ELECTRICAL UNITS

TKWT3404E

10. Check the engine oil level. Refer to LU-7, "ENGINE OIL LEVEL" .

Air relief plug:

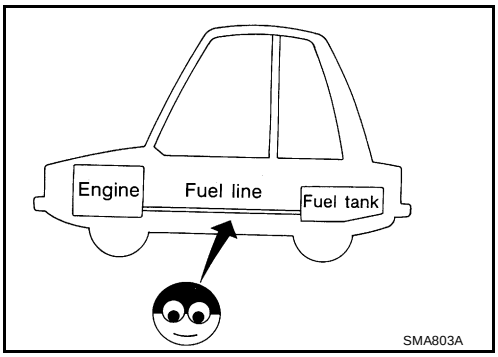
: 1.2 N·m (0.12 kg-m, 11 in-lb)

4. Run engine and warm it up to normal operating temperature.
5. Rev engine two or three times under no-load.
6. Stop engine and wait until it cools down.
7. Drain water from the system. Refer to CO-40, "DRAINING ENGINE COOLANT" .
8. Repeat steps 1 through 7 until clear water begins to drain from radiator.

Checking Fuel Lines

NLS0007T

Inspect fuel lines, fuel filler cap and fuel tank for improper attachment, leaks, cracks, damage, loose connections, chafing or deterioration.
If necessary, repair or replace damaged parts.



Changing Air Cleaner Filter

NLS0007U

VISCOUS PAPER TYPE

The viscous paper type filter does not need cleaning between replacement intervals. Refer to MA-7, "PERIODIC MAINTENANCE" .

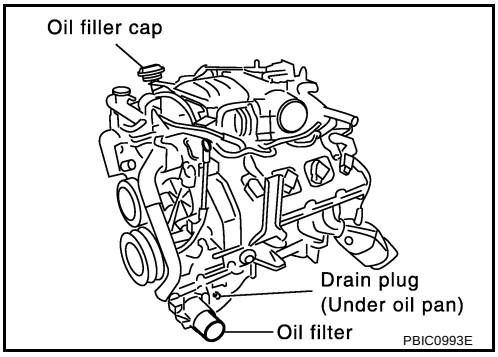
Changing Engine Oil

NLS0007V

WARNING:

- **Be careful not to burn yourself, as engine oil may be hot.**
- **Prolonged and repeated contact with used engine oil may cause skin cancer; try to avoid direct skin contact with used engine oil. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.**

1. Warm up engine, put vehicle horizontally and check for engine oil leakage from engine components. Refer to LU-27, "ENGINE OIL LEAKAGE" .
2. Stop engine and wait for 15 minutes.
3. Loosen oil filler cap.



4. Remove mounting bolts, and then pull down the rear of front engine undercover and secure it using clip.
5. Remove drain plug and then drain engine oil.
6. Install drain plug with new washer. Refer to EM-187, "OIL PAN AND OIL STRAINER" .

CAUTION:
Be sure to clean drain plug and install with new washer.

Oil pan drain plug:

: 34.3 N·m (3.5 kg-m, 25 ft-lb)

CAN DIAG SUPPORT MNTR

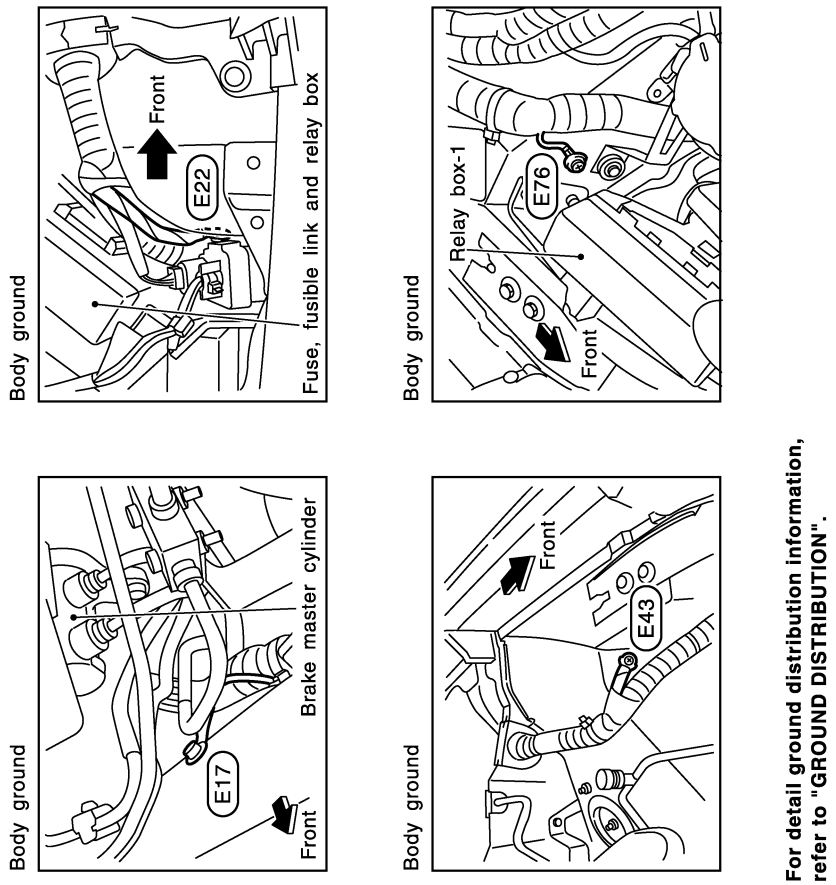
Refer to LAN-44, "CAN Diagnostic Support Monitor" in LAN section.

ACTIVE TEST

Operation Procedure

1. Touch “ACTIVE TEST” on “SELECT DIAG MODE” screen.
2. Touch item to be tested.
3. Touch “START”, and confirm its operation.
4. Touch “STOP” while testing to stop the operation.

Test item	CONSULT-II screen display	Description
Tail lamp operation	TAIL LAMP	With a certain ON-OFF operation, the tail lamp relay can be operated.
Rear window defogger operation	REAR DEFOGGER	With a certain ON-OFF operation, the rear window defogger relay can be operated.
Front wiper (HI, LO) operation	FRONT WIPER	With a certain operation (OFF, HI ON, LO ON), the front wiper relay (Lo, Hi) can be operated.
Cooling fan operation	MOTOR FAN	With a certain operation (1, 2, 3, 4), the cooling fan can be operated.
Lamp (HI, LO, FOG) operation	LAMPS	With a certain operation (OFF, HI ON, LO ON, FOG ON), the lamp relay (Lo, Hi, Fog) can be operated.
Horn operation	HORN	Push “ON” button, horn relay operates 20ms.



For detail ground distribution information, refer to "GROUND DISTRIBUTION".

TKIT0449E

FRONT PROPELLER SHAFT

PFP:37200

On-Vehicle Inspection

NDS000EA

APPEARANCE AND NOISE INSPECTION

- Check the propeller shaft tube surface for dents or cracks. If damaged, replace propeller shaft assembly.

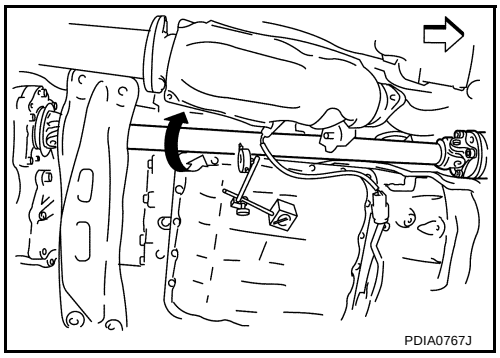
PROPELLER SHAFT VIBRATION

If vibration is present at high speed, inspect propeller shaft runout first.

1. Measure propeller shaft runout at runout measuring point by rotating final drive companion flange with hands. For measuring point, refer to PR-4, "Propeller Shaft Runout Measuring Point" .

   Propeller shaft runout limit : 0.8 mm (0.031 in)

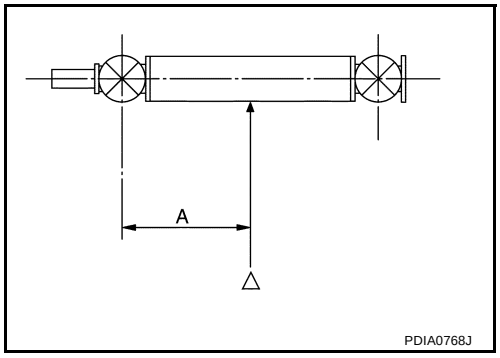
2. If runout still exceeds specifications, separate propeller shaft at final drive companion flange; then rotate companion flange 90, 180, 270 degrees and install propeller shaft.
3. Check runout again. If runout still exceeds specifications, replace propeller shaft assembly.
4. Check the vibration by driving vehicle.



Propeller Shaft Runout Measuring Point

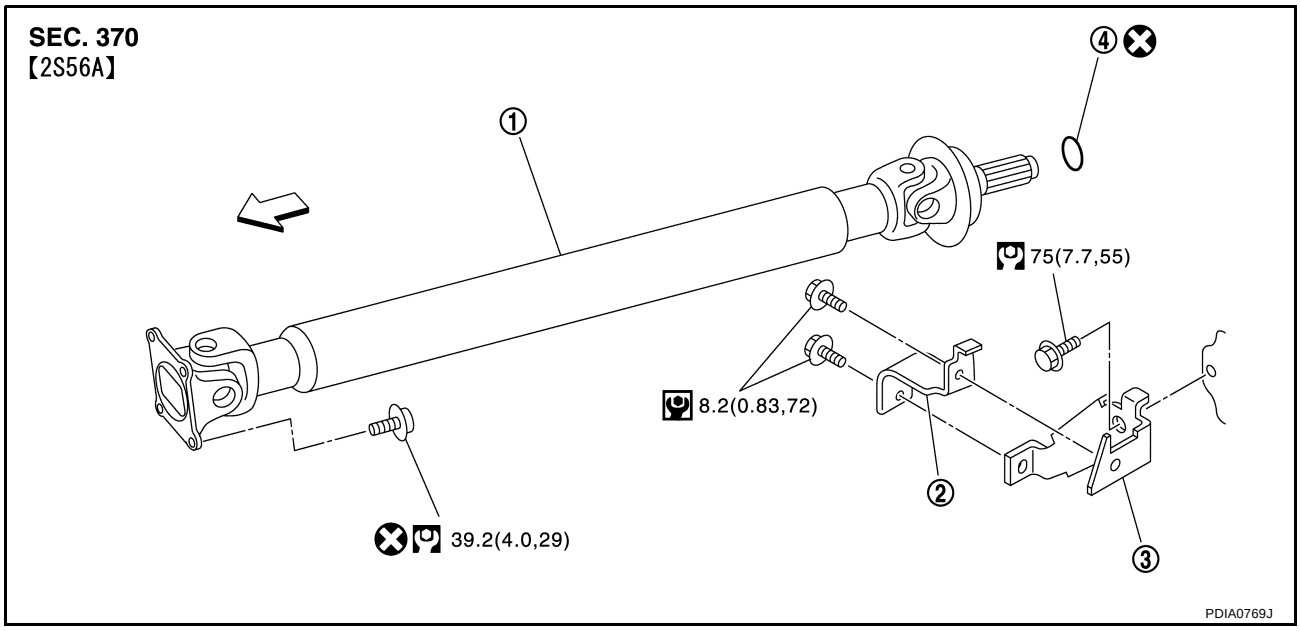
- Propeller shaft runout measuring point (Point "△")

  Dimension A: 381.5 mm (15.01 in)



Components

NDS000EB



1. Propeller shaft assembly
2. Heat bracket (A)
3. Heat bracket (B)
4. O-ring

Refer to GI-11, "Components" , for the symbols in the figure.

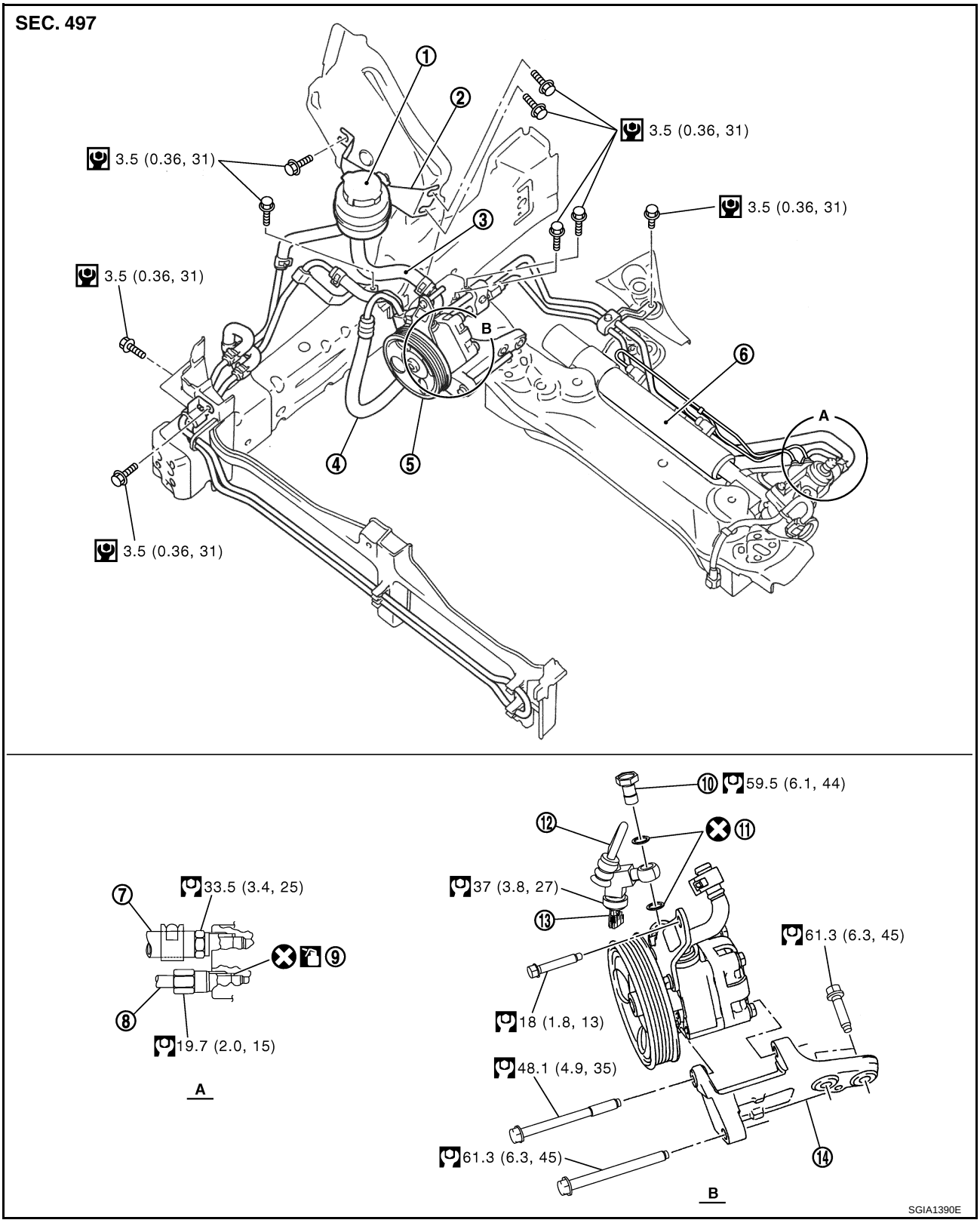
HYDRAULIC LINE

PFP:49721

Removal and Installation

NGS000DI

COMPONENTS (VQ35DE 2WD MODELS)



1. Reservoir tank
2. Reservoir tank bracket
3. Suction hose
4. High pressure hose
5. Oil pump assembly
6. Steering gear assembly
7. Low pressure piping
8. High pressure piping
9. O-ring

1. Sunshade stopper
2. Sunshade
3. Sunshade knob
4. Guide stopper
5. Sunroof guide assembly (LH/RH)
6. Guide wire assembly (LH/RH)
7. Drain guide (LH/RH)
8. Rear drain assembly
9. Wind deflector assembly
10. Sunroof frame

DISASSEMBLY

1. Remove sunshade stopper mounting screws from the rear end of sunroof frame, and then remove sunshade stopper.
2. Remove sunshade from the rear end of sunroof frame.

   NOTE:
   Removing is possible even by the on vehicle.
3. Remove sunshade knob from the sunshade.
4. Remove guide stopper from the rear end of sunroof frame.
5. Remove sunroof guide assembly from the rear end of sunroof frame.
6. Remove guide wire assembly from sunroof guide assembly.
7. Remove rear drain assembly and drain guide from sunroof guide assembly.
8. Remove screws from left and right sides of each wind deflector holder. Extract pawls through rail holes, then remove left and right sides of wind deflector holder.
9. Remove screws from front end of sunroof unit. Extract pawls through frame holes, then remove wind deflector from frame assembly.

   NOTE:
   Removing is possible even by the on vehicle.

ASSEMBLY

Assemble in the reverse order of disassembly.

CAUTION:
Be sure to place the sunroof guide assembly in the symmetrical and fully close position.

Shock Absorber

Check the following:

- Shock absorber for deformation, cracks, and other damage. Replace if there are.
- Piston rod for damage, uneven wear, and distortion. Replace if there are.

ASSEMBLY

- Installation is the reverse order of removal. For tightening torque. Refer to RSU-7, "Components" .

  CAUTION:
  Do not reuse non-reusable parts.
- Make sure piston rod on shock absorber is not damaged when attaching components to shock absorber.

Battery electrolyte temperature °C (°F)	Add to specific gravity reading
16 (60)	–0.008
10 (50)	–0.012
4 (40)	–0.016
–1 (30)	–0.020
–7 (20)	–0.024
–12 (10)	–0.028
–18 (0)	–0.032

Corrected specific gravity	Approximate charge condition
1.260 - 1.280	Fully charged
1.230 - 1.250	3/4 charged
1.200 - 1.220	1/2 charged
1.170 - 1.190	1/4 charged
1.140 - 1.160	Almost discharged
1.110 - 1.130	Completely discharged

CHARGING THE BATTERY

CAUTION:

- **Never “quick charge” a fully discharged battery.**
- **Keep the battery away from open flame while it is being charged.**
- **When connecting the charger, connect the leads first, then turn on the charger. Never turn on the charger first, as this may cause a spark.**
- **If battery electrolyte temperature rises above 55 °C (131 °F), stop charging. Always charge battery at a temperature below 55 °C (131 °F).**

Charging Rates

Amps	Time
50	1 hour
25	2 hours
10	5 hours
5	10 hours

Never charge at more than 50 ampere rate.

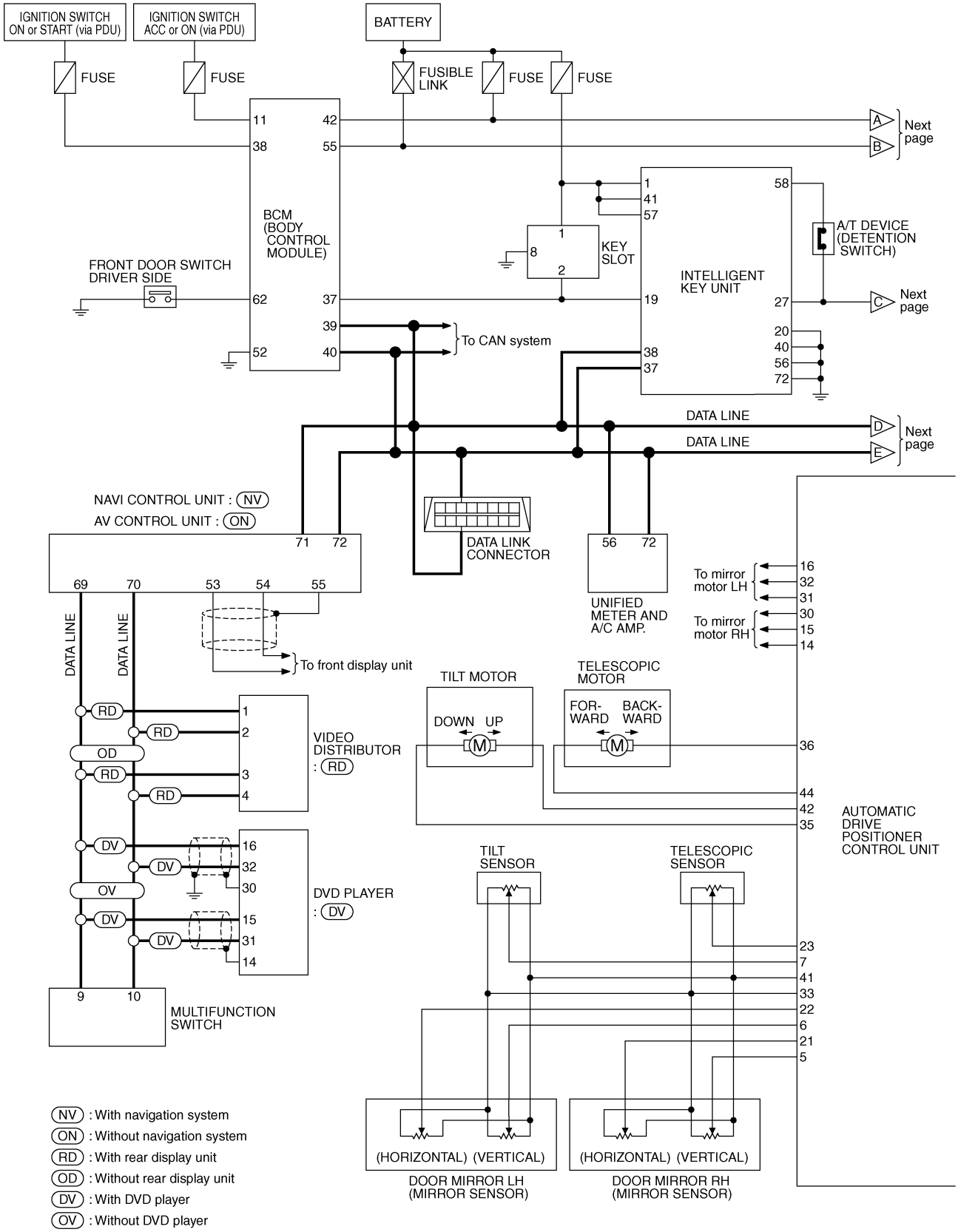
NOTE:

The ammeter reading on your battery charger will automatically decrease as the battery charges. This indicates that the voltage of the battery is increasing normally as the state of charge improves. The charging amps indicated above refer to initial charge rate.

- If, after charging, the specific gravity of any two cells varies more than 0.050, the battery should be replaced.

Schematic

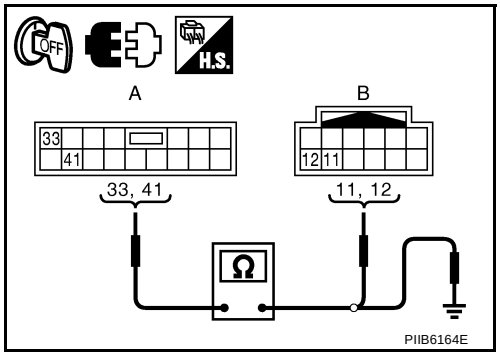
NIS0025U



TIWT1371E

3. CHECK HARNESS CONTINUITY 1

1. Turn ignition switch OFF.
2. Disconnect automatic drive positioner control unit connector and door mirror LH connector.
3. Check continuity between automatic drive positioner control unit connector and door mirror LH connector.



A		B		Continuity
Automatic drive positioner control unit connector	Terminal	Door mirror LH connector	Terminal	
M7	33	D2	11	Yes
	41		12	

4. Check continuity between automatic drive positioner control unit connector and ground.

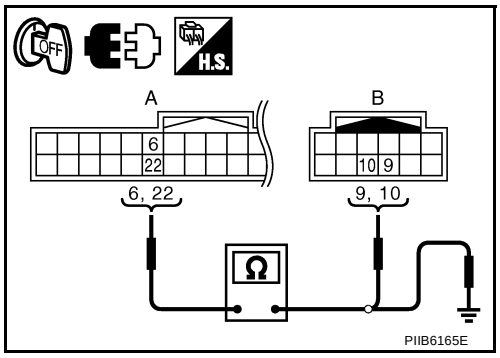
A		Ground	Continuity
Automatic drive positioner control unit connector	Terminal		
M7	33		No
	41		

OK or NG

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

4. CHECK HARNESS CONTINUITY 2

1. Check continuity between automatic drive positioner control unit connector and door mirror LH connector.



A		B		Continuity
Automatic drive positioner control unit connector	Terminal	Door mirror LH connector	Terminal	
M6	6	D2	9	Yes
	22		10	

2. Check continuity between automatic drive positioner control unit connector and ground.

A		Ground	Continuity
Automatic drive positioner control unit connector	Terminal		
M6	6		No
	22		

OK or NG

OK >> Replace door mirror LH.
NG >> Repair or replace harness.

- **At the time of work, please turn OFF a switch, and carry it out after checking that the thermal electric device has got cold.**

Power is at all times supplied

- through 15A fuse [No. 41 located in the fuse fusible link and relay unit]
- to climate controlled seat relay terminals 5.
- through 15A fuse [No. 42 located in the fuse fusible link and relay unit]
- to climate controlled seat relay terminals 7.

When the ignition switch turned to ON or START position,
Power is supplied

- through 10A fuse [No. 12, located in the fuse block (J/B)]
- to climate controlled seat relay terminal 2.

Then ground is supplied

- to climate controlled seat relay terminal 1,
- through body grounds E22 and E43.

Then climate controlled seat relay is energized.
When climate controlled seat relay is turned to ON,
Power is supplied,

- through climate controlled seat relay terminal 3,
- to climate controlled seat control unit (passenger side) terminal 2 and 4.
- through climate controlled seat relay terminal 6,
- to climate controlled seat control unit (driver side) terminal 2 and 4.

When climate controlled switch select HEAT, ground is supplied

- through climate controlled seat switch terminal 1 and 3,
- to climate controlled seat control unit terminal 10.

Then, the climate controlled seat control unit receives climate controlled seat switch HEAT signal.
When climate controlled seat switch select COOL, ground is supplied

- through climate controlled seat switch terminal 1 and 2,
- to climate controlled seat control unit terminal 20,

Then, the climate controlled seat control unit receives climate controlled switch COOL signal.
When blower motor rotates, signal is transmitted

- to climate controlled seat control unit terminal 18,
- through climate controlled seat blower motor terminal 1.

This is climate controlled seat blower motor tachometer signal.
When climate controlled seat control unit receives climate controlled seat switch signal and tachometer signal,
Power is supplied

- to climate controlled seat blower motor terminal 4,
- through climate controlled seat control unit terminal 17.

This is blower motor revolution control signal.
When blower motor receivers blower motor revolution control signal,
Power is supplied

- through climate controlled seat control unit terminal 14,
- to climate controlled seat blower motor terminal 2.

When number of rotations correspond signal,
Ground is supplied

- to climate controlled seat blower motor terminal 3,
- through climate controlled seat control unit terminal 7,
- through climate controlled seat control unit terminal 3,
- through body grounds B5, B40 and B131.

Then motor revolution is controlled.
When the ignition switch turned to ON or START position,
Power is supplied

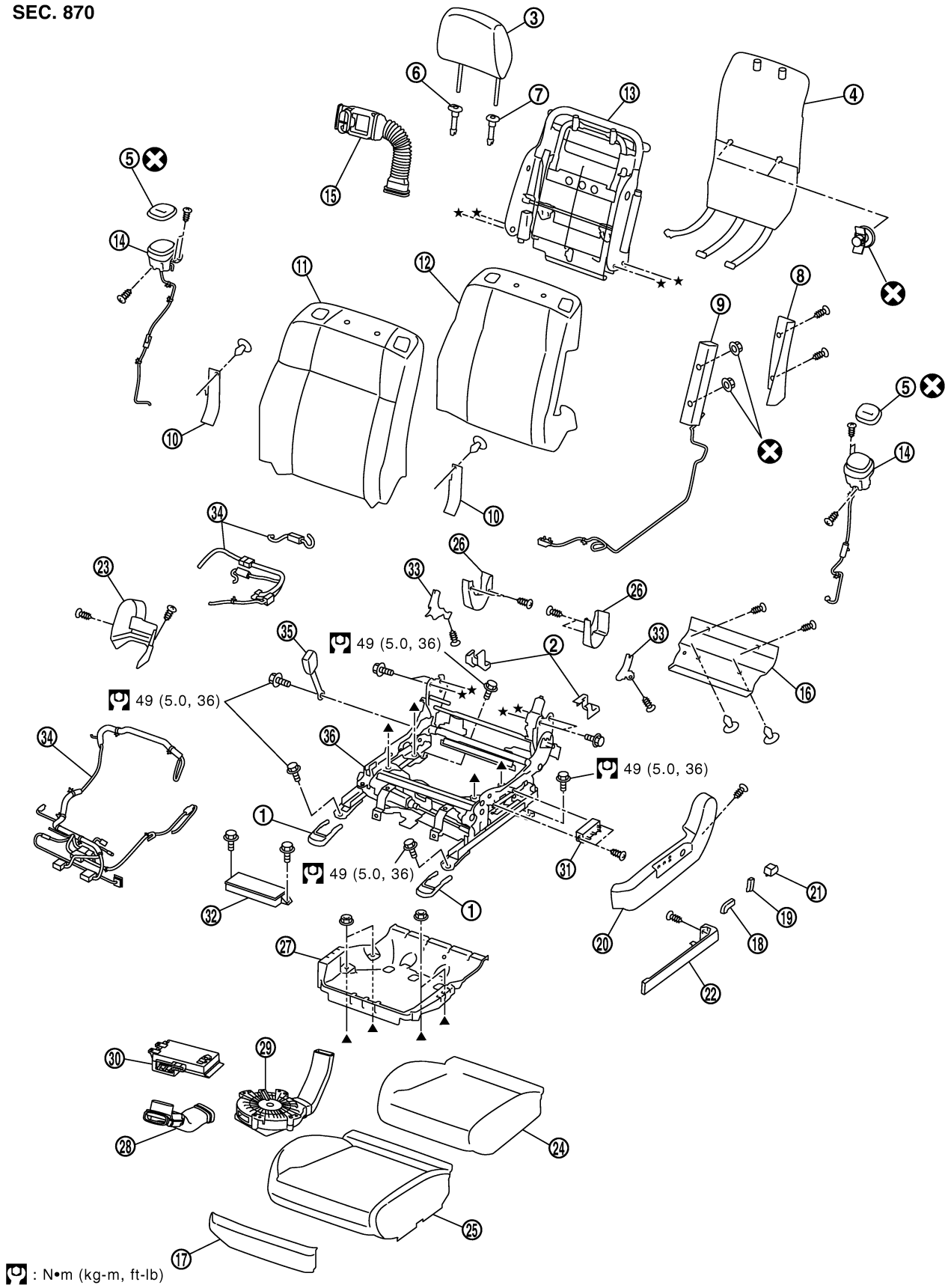
FRONT SEAT

PFP:87000

Driver's Seat Components

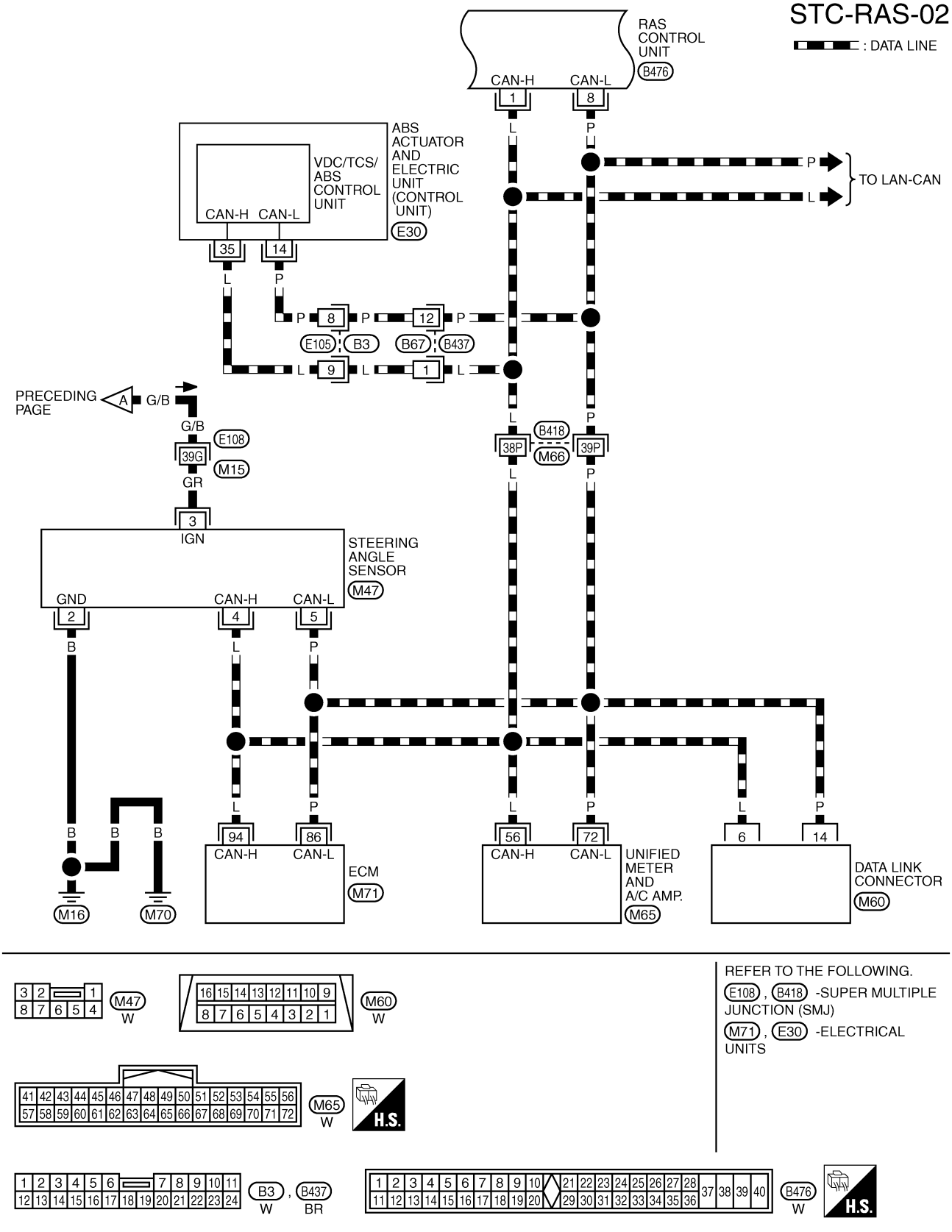
NIS0028E

SEC. 870



PIIB5328E

Diagnostic item	Explanation	Repair order “Recheck SRS at each replacement”
ASSIST A/B MODULE [OPEN] [B1065] [B1070]	● Front passenger air bag module circuit is open.	1. Visually check the wiring harness connection. 2. Replace the harness if it has visible damage. 3. If the harness check result is OK, replace the diagnosis sensor unit and front passenger air bag module.
ASSIST A/B MODULE [VB-SHORT] [B1066] [B1071]	● Front passenger air bag module circuit is shorted to a power supply circuit.	
ASSIST A/B MODULE [GND-SHORT] [B1067] [B1072]	● Front passenger air bag module circuit is shorted to ground.	
ASSIST A/B MODULE [SHORT] [B1068] [B1073]	● Front passenger air bag module circuit is shorted between lines.	
CRASH ZONE SEN [UNIT FAIL] [B1033] [B1034] CRASH ZONE SEN [COMM FAIL] [B1035] CRASH ZONE SEN [UNMATCH] [B1036]	● Crash zone sensor	1. Visually check the wiring harness connection. 2. Replace the harness if it has visible damage. 3. If the harness check result is OK, replace crash zone sensor and diagnosis sensor unit.
SIDE MODULE LH [OPEN] [B1134]	● Front LH side air bag module circuit is open.	1. Visually check the wiring harness connection. 2. Replace the harness if it has visible damage. 3. If the harness check result is OK, replace the diagnosis sensor unit and LH side air bag module.
SIDE MODULE LH [VB-SHORT] [B1135]	● Front LH side air bag module circuit is shorted to a power supply circuit.	
SIDE MODULE LH [GND-SHORT] [B1136]	● Front LH side air bag module circuit is shorted to ground.	
SIDE MODULE LH [SHORT] [B1137]	● Front LH side air bag module circuit is shorted between lines.	
SIDE MODULE RH [OPEN] [B1129]	● Front RH side air bag module circuit is open.	1. Visually check the wiring harness connection. 2. Replace the harness if it has visible damage. 3. If the harness check result is OK, replace the diagnosis sensor unit and RH side air bag module.
SIDE MODULE RH [VB-SHORT] [B1130]	● Front RH side air bag module circuit is shorted to a power supply circuit.	
SIDE MODULE RH [GND-SHORT] [B1131]	● Front RH side air bag module circuit is shorted to ground.	
SIDE MODULE RH [SHORT] [B1132]	● Front RH side air bag module circuit is shorted between lines.	
SATELLITE SENS LH [UNIT FAIL] [B1118] [B1119] SATELLITE SENS LH [COMM FAIL] [B1120] SATELLITE SENS LH [UNMATCH] [B1121]	● LH side air bag (Satellite) sensor	1. Visually check the wiring harness connection. 2. Replace the harness if it has visible damage. 3. If the harness check result is OK, replace the diagnosis sensor unit and LH side air bag (Satellite) sensor.


STC-RAS-02
: DATA LINE
RAS CONTROL UNIT
B476
CAN-H
CAN-L
1
8
L
P
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
E30
VDC/TCS/ ABS CONTROL UNIT
CAN-H CAN-L
35
14
TO LAN-CAN
8
12
E105
B3
B67
B437
9
1
PRECEDING PAGE
A
G/B
39G
E108
M15
GR
3
IGN
STEERING ANGLE SENSOR
M47
GND
2
4
5
B418
38P
M66
39P
B
94
86
ECM
M71
56
72
UNIFIED METER AND A/C AMP.
M65
6
14
DATA LINK CONNECTOR
M60
M16
M70
REFER TO THE FOLLOWING.
E108 , B418 -SUPER MULTIPLE JUNCTION (SMJ)
M71 , E30 -ELECTRICAL UNITS
M47
W
M60
W
M65
W
H.S.
B3 , B437
W
BR
B476
W

TGWT0063E

Monitor item [Unit]	Content	Condition	Display value
RR RH SENSOR [km/h] or [mph]	Wheel speed (Rear wheel right)	Vehicle stopped	0.00 km/h (0.00 mph)
		Vehicle running **CAUTION:** **Check air pressure of tire under standard condition.**	Approximately equal to the indication on speed-ometer (Inside of ±10%)
RR LH SENSOR [km/h] or [mph]	Wheel speed (Rear wheel left)	Vehicle stopped	0.00 km/h (0.00 mph)
		Vehicle running **CAUTION:** **Check air pressure of tire under standard condition.**	Approximately equal to the indication on speed-ometer (Inside of ±10%)
BATTERY VOLT [V]	Power supply voltage for AWD control unit	Ignition switch: ON	Battery voltage
THRTL POS SEN [%]	Throttle opening condition	When depressing accelerator pedal (Value rises gradually in response to throttle position.)	0 - 100%
ETS SOLENOID [A]	Monitored value of current at AWD solenoid	Engine running ● At idle speed	Approx. 0.000A
		Engine running ● When depressing accelerator pedal	Approx. 0.000 - 0.500A*1
STOP LAMP SW [ON/OFF]	Condition of brake pedal operation	Brake pedal: Depressed	ON
		Brake pedal: Released	OFF
ENG SPEED SIG [RUN/STOP]	Condition of engine running	Engine stopped (Engine speed: Less than 400 rpm)	STOP
		Engine running (Engine speed: 400 rpm or more)	RUN
ETS ACTUATOR [ON/OFF]	Operating condition of AWD actuator relay (integrated in AWD control unit)	Engine stopped (Ignition switch: ON)	OFF
		Engine running	ON
4WD WARN LAMP [ON/OFF]	AWD warning lamp condition	AWD warning lamp: ON	ON
		AWD warning lamp: OFF	OFF
4WD MODE SW*2 [AUTO]	Input condition from mode switch	Always	AUTO
4WD MODE MON [AUTO]	Control status of AWD	Engine running	AUTO
DIS-TIRE MONI [mm]	Improper size tire installed condition	Vehicle running with normal size tire installed	0-4 mm
		Vehicle running with improper size tire installed (Front/rear tire size dif-ference, wear condition)	4-8 mm, 8- mm
P BRAKE SW [ON/OFF]	Condition of parking brake	Parking brake operated	ON
		Parking brake not operated	OFF

*1 : The values are changed by throttle opening and engine speed.

*2 : Mode switch is not equipped, but displayed.

CONSULT-II Function (ALL MODE AWD/4WD)

NDS000DM

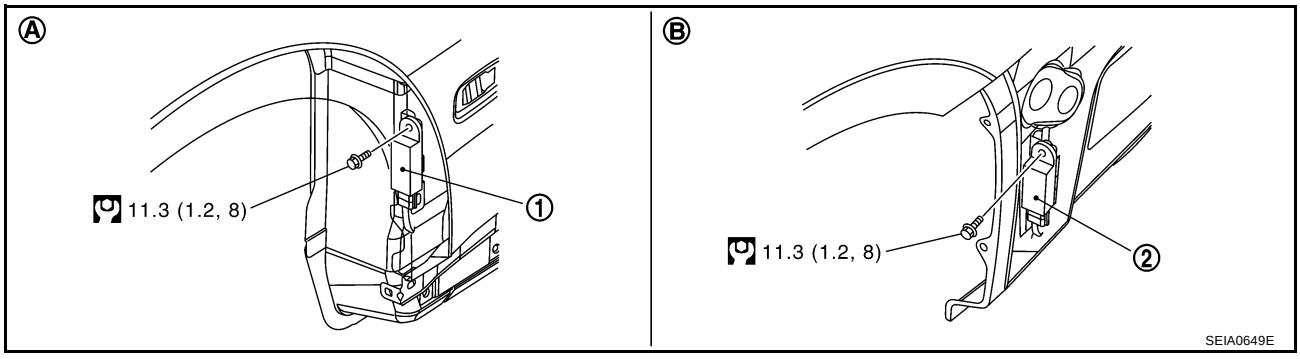
FUNCTION

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

Diagnostic test mode	Function	Reference page
Self-diagnostic results	● Self-diagnostic results can be read and erased quickly.	TF-22
Data monitor	● Input/Output data in the AWD control unit can be read.	TF-24

RECEIVER

The receiver receives the air pressure signal transmitted by the transmitter in each wheel.



1. Tire pressure receiver front
2. Tire pressure receiver rear
A. Front wheel house

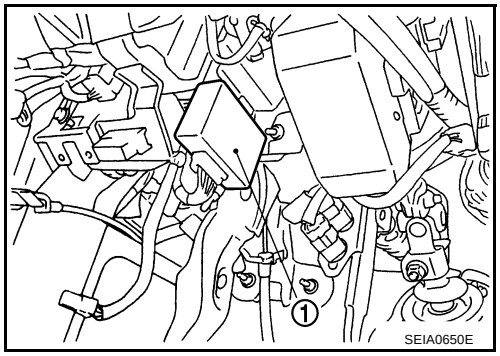
A. Front wheel house

B. Rear wheel house

Refer to GI-11, "Components" , for the symbols in the figure.

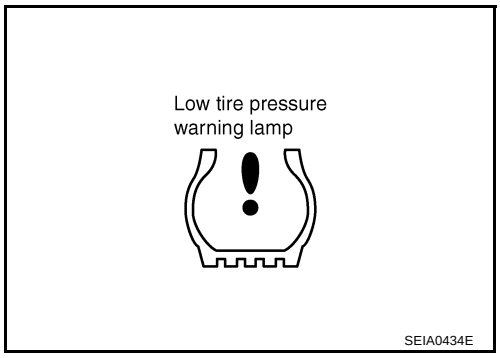
LOW TIRE PRESSURE WARNING CONTROL UNIT

The low tire pressure warning control unit (1) reads the air pressure signal received by the receiver, and controls the low tire pressure warning lamp operations. It also has a judgementfunction to detect a system malfunction.



LOW TIRE PRESSURE WARNING LAMP

The combination meter receives tire pressure status from the low tire pressure warning control unit using CAN communication. When a low tire pressure condition is sensed by the low tire pressure warning control unit, the combination meter low tire pressure warning lamp is activated.



Low Tire Pressure Warning Lamp Indication

Condition	Low tire pressure warning lamp
Less than 182 kPa (1.82 kg/cm^2 , 26.5 psi) [Flat tire]*	ON
Low tire pressure warning system malfunction [Other diagnostic item]	Warning lamp blinks 1 min, then turns ON

*: Standard air pressure is for 230 kpa (2.3 kg/cm^2 , 33 psi) vehicle.