

EDITION: JUNE 2000
REVISION: JUNE 2001
PUBLICATION NO. SM1E-1C33U2



I N F I N I T I®

130

MODEL A33 SERIES



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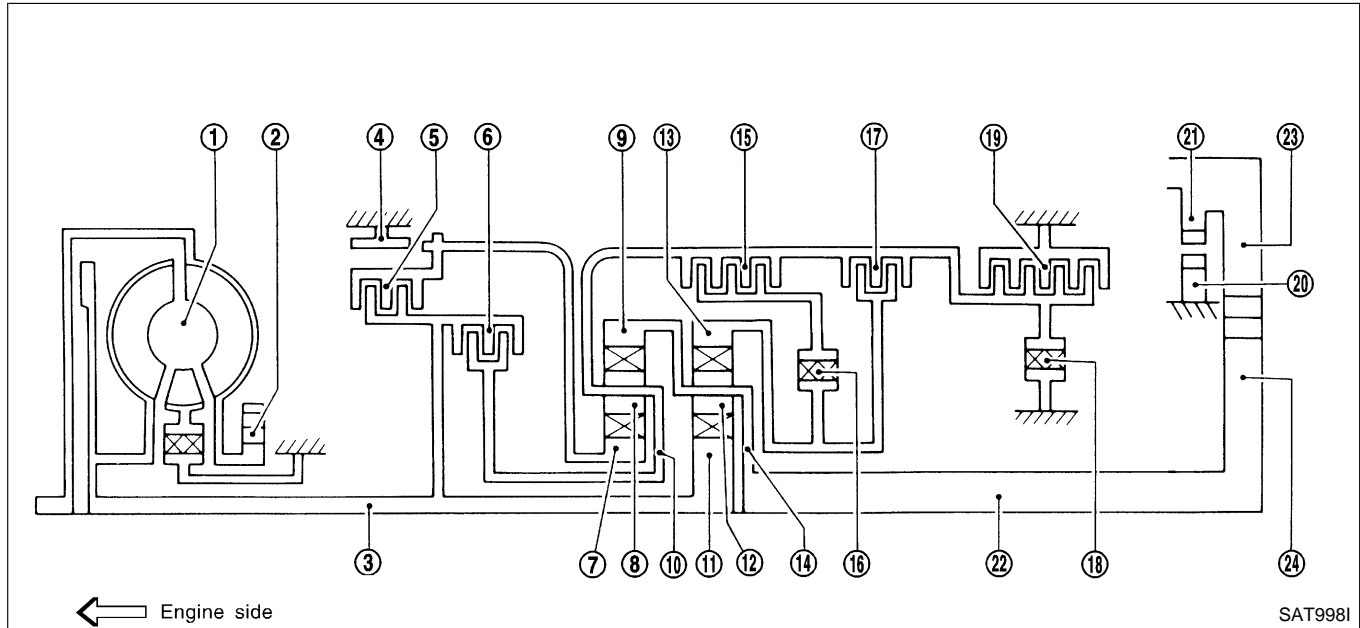
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Shift Mechanism

NHAT0013

NHAT0013S01

CONSTRUCTION



- | | | |
|----------------------|-----------------------------|-------------------------|
| 1. Torque converter | 9. Front internal gear | 17. Overrun clutch |
| 2. Oil pump | 10. Front planetary carrier | 18. Low one-way clutch |
| 3. Input shaft | 11. Rear sun gear | 19. Low & reverse brake |
| 4. Brake band | 12. Rear pinion gear | 20. Parking pawl |
| 5. Reverse clutch | 13. Rear internal gear | 21. Parking gear |
| 6. High clutch | 14. Rear planetary carrier | 22. Output shaft |
| 7. Front sun gear | 15. Forward clutch | 23. Idle gear |
| 8. Front pinion gear | 16. Forward one-way clutch | 24. Output gear |



FUNCTION OF CLUTCH AND BRAKE

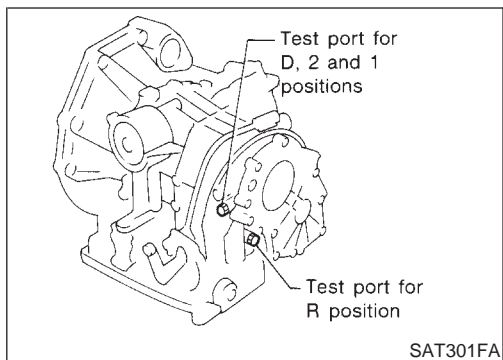
NHAT0013S02

Clutch and brake components	Abbr.	Function
Reverse clutch 5	R/C	To transmit input power to front sun gear 7 .
High clutch 6	H/C	To transmit input power to front planetary carrier 10 .
Forward clutch 15	F/C	To connect front planetary carrier 10 with forward one-way clutch 16 .
Overrun clutch 17	O/C	To connect front planetary carrier 10 with rear internal gear 13 .
Brake band 4	B/B	To lock front sun gear 7 .
Forward one-way clutch 16	F/O.C	When forward clutch 15 is engaged, to stop rear internal gear 13 from rotating in opposite direction against engine revolution.
Low one-way clutch 18	L/O.C	To stop front planetary carrier 10 from rotating in opposite direction against engine revolution.
Low & reverse brake 19	L & R/B	To lock front planetary carrier 10 .

ON BOARD DIAGNOSTIC SYSTEM DESCRIPTION

CONSULT-II (Cont'd)

Detected items (Screen terms for CONSULT-II, "SELF DIAGNOSIS" test mode)		Malfunction is detected when ...	TCM self-diagnosis	OBD-II (DTC)
"A/T"	"ENGINE"		 Available by O/D OFF indicator lamp or "A/T" on CONSULT-II	 Available by malfunction indicator lamp*2, "ENGINE" on CONSULT-II or GST
A/T 4th gear function		● A/T cannot be shifted to the 4th gear position even if electrical circuit is good.	—	P0734*1
—	A/T 4TH GR FNCTN			
A/T TCC S/V function (lock-up)		● A/T cannot perform lock-up even if electrical circuit is good.	—	P0744*1
—	A/T TCC S/V FNCTN			
Shift solenoid valve A		● TCM detects an improper voltage drop when it tries to operate the solenoid valve.	X	P0750
SHIFT SOLENOID/V A	SFT SOL A/CIRC			
Shift solenoid valve B		● TCM detects an improper voltage drop when it tries to operate the solenoid valve.	X	P0755
SHIFT SOLENOID/V B	SFT SOL B/CIRC			
Overrun clutch solenoid valve		● TCM detects an improper voltage drop when it tries to operate the solenoid valve.	X	P1760
OVERRUN CLUTCH S/V	O/R CLUCH SOL/ CIRC			
T/C clutch solenoid valve		● TCM detects an improper voltage drop when it tries to operate the solenoid valve.	X	P0740
T/C CLUTCH SOL/V	TCC SOLENOID/ CIRC			
Line pressure solenoid valve		● TCM detects an improper voltage drop when it tries to operate the solenoid valve.	X	P0745
LINE PRESSURE S/V	L/PRESS SOL/ CIRC			
Throttle position sensor Throttle position switch		● TCM receives an excessively low or high voltage from the sensor.	X	P1705
THROTTLE POSI SEN	TP SEN/CIRC A/T			
Engine speed signal		● TCM does not receive the proper voltage signal from the ECM.	X	P0725
ENGINE SPEED SIG				
A/T fluid temperature sensor		● TCM receives an excessively low or high voltage from the sensor.	X	P0710
BATT/FLUID TEMP SEN	ATF TEMP SEN/ CIRC			
Engine control		● The ECM-A/T communication line is open or shorted.	X	EC-446, EC-594
A/T COMM LINE	—			
TCM (RAM)		● TCM memory (RAM) is malfunctioning	—	—
CONTROL UNIT (RAM)	—			
TCM (ROM)		● TCM memory (ROM) is malfunctioning	—	—
CONTROL UNIT (ROM)	—			



Line Pressure Test

LINE PRESSURE TEST PORTS

NHAT0028

NHAT0028S01

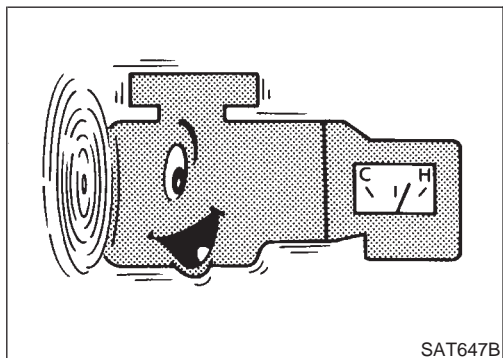
Location of line pressure test ports are shown in the illustration.

- Always replace pressure plugs as they are self-sealing bolts.

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LINE PRESSURE TEST PROCEDURE

NHAT0028S02

1. Check A/T fluid and engine oil levels. If necessary, add fluid and oil.
2. Drive vehicle for approx. 10 minutes or until fluid and oil reach operating temperature.

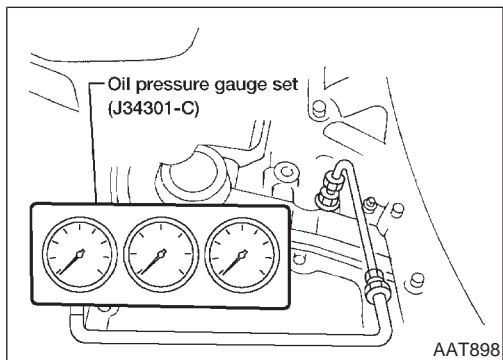
**ATF operating temperature:
50 - 80°C (122 - 176°F)**

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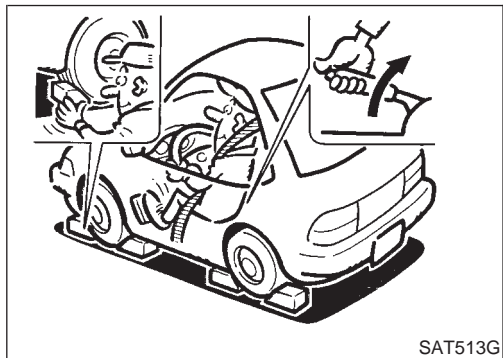
3. Install pressure gauge to corresponding line pressure port.

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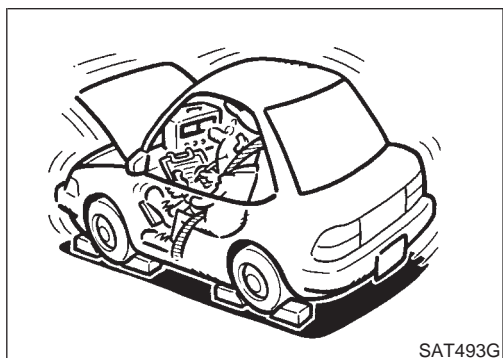
4. Set parking brake and block wheels.
 - Continue to depress brake pedal fully while line pressure test is being performed at stall speed.

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5. Start engine and measure line pressure at idle and stall speed.
 - When measuring line pressure at stall speed, follow the stall test procedure.

EL

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Line pressure: Refer to SDS, AT-382.

TROUBLE DIAGNOSIS — GENERAL DESCRIPTION

Symptom Chart (Cont'd)

Items	Symptom	Condition	Diagnostic Item	Reference Page	
No Up Shift	Failure to change gear from D ₃ to D ₄ .	ON vehicle	1. Park/neutral position (PNP) switch adjustment	AT-281	
			2. Control cable adjustment	AT-282	
			3. Shift solenoid valve A	AT-172	
			4. Vehicle speed sensor-A/T (Revolution sensor) and vehicle speed sensor-MTR	AT-114, 203	
			5. A/T fluid temperature sensor	AT-108	
		OFF vehicle	6. Brake band	AT-351	
	A/T does not shift to D ₄ when driving with overdrive control switch ON.	ON vehicle		1. Throttle position sensor (Adjustment)	EC-55
				2. Park/neutral position (PNP) switch adjustment	AT-281
				3. Vehicle speed sensor-A/T (Revolution sensor) and vehicle speed sensor-MTR	AT-114, 203
				4. Shift solenoid valve A	AT-172
5. Overrun clutch solenoid valve				AT-191	
6. Control valve assembly				AT-280	
7. A/T fluid temperature sensor				AT-108	
8. Line pressure solenoid valve				AT-166	
		OFF vehicle	9. Brake band	AT-351	
			10. Overrun clutch	AT-334	
Slips/Will Not Engage	Vehicle will not run in R position (but runs in D, 2 and 1 positions). Clutch slips. Very poor acceleration. AT-229	ON vehicle	1. Control cable adjustment	AT-282	
			2. Line pressure test	AT-65	
			3. Line pressure solenoid valve	AT-166	
			4. Control valve assembly	AT-280	
		OFF vehicle	5. Reverse clutch	AT-326	
			6. High clutch	AT-329	
			7. Forward clutch	AT-334	
			8. Overrun clutch	AT-334	
			9. Low & reverse brake	AT-339	
	Vehicle will not run in D and 2 positions (but runs in 1 and R positions).	ON vehicle	1. Control cable adjustment	AT-282	
OFF vehicle		2. Low one-way clutch	AT-286		


DTC P0710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

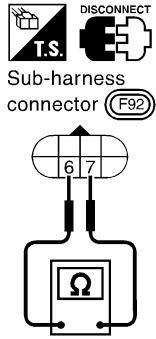
Diagnostic Procedure

Diagnostic Procedure

=NHAT0039

1	INSPECTION START	
Do you have CONSULT-II?		
Yes or No		
Yes	▶	GO TO 2.
No	▶	GO TO 6.

2	CHECK INPUT SIGNAL OF A/T FLUID TEMPERATURE SENSOR (With CONSULT-II)															
<p> With CONSULT-II</p> <ol style="list-style-type: none"> Start engine. Select "TCM INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II. Read out the value of "FLUID TEMP SE". 																
<table border="1" style="margin: auto;"> <thead> <tr> <th colspan="2">DATA MONITOR</th> </tr> <tr> <th>MONITORING</th> <th></th> </tr> </thead> <tbody> <tr> <td>VHCL/S SE-A/T</td> <td>XXX km/h</td> </tr> <tr> <td>VHCL/S SE-MTR</td> <td>XXX km/h</td> </tr> <tr> <td>THRTL POS SEN</td> <td>XXX V</td> </tr> <tr> <td>FLUID TEMP SE</td> <td>XXX V</td> </tr> <tr> <td>BATTERY VOLT</td> <td>XXX V</td> </tr> </tbody> </table>			DATA MONITOR		MONITORING		VHCL/S SE-A/T	XXX km/h	VHCL/S SE-MTR	XXX km/h	THRTL POS SEN	XXX V	FLUID TEMP SE	XXX V	BATTERY VOLT	XXX V
DATA MONITOR																
MONITORING																
VHCL/S SE-A/T	XXX km/h															
VHCL/S SE-MTR	XXX km/h															
THRTL POS SEN	XXX V															
FLUID TEMP SE	XXX V															
BATTERY VOLT	XXX V															
<p>Voltage: Cold [20°C (68°F)] → Hot [80°C (176°F)]: Approximately 1.5V → 0.5V</p>																
OK or NG																
OK	▶	GO TO 7.														
NG	▶	GO TO 3.														

3	CHECK A/T FLUID TEMPERATURE SENSOR WITH TERMINAL CORD ASSEMBLY	
<ol style="list-style-type: none"> Turn ignition switch to OFF position. Disconnect terminal cord assembly connector in engine compartment. Check resistance between terminals 6 and 7 when A/T is cold. 		
		
<p>Resistance: Cold [20°C (68°F)] Approximately 2.5 kΩ</p>		
<p>4. Reinstall any part removed.</p>		
OK or NG		
OK	▶	GO TO 4.
NG	▶	GO TO 5.

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DTC P0732 A/T 2ND GEAR FUNCTION

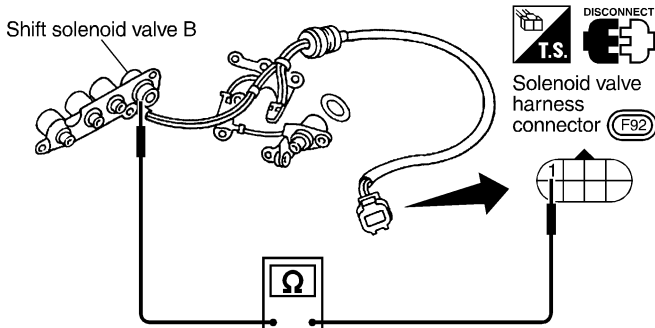
Diagnostic Procedure

Diagnostic Procedure

NHAT0051

1 CHECK VALVE RESISTANCE

1. Remove control valve assembly. Refer to AT-280.
 ● Shift solenoid valve B
 2. Check resistance to the terminal and ground.



Solenoid valve	Terminal No.		Resistance (Approx.)
Shift solenoid valve B	1	Ground	5 - 20Ω

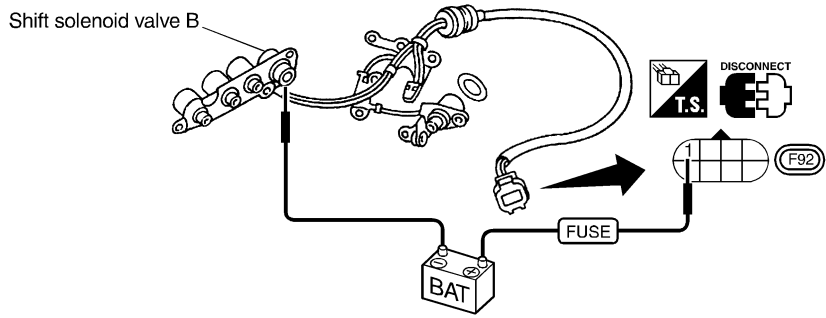
SAT045KA

OK or NG

OK	▶	GO TO 2.
NG	▶	Repair or replace shift solenoid valve assembly.

2 CHECK VALVE OPERATION

1. Remove control valve assembly. Refer to AT-280.
 ● Shift solenoid valve B
 2. Check solenoid valve by listening for its operating sound while applying battery voltage to the terminal and ground.



SAT036K

OK or NG

OK	▶	GO TO 3.
NG	▶	Repair or replace shift solenoid valve assembly.

DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)

On Board Diagnosis Logic (Cont'd)

This malfunction will be caused when shift solenoid valve B is stuck closed.

Gear positions supposed by TCM are as follows.

In case of gear position with no malfunctions: 1, 2, 3 and 4 positions

In case of gear position with shift solenoid valve B stuck closed: 1, 2, 2 and 1* positions to each gear position above

*: P0744 is detected.

Diagnostic trouble code A/T TCC S/V FNCTN with CONSULT-II or P0744 without CONSULT-II is detected when A/T cannot perform lock-up even if electrical circuit is good.

Possible Cause

Check the following items.

- Line pressure solenoid valve
- Torque converter clutch solenoid valve
- Each clutch
- Hydraulic control circuit

NHAT0229

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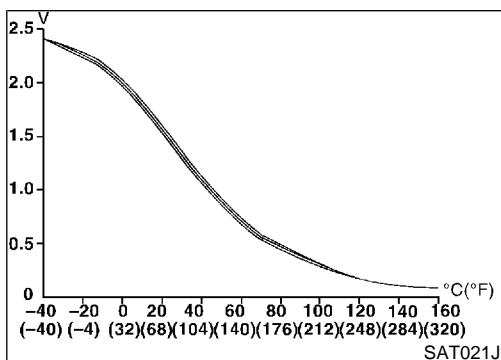
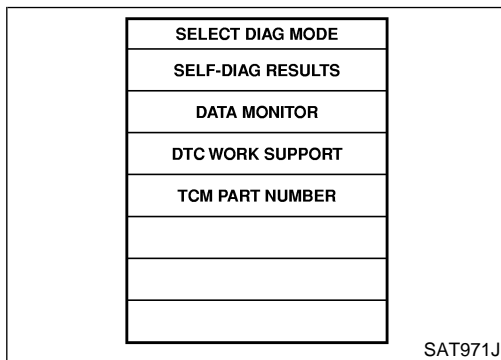
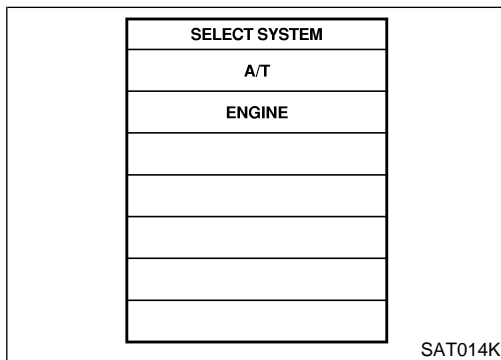
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Diagnostic Trouble Code (DTC) Confirmation Procedure

NHAT0230

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch OFF and wait at least 5 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

NHAT0230S01

1) Start engine and select "DATA MONITOR" mode for "A/T" with CONSULT-II.

2) Make sure that output voltage of A/T fluid temperature sensor is within the range below.

FLUID TEMP SEN: 0.4 - 1.5V

If out of range, drive vehicle to decrease voltage (warm up the fluid) or stop engine to increase voltage (cool down the fluid).

3) Select "TCC S/V FNCTN P0744" of "DTC WORK SUPPORT" mode for "A/T" with CONSULT-II and touch "START".

4) Accelerate vehicle to more than 70 km/h (43 MPH) and maintain the following condition continuously until "TESTING" has turned to "COMPLETE". (It will take approximately 30 seconds after "TESTING" shows.)

THROTTLE POSI: 1.0/8 - 2.0/8 (at all times during step 4)

Selector lever: D position (O/D ON)

TCC S/V DUTY: More than 94%

VHCL/S SE-A/T: Constant speed of more than 70 km/h (43 MPH)

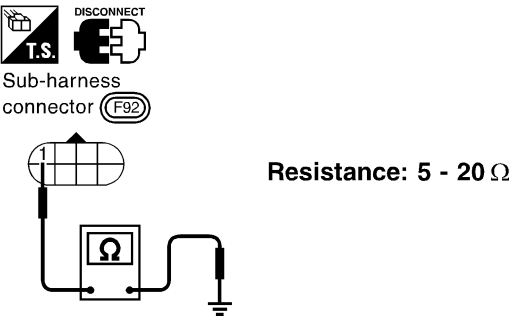
- Check that "GEAR" shows "4".
- For shift schedule, refer to SDS, AT-382.
- If "TESTING" does not appear on CONSULT-II for a long time, select "SELF-DIAG RESULTS". In case a 1st trip DTC

DTC P0755 SHIFT SOLENOID VALVE B

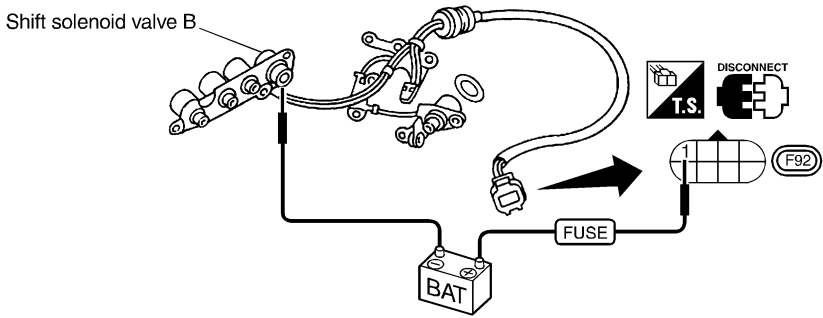
Diagnostic Procedure

Diagnostic Procedure

NHAT0072

1	CHECK VALVE RESISTANCE
<p>1. Turn ignition switch to OFF position. 2. Disconnect terminal cord assembly connector in engine compartment. 3. Check resistance between terminal 1 and ground.</p> <div style="text-align: center;">  <p>Resistance: 5 - 20 Ω</p> </div> <p style="text-align: center;">OK or NG</p>	
OK	▶ GO TO 3.
NG	▶ GO TO 2.

SAT633JC

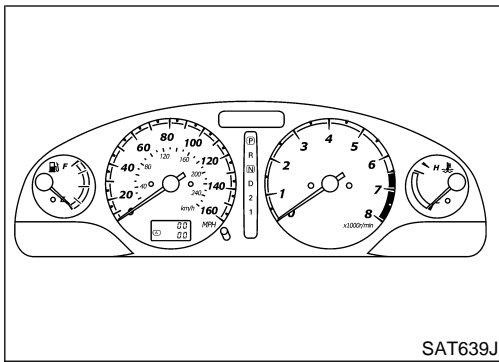
2	CHECK VALVE OPERATION
<p>1. Remove control valve assembly. Refer to AT-280. 2. Check the following items:</p> <ul style="list-style-type: none"> ● Shift solenoid valve B ● Operation check <p>i. Check solenoid valve by listening for its operating sound while applying battery voltage to the terminal and ground.</p> <div style="text-align: center;">  <p>OK or NG</p> </div>	
<ul style="list-style-type: none"> ● Harness of terminal cord assembly for short or open 	
OK	▶ GO TO 3.
NG	▶ Repair or replace damaged parts.

SAT036K

3	CHECK POWER SOURCE CIRCUIT
<p>1. Turn ignition switch to OFF position. 2. Disconnect TCM harness connector. 3. Check continuity between sub-harness connector terminal 1 and TCM harness connector terminal 12. Refer to wiring diagram — AT — SSV/B. Continuity should exist. If OK, check harness for short to ground and short to power. 4. Reinstall any part removed.</p> <p style="text-align: center;">OK or NG</p>	
OK	▶ GO TO 4.
NG	▶ Repair open circuit or short to ground or short to power in harness or connectors.

DTC VEHICLE SPEED SENSOR-MTR

Description



Description

The vehicle speed sensor-MTR is built into the speedometer assembly. The sensor functions as an auxiliary device to the revolution sensor when it is malfunctioning. The TCM will then use a signal sent from the vehicle speed sensor-MTR.

NHAT0082

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TCM TERMINALS AND REFERENCE VALUE

NHAT0082S01

Remarks: Specification data are reference values.

Terminal No.	Wire color	Item	Condition		Judgement standard (Approx.)
40	PU/R	Vehicle speed sensor		When moving vehicle at 2 to 3 km/h (1 to 2 MPH) for 1 m (3 ft) or more.	Voltage varies between less than 1V and more than 4.5V
42	B	Throttle position sensor (Ground)	—	—	—

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On Board Diagnosis Logic

Diagnostic trouble code VHCL SPEED SEN-MTR with CONSULT-II or 2nd judgement flicker without CONSULT-II is detected when TCM does not receive the proper voltage signal from the sensor.

NHAT0249

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Possible Cause

Check the following items.

- Harness or connectors (The sensor circuit is open or shorted.)
- Vehicle speed sensor

NHAT0250

IDX

TROUBLE DIAGNOSES FOR SYMPTOMS

4. In N Position, Vehicle Moves (Cont'd)

8	CHECK TCM INSPECTION
1. Perform TCM input/output signal inspection. 2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.	
OK or NG	
OK	▶ INSPECTION END
NG	▶ Repair or replace damaged parts.

TROUBLE DIAGNOSES FOR SYMPTOMS

12. A/T Does Not Perform Lock-up (Cont'd)

4	CHECK SYMPTOM	
Check again.		
OK or NG		
OK	▶	INSPECTION END
NG	▶	GO TO 5.

GI

MA

5	CHECK TCM INSPECTION	
1. Perform TCM input/output signal inspection. 2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.		
OK or NG		
OK	▶	INSPECTION END
NG	▶	Repair or replace damaged parts.

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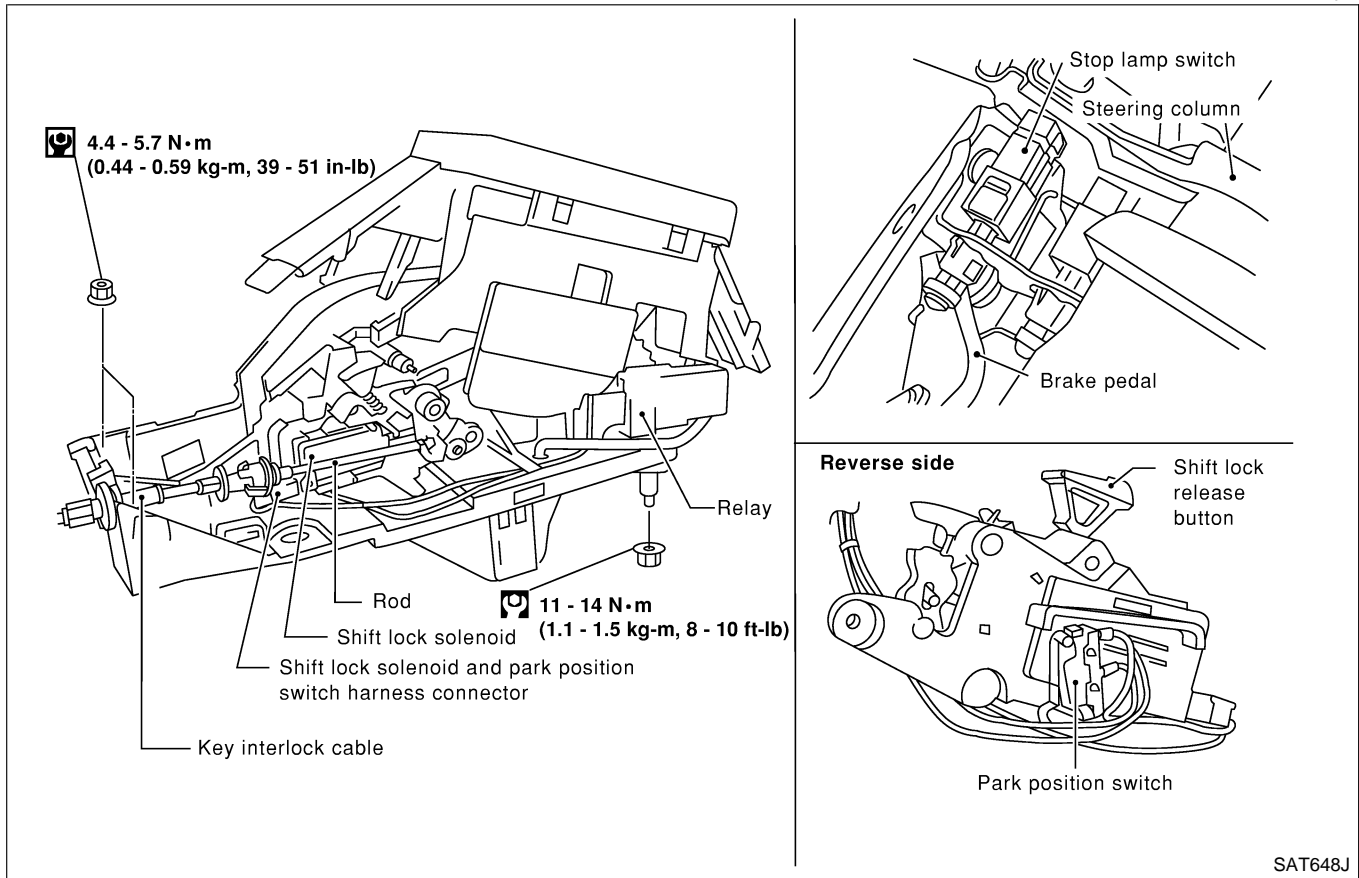
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AT SHIFT LOCK SYSTEM

Shift Lock System Electrical Parts Location

Shift Lock System Electrical Parts Location

NHAT0111



Diagnostic Procedure

NHAT0112

SYMPTOM 1:

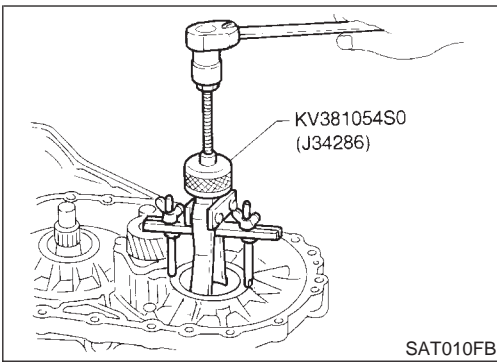
- Selector lever cannot be moved from P position with key in ON position and brake pedal applied.
- Selector lever can be moved from P position with key in ON position and brake pedal released.
- Selector lever can be moved from P position when key is removed from key cylinder.

SYMPTOM 2:

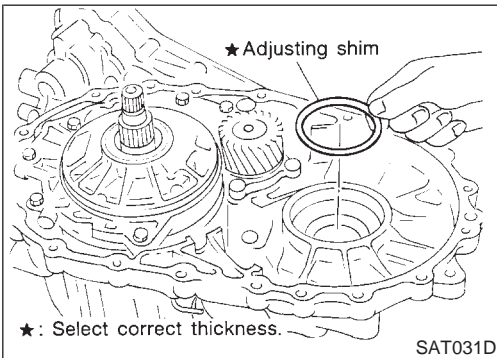
Ignition key cannot be removed when selector lever is set to P position. It can be removed when selector lever is set to any position except P.

1	CHECK KEY INTERLOCK CABLE	
Check key interlock cable for damaged.		
OK or NG		
OK	▶	GO TO 2.
NG	▶	Repair key interlock cable. Refer to "Key Interlock Cable", AT-276.

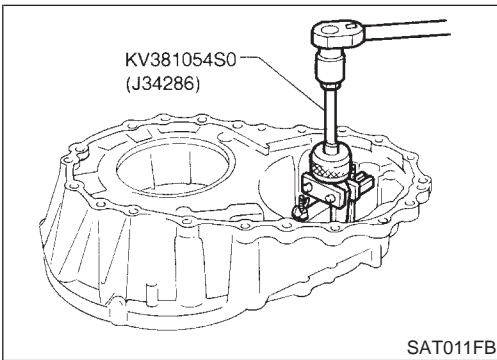
DISASSEMBLY



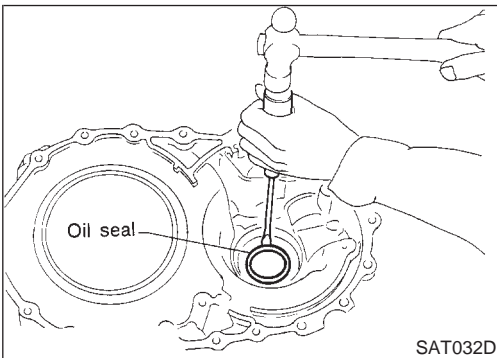
22. Remove differential side bearing outer race and side bearing adjusting shim from transmission case.



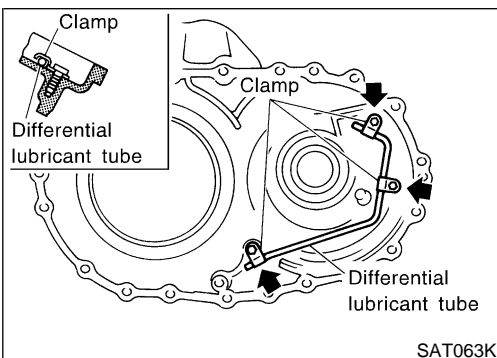
23. Remove differential side bearing adjusting shim from transmission case.



24. Remove differential side bearing outer race from converter housing.



25. Remove oil seal with screwdriver from converter housing.
● **Be careful not to damage case.**



26. Remove differential lubricant tube from converter housing.

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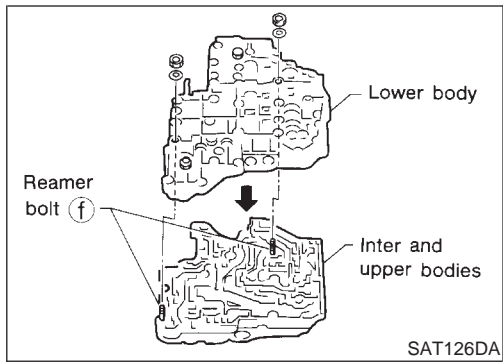
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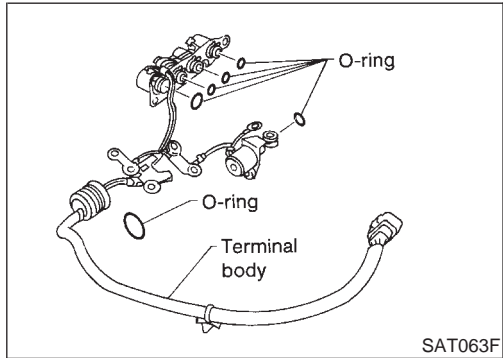
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REPAIR FOR COMPONENT PARTS

Control Valve Assembly (Cont'd)




- k. Install lower body on inter body using reamer bolts f as guides and tighten reamer bolts f slightly.

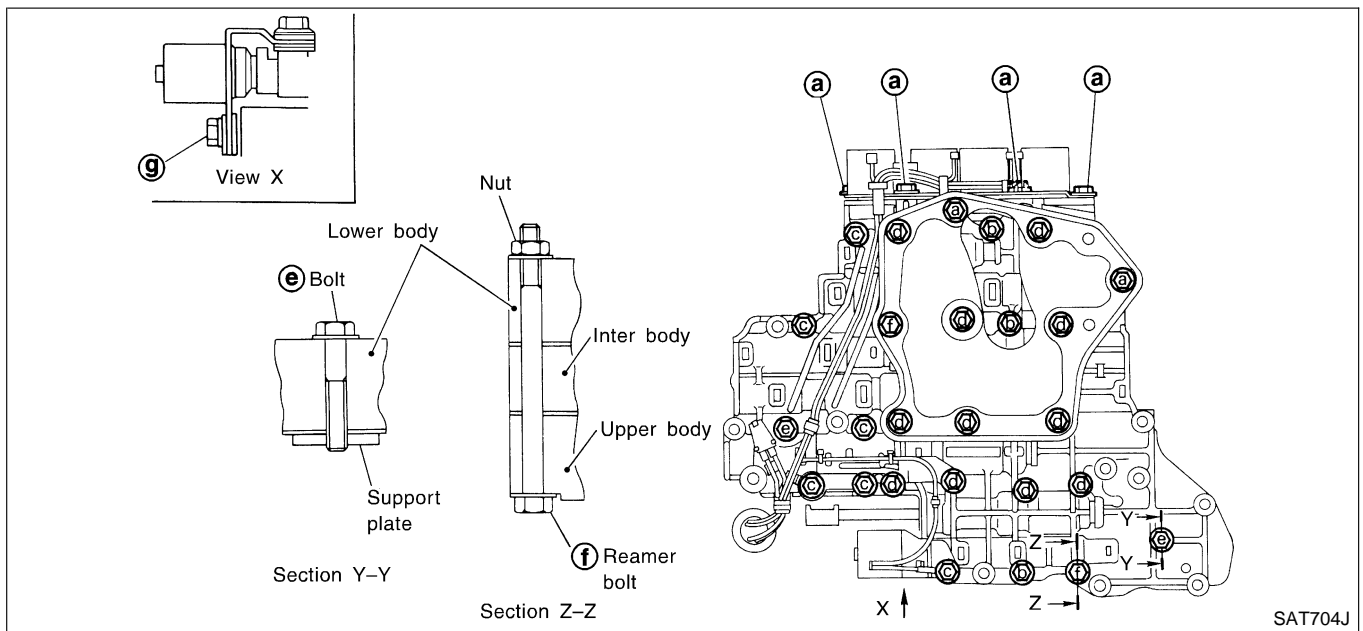


2. Install O-rings to solenoid valves and terminal body.
 ● Apply ATF to O-rings.

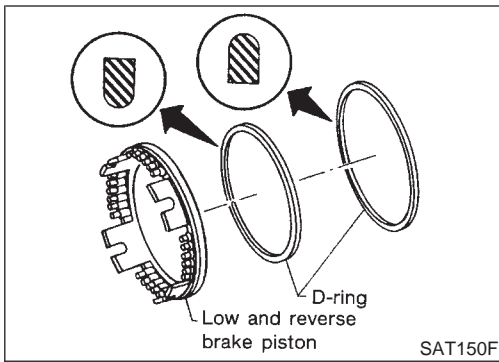
3. Install and tighten bolts.

Bolt length, number and location:

Bolt symbol	a	b	c	d	e	f	g
Bolt length "ℓ" mm (in)	13.5 (0.531)	58.0 (2.283)	40.0 (1.575)	66.0 (2.598)	33.0 (1.299)	78.0 (3.071)	18.0 (0.709)
							
Number of bolts	6	3	6	11	2	2	1

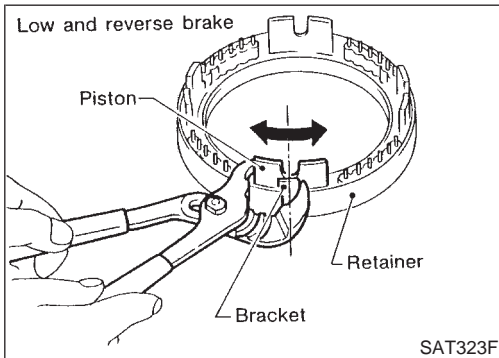


NHAT0160

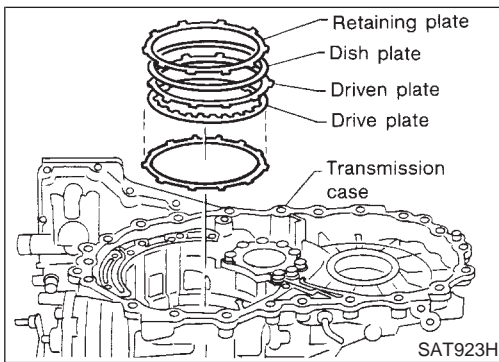


ASSEMBLY

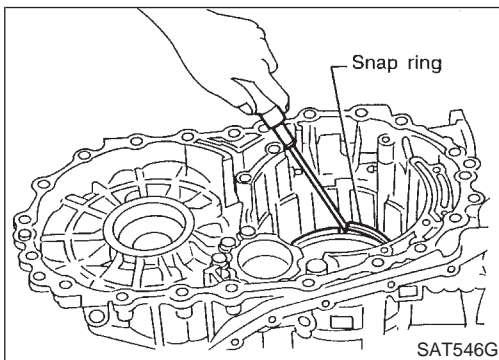
1. Install D-rings on piston.
 - Apply ATF to both parts.



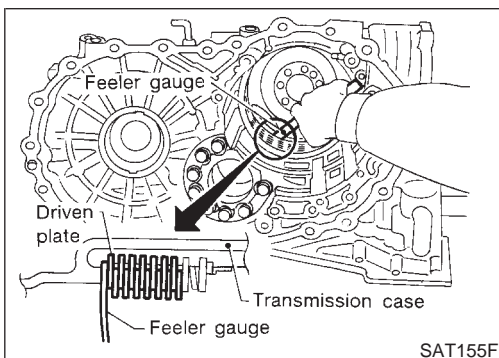
2. Set and align piston with retainer.
 - This operation is required in order to engage the protrusions of piston to return springs correctly. Further procedures are given in "ASSEMBLY".



3. Install driven plates, drive plates, retaining plate and dish plate on transmission case.
 - Take care with order of plates and direction of dish plate.



4. Install snap ring.



5. Measure clearance between driven plate and transmission case. If not within allowable limit, select proper retaining plate. (front side)

Specified clearance:

Standard 1.7 - 2.1 mm (0.067 - 0.083 in)

Allowable limit 3.3 mm (0.130 in)

Retaining plate:

Refer to SDS, AT-386.

GI

MA

EM

LC

EC

FE

AT

AX

SU

BR

ST

RS

BT

HA

SC

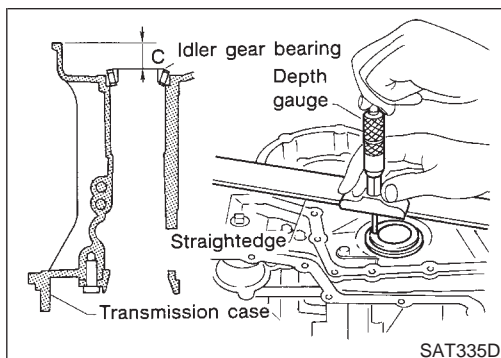
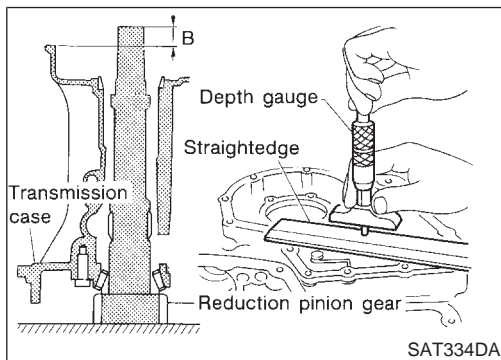
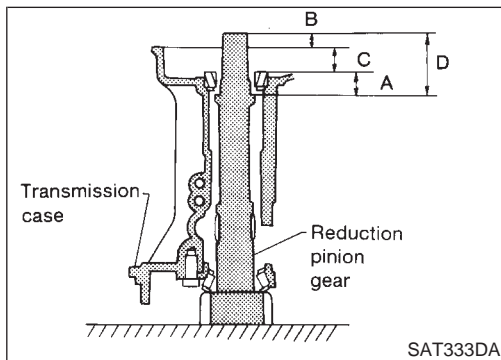
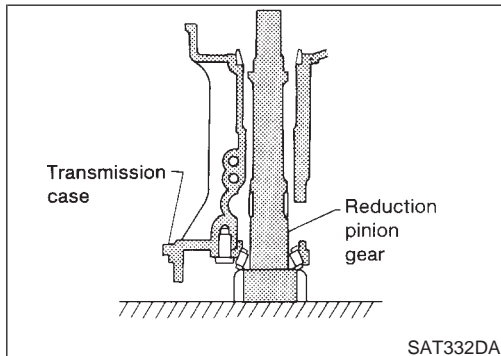
EL

IDX

ASSEMBLY

Adjustment (1) (Cont'd)

RE4F04W-KV38105210 (J39883)



REDUCTION PINION GEAR BEARING PRELOAD

NHAT0178S02

1. Remove transmission case and final drive assembly from converter housing.
2. Select proper thickness of reduction pinion gear bearing adjusting shim using the following procedures.
 - a. Place reduction pinion gear on transmission case as shown.
 - b. Place idler gear bearing on transmission case.
 - c. Measure dimensions "B" "C" and "D" and calculate dimension "A".

$$A = D - (B + C)$$

"A": Distance between the surface of idler gear bearing inner race and the adjusting shim mating surface of reduction pinion gear.

- Measure dimension "B" between the end of reduction pinion gear and the surface of transmission case.
- **Measure dimension "B" in at least two places.**
- Measure dimension "C" between the surface of idler gear bearing inner race and the surface of transmission case.
- **Measure dimension "C" in at least two places.**

SERVICE DATA AND SPECIFICATIONS (SDS)

Final Drive (Cont'd)

DIFFERENTIAL SIDE BEARING PRELOAD ADJUSTING SHIMS RE4F04B

NHAT0189S03

NHAT0189S0301

Thickness mm (in)	Part number*
0.48 (0.0189)	31438-80X00
0.52 (0.0205)	31438-80X01
0.56 (0.0220)	31438-80X02
0.60 (0.0236)	31438-80X03
0.64 (0.0252)	31438-80X04
0.68 (0.0268)	31438-80X05
0.72 (0.0283)	31438-80X06
0.76 (0.0299)	31438-80X07
0.80 (0.0315)	31438-80X08
0.84 (0.0331)	31438-80X09
0.88 (0.0346)	31438-80X10
0.92 (0.0362)	31438-80X11

*: Always check with the Parts Department for the latest parts information.

RE4F04W

NHAT0189S0302

Thickness mm (in)	Part number*
0.36 (0.0142)	38753-56E00
0.40 (0.0157)	38753-56E01
0.44 (0.0173)	38753-56E02
0.48 (0.0189)	38753-56E03
0.52 (0.0205)	38753-56E04
0.56 (0.0220)	38753-56E05
0.60 (0.0236)	38753-56E06
0.64 (0.0252)	38753-56E07
0.68 (0.0268)	38753-56E08
0.72 (0.0283)	38753-56E09
0.76 (0.0299)	38753-56E10
0.80 (0.0315)	38753-56E11
0.84 (0.0331)	38753-56E12
0.88 (0.0346)	38753-56E13
0.92 (0.0362)	38753-56E14
0.12 (0.0047)	38753-56E15
0.16 (0.0063)	38753-56E16
0.20 (0.0079)	38753-56E17
0.24 (0.0094)	38753-56E18
0.28 (0.0110)	38753-56E19
0.32 (0.0126)	38753-56E20

*: Always check with the Parts Department for the latest parts information.

BEARING PRELOAD

NHAT0189S04

Differential side bearing preload mm (in)	0.05 - 0.09 (0.0020 - 0.0035)
---	-------------------------------

TURNING TORQUE

NHAT0189S05

Turning torque of final drive assembly N-m (kg-cm, in-lb)	0.78 - 1.37 (8.0 - 14.0, 6.9 - 12.2)
---	--------------------------------------

CLUTCH AND BRAKE RETURN SPRINGS

NHAT0189S06
Unit: mm (in)

Parts	Part number*	Free length	Outer diameter
Forward clutch (Overrun clutch) (22 pcs)	31505-80X02	21.4 (0.843)	10.3 (0.406)
High clutch (12 pcs)	31505-80X05	22.5 (0.886)	10.8 (0.425)
Low & reverse brake (24 pcs)	31505-80X07	24.1 (0.949)	6.6 (0.260)

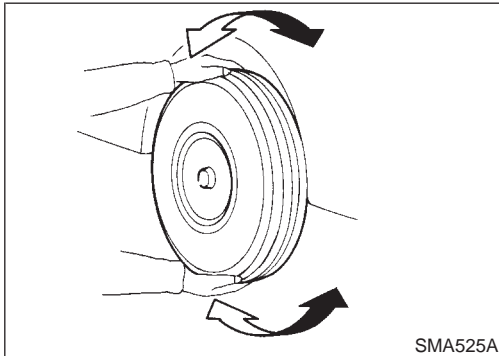
*: Always check with the Parts Department for the latest parts information.

REAR AXLE

Noise, Vibration and Harshness (NVH) Troubleshooting

Noise, Vibration and Harshness (NVH) Troubleshooting

Refer to "Noise, Vibration and Harshness (NVH) Troubleshooting", "FRONT AXLE", AX-3. NHAX0025

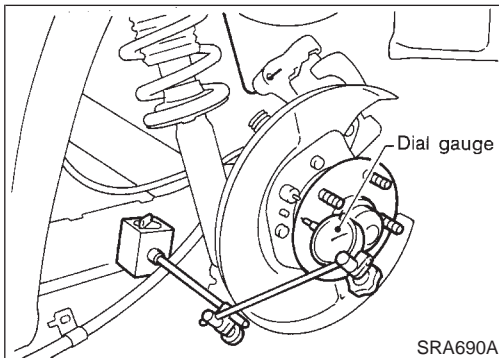


On-vehicle Service

REAR AXLE PARTS

Check axle and suspension parts for excessive play, wear or damage. NHAX0026

- Shake each rear wheel to check for excessive play.

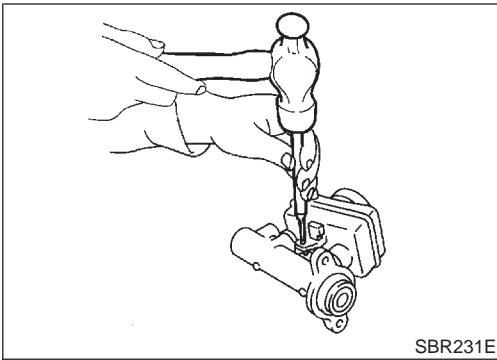


REAR WHEEL BEARING

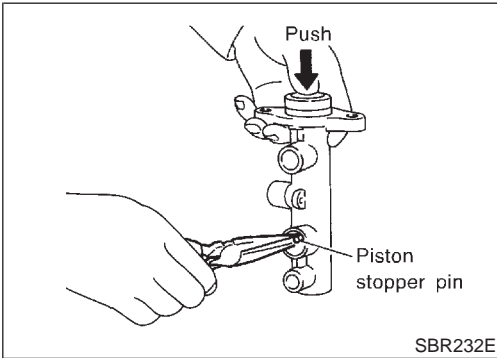
- Check axial end play.
Axial end play:
0.05 mm (0.0020 in)
- Check that wheel hub bearings operate smoothly.
- Check tightening torque of wheel bearing lock nut.
ⓘ : 187- 254 N·m (19 - 26 kg·m, 138 - 188 ft·lb)
- Replace wheel bearing assembly if there is axial end play or wheel bearing does not turn smoothly. Refer to "Wheel Hub", "REAR AXLE", AX-19. NHAX0027

MASTER CYLINDER (NABCO)

Disassembly (Cont'd)



2. Drive out spring pin from cylinder body.
3. Draw out reservoir tank and seals.



4. Remove piston stopper pin while piston is pushed into cylinder.
5. Remove piston assemblies.
If it is difficult to remove secondary piston assembly, gradually apply compressed air through fluid outlet.

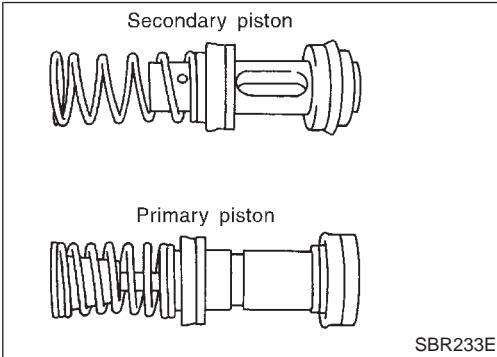
Inspection

Check for the following items.
Replace any part if damaged.
Master cylinder:

- Pin holes or scratches on inner wall.

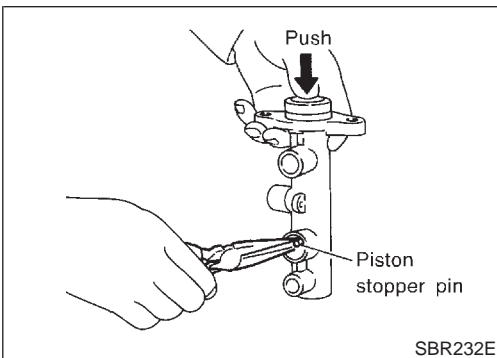
Piston:

- Deformation of or scratches on piston cups.



Assembly

1. Insert secondary piston assembly. Then insert primary piston assembly.
Pay attention to alignment of secondary piston slit with valve stopper mounting hole of cylinder body.



2. Install piston stopper pin while piston is pushed into cylinder.
3. Push reservoir tank seals and reservoir tank into cylinder body.
4. Install spring pin.

GI

MA

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LC

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NHBR0097

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BR

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RS

NHBR0098

BT

HA

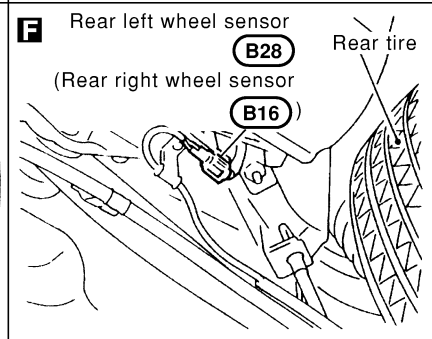
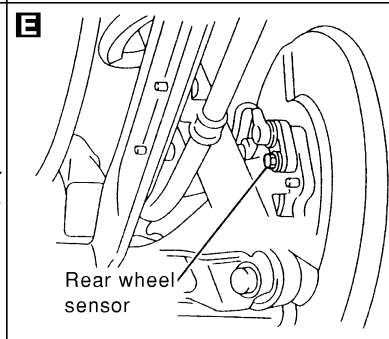
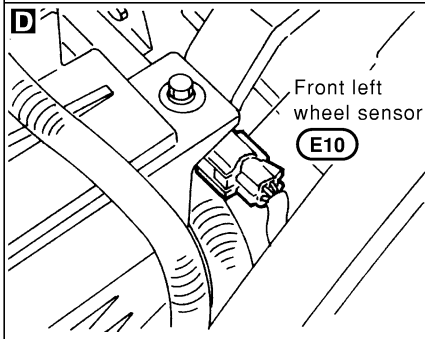
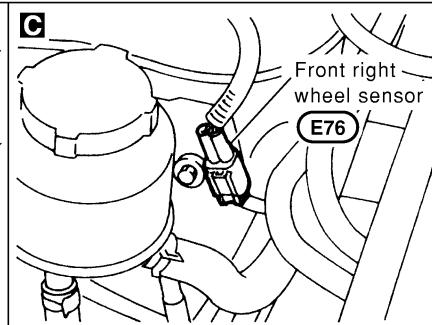
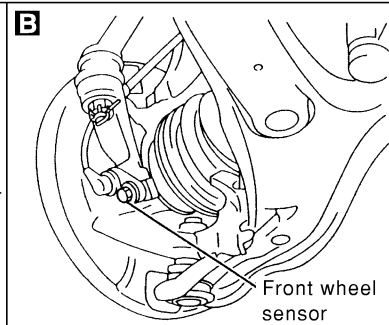
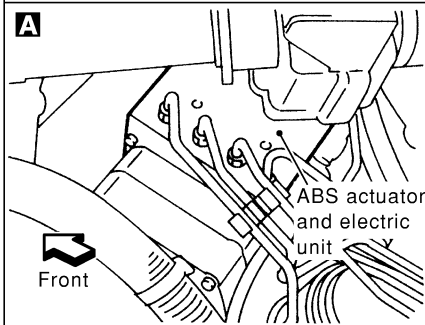
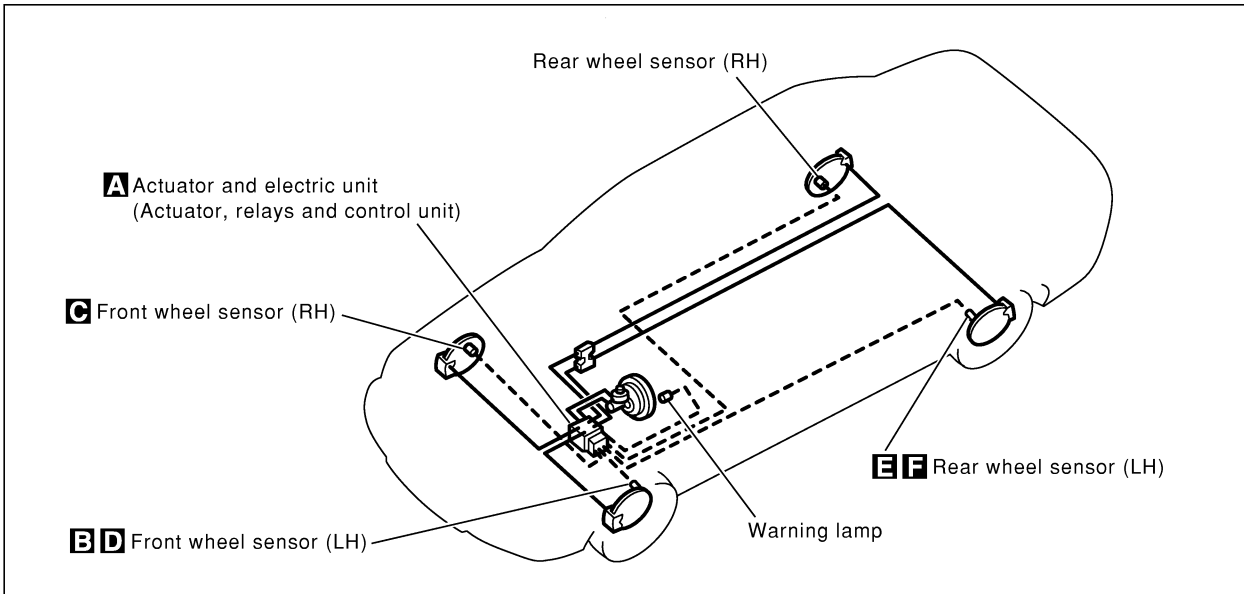
SC

EL

IDX

Component Parts and Harness Connector Location

NHBR0105



SBR646EA

ABS Actuator Solenoid Valve or Solenoid Valve Relay

DIAGNOSTIC PROCEDURE

Malfunction code No. 41, 45, 55, 42, 46, 56, 63, 51, 52

=NHBR0116

NHBR0116S01

1	INSPECTION START																														
Solenoid valve relay inspection																															
<p>ABS actuator and electric unit connector (E9)</p> <table border="1" style="margin: auto;"> <tr> <td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td> </tr> </table>		16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15																	
SBR591EA																															
▶ GO TO 2.																															

2	CHECK SOLENOID VALVE POWER SUPPLY CIRCUIT
Check 40A [E] fusible link (ABS ACTR) for ABS solenoid valve relay. For fusible link layout, refer to POWER SUPPLY ROUTING in EL section.	
Is fusible link OK?	
Yes	▶ GO TO 3.
No	▶ GO TO 7.

3	CHECK FUSE
Check 10A fuse No. 31. For fuse layout, refer to "POWER SUPPLY ROUTING" in EL section.	
Is fuse OK?	
Yes	▶ GO TO 4.
No	▶ GO TO 9.

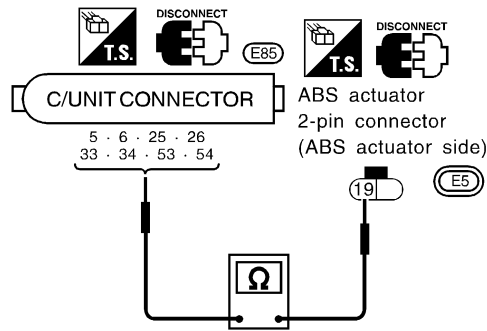
GI
MA
EM
LC
EC
FE
AT
AX
SU
BR
ST
RS
BT
HA
SC
EL
IDX

3 CHECK ABS ACTUATOR SOLENOID VALVE

1. Disconnect connectors from control unit and ABS actuator.
2. Check resistance between control unit connector terminals and ABS actuator 2-pin connector E5 (ABS actuator side) terminals.

Code No.	Control unit	ABS actuator	Resistance
41	26	19	4.4 - 6.0Ω
45	33	19	
51	34	19	
55	25	19	
42	54	19	8.5 - 9.5Ω
46	5	19	
52	6	19	
56	53	19	

MTBL0084



SBR766DH

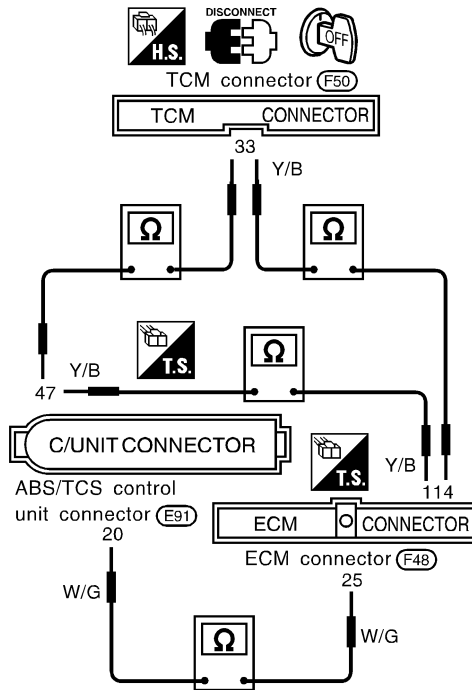
Is resistance within specifications?

- | | | |
|-----|---|----------|
| Yes | ▶ | GO TO 6. |
| No | ▶ | GO TO 4. |

GI
 MA
 EM
 LC
 EC
 FE
 AT
 AX
 SU
 BR
 ST
 RS
 BT
 HA
 SC
 EL
 IDX

6 CHECK LAN CIRCUIT

Check continuity between connector terminals.



SBR542E

Control unit	ECM	TCM
20	25	
47	114	
47		33
	114	33

MTBL0320

Does continuity exist?

Yes	▶	Repeat self-diagnostic procedures.
No	▶	<p>Check the following.</p> <ul style="list-style-type: none"> ● Harness connectors E91, F48, F50 ● Harness for open or short between control unit connector and TCM connector ● Harness for open or short between ECM connector and TCM connector <p>If NG, repair harness or connectors.</p>

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

General Specifications

NHBR0077
Unit: mm (in)

Front brake	Brake model		CLZ25VC disc brake	GI
	Cylinder bore diameter		57.2 (2.252)	
	Pad Length × width × thickness		125.6 × 46 × 11 (4.94 × 1.81 × 0.43)	MA
	Rotor outer diameter × thickness		280 × 26 (11.02 × 1.02)	
Rear brake	Brake model		CL9HB disc brake	EM
	Cylinder bore diameter		33.96 (1.3370)	
	Pad Length × width × thickness		89.1 × 39.5 × 10 (3.508 × 1.555 × 0.39)	LC
	Rotor outer diameter × thickness		278 × 9 (10.94 × 0.35)	EC
Master cylinder	Cylinder bore diameter		23.81 (15/16)	
Control valve	Valve model		Dual proportioning valve	FE
Brake booster	Booster model		M215T	
	Diaphragm diameter	Primary	230 (9.06)	AT
		Secondary	205 (8.07)	
Recommended brake fluid			DOT 3	AX

Disc Brake

NHBR0078
Unit: mm (in)

Brake model		CLZ25VC	CL9HB	SU
Pad wear limit	Minimum thickness	2.0 (0.079)	1.5 (0.059)	BR
	Maximum runout	0.07 (0.0028)	0.07 (0.0028)	
Rotor repair limit	Minimum thickness	24.0 (0.945)	8 (0.31)	ST

Brake Pedal

NHBR0079
Unit: mm (in)

Free height "H"	M/T	158 - 165 (6.22 - 6.50)	RS
	A/T	167 - 174 (6.57 - 6.85)	BT
Clearance "C" between pedal stopper and threaded end of stop lamp switch or ASCD switch		0.74 - 1.96 (0.0291 - 0.0772)	HA

*: Measured from surface of dash reinforcement panel to surface of pedal pad

Parking Brake

NHBR0080

Number of notches [under force of 196 N (20 kg, 44 lb)]	3 - 4	SC
Number of notches when warning lamp switch comes on	1	EL

Control Valve

NHBR0092
Unit: kPa (kg/cm², psi)

Applied pressure (front)	7,355 (75, 1,067)	IDX
Output pressure (rear)	5,100 - 5,492 (52 - 56, 739 - 796)	

DOOR

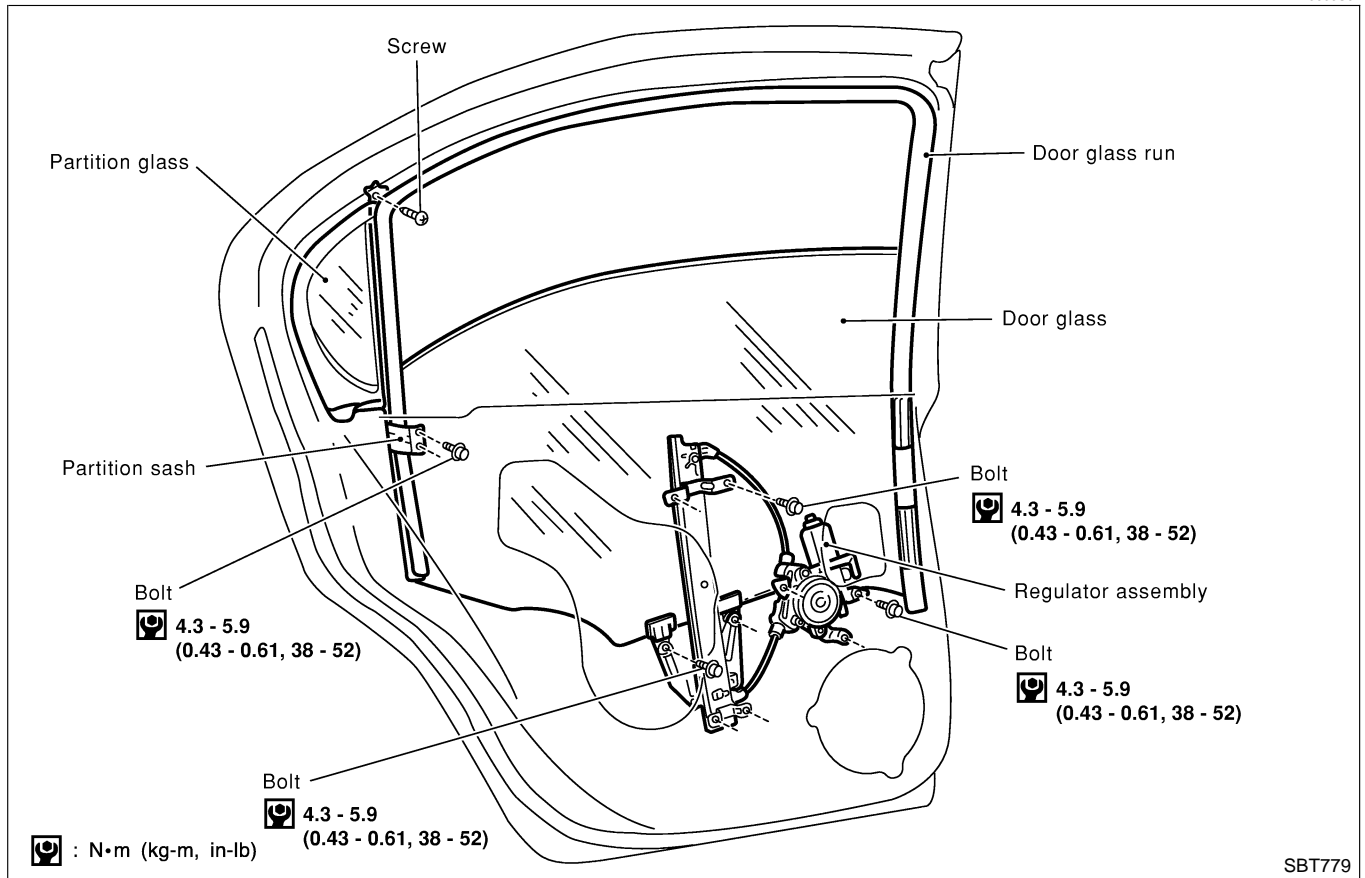
Rear Door Glass

NHBT0009

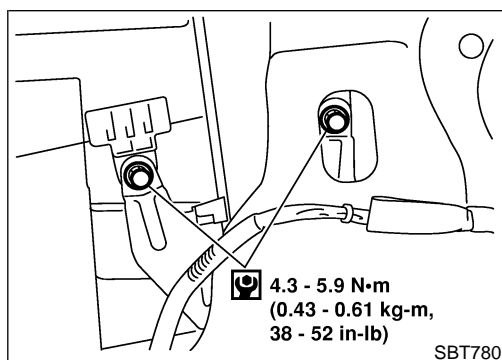
- Make sure that door glass is positioned in glass run groove.
- Make sure that there is no abnormality when door glass is raised or lowered.

REAR DOOR GLASS AND REGULATOR

NHBT0009S01

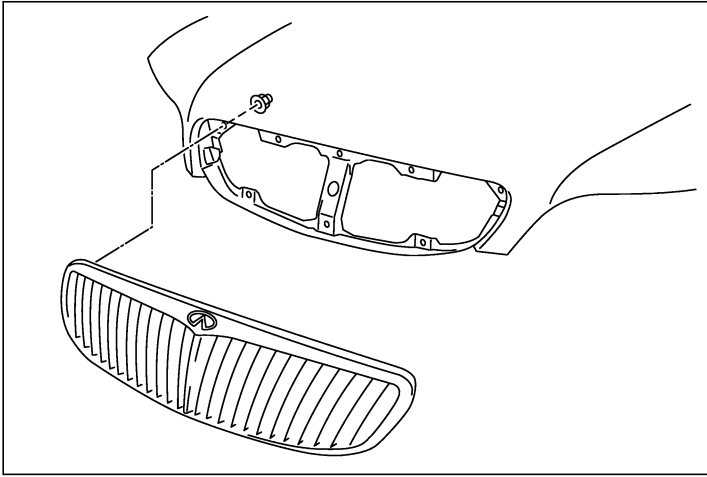


- For removal of rear door trim, refer to “DOOR TRIM”, BT-35.
- For removal of door outside molding, refer to “EXTERIOR”, BT-40.
- Remove sealing screen.

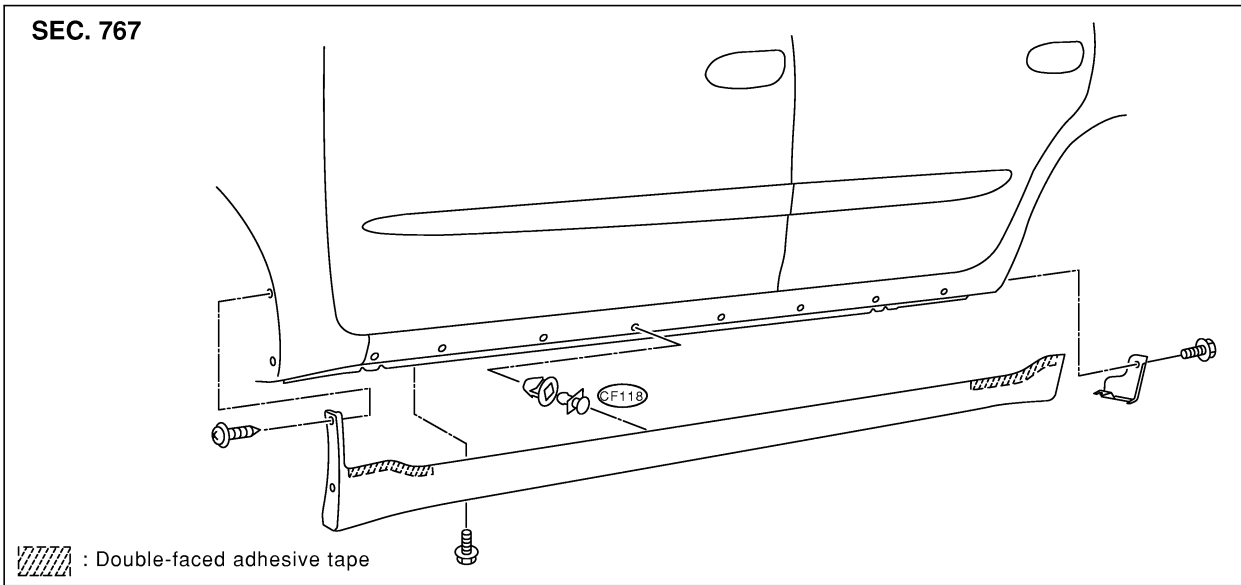


1. Using power window main switch, raise or lower door glass until carrier plate securing bolts are visible.
2. Remove bolts securing carrier plate.

21 Front hood grille



22 Mudguard center



- With a vehicle coated with Hard Clear Coat, use double-faced 3M adhesive tape Product No. 4210 or equivalent, after priming with 3M primer Product No. N-200 or C-100 or equivalent.

GI

MA

EM

LC

EC

FE

AT

AX

SU

BR

ST

RS

BT

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SC

EL

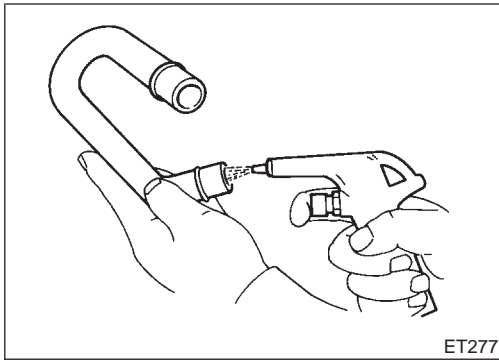
IDX

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ENGINE AND EMISSION BASIC CONTROL SYSTEM DESCRIPTION

Positive Crankcase Ventilation (Cont'd)



PCV Valve Ventilation Hose

NHEC0022S02

1. Check hoses and hose connections for leaks.
2. Disconnect all hoses and clean with compressed air. If any hose cannot be freed of obstructions, replace.

ON BOARD DIAGNOSTIC SYSTEM DESCRIPTION

Emission-related Diagnostic Information (Cont'd)

SRT Item

=NHEC0031S0310

The table below shows required self-diagnostic items to set the SRT to "CMPLT".

SRT item (CONSULT-II indication)	Performance Priority*2	Required self-diagnostic items to set the SRT to "CMPLT"	Corresponding DTC No.	
CATALYST	3	Three way catalyst function	P0420, P0430	GI
EVAP SYSTEM	2	EVAP control system (small leak) (negative pressure)	P0440	MA
	—	EVAP control system (small leak) (positive pressure)	P1440*1	EM
	3	EVAP control system purge flow monitoring	P1447	
HO2S	3	Heated oxygen sensor 1 (front) (circuit)	P0130, P0150	LC
		Heated oxygen sensor 1 (front) (lean shift monitoring)	P0131, P0151	
		Heated oxygen sensor 1 (front) (rich shift monitoring)	P0132, P0152	EC
		Heated oxygen sensor 1 (front) (response monitoring)	P0133, P0153	
		Heated oxygen sensor 1 (front) (high voltage)	P0134, P0154	FE
		Heated oxygen sensor 2 (rear) (min. voltage monitoring)	P0137, P0157	
		Heated oxygen sensor 2 (rear) (max. voltage monitoring)	P0138, P0158	AT
		Heated oxygen sensor 2 (rear) (response monitoring)	P0139, P0159	
		Heated oxygen sensor 2 (rear) high voltage)	P0140, P0160	AX
HO2S HTR	3	Heated oxygen sensor 1 heater (front)	P0135, P0155	SU
		Heated oxygen sensor 2 heater (rear)	P0141, P0161	

*1: P1440 [EVAP control system (small leak) (positive pressure) diagnosis] is one type of SRT related diagnosis. This diagnosis, however, does not contribute to setting the SRT as "CMPLT", when no malfunction exists in the EVAP system. Therefore, P0440 must be used instead of P1440.

*2: If completion of several SRTs is required, perform driving patterns (DTC confirmation procedure), one by one based on the priority for models with CONSULT-II.

ON BOARD DIAGNOSTIC SYSTEM DESCRIPTION

CONSULT-II (Cont'd)

Freeze frame data item*1	Description
VHCL SPEED [km/h] or [mph]	<ul style="list-style-type: none">• The vehicle speed at the moment a malfunction is detected is displayed.
ABSOL TH.P/S [%]	<ul style="list-style-type: none">• The throttle valve opening angle at the moment a malfunction is detected is displayed.
B/FUEL SCHDL [msec]	<ul style="list-style-type: none">• The base fuel schedule at the moment a malfunction is detected is displayed.
INT/A TEMP SE [°C] or [°F]	<ul style="list-style-type: none">• The intake air temperature at the moment a malfunction is detected is displayed.

*1: The items are the same as those of 1st trip freeze frame data.

*2: Regarding A33 model, "-B1" indicates right bank and "-B2" indicates left bank.

TROUBLE DIAGNOSIS — BASIC INSPECTION

Basic Inspection (Cont'd)

13	CHECK (1ST TRIP) DTC	
1. Start engine and warm it up to normal operating temperature. 2. Rev (2,000 to 3,000 rpm) two or three times. 3. Make sure no (1st trip) DTC is displayed with CONSULT-II or GST.		
OK or NG		
OK	▶	GO TO 15.
NG	▶	GO TO 14.

GI

MA

EM

14	REPAIR MALFUNCTION	
Repair or replace components as necessary according to corresponding "Diagnostic Procedure".		
▶ GO TO 13.		

LC

EC

15	CHECK TARGET IDLE SPEED	
(P) With CONSULT-II 1. Start engine and warm it up to normal operating temperature. 2. Select "ENG SPEED" in "DATA MONITOR" mode with CONSULT-II. 3. Check idle speed. 700±50 rpm (in "P" or "N" position)		
(X) Without CONSULT-II 1. Start engine and warm it up to normal operating temperature. 2. Check idle speed. 700±50 rpm (in "P" or "N" position)		
OK or NG		
OK	▶	GO TO 24.
NG	▶	GO TO 16.

FE

AT

AX

SU

BR

16	PERFORM IDLE AIR VOLUME LEARNING	
Refer to "Idle Air Volume Learning", EC-66. Which is the result CMPLT or INCMP?		
CMPLT or INCMP		
CMPLT	▶	GO TO 17.
INCMP	▶	1. Follow the construction of "Idle Air Volume Learning". 2. GO TO 16.

ST

RS

BT

HA

17	CHECK TARGET IDLE SPEED AGAIN	
(P) With CONSULT-II 1. Start engine and warm it up to normal operating temperature. 2. Select "ENG SPEED" in "DATA MONITOR" mode with CONSULT-II. 3. Check idle speed. 700±50 rpm (in "P" or "N" position)		
(X) Without CONSULT-II 1. Start engine and warm it up to normal operating temperature. 2. Check idle speed. 700±50 rpm (in "P" or "N" position)		
OK or NG		
OK	▶	GO TO 22.
NG	▶	GO TO 18.

SC

EL

IDX

TROUBLE DIAGNOSIS — SPECIFICATION VALUE

Description

Description

The specification (SP) value indicates the tolerance of the value that is displayed in “DATA MONITOR (SPEC)” mode of CONSULT-II during normal operation of the Engine Control System. When the value in “DATA MONITOR (SPEC)” mode is within the SP value, the Engine Control System is confirmed OK. When the value in “DATA MONITOR (SPEC)” mode is NOT within the SP value, the Engine Control System may have one or more malfunctions. NHEC0648

The SP value is used to detect malfunctions that may affect the Engine Control System, but will not light the MIL.

The SP value will be displayed for the following three items:

- B/FUEL SCHDL (The fuel injection pulse width programmed into ECM prior to any learned on board correction)
- A/F ALPHA-B1 (The mean value of air-fuel ratio feedback correction factor per cycle)
- MAS A/F SE-B1 (The signal voltage of the mass air flow sensor)

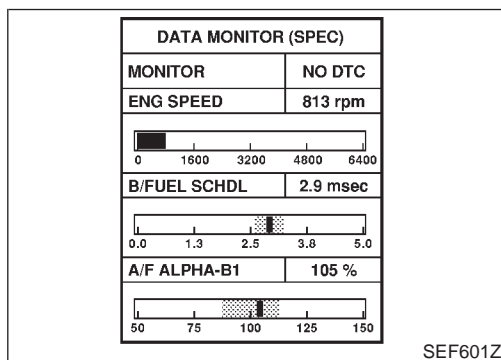
Testing Condition

- Vehicle driven distance: More than 5,000 km (3,017 miles)
- Barometric pressure: 98.3 - 104.3 kPa (1.003 - 1.064 kg/cm², 14.25 - 15.12 psi)
- Atmospheric temperature: 20 - 30°C (68 - 86°F)
- Engine coolant temperature: 75 - 95°C (167 - 203°F)
- Transmission: Warmed-up*1
- Electrical load: Not applied*2
- Engine speed: Idle

NHEC0649

*1: For A/T or CVT models, after the engine is warmed up to normal operating temperature, drive vehicle until “FLUID TEMP SE” (A/T or CVT fluid temperature sensor signal) indicates less than 0.9V. For M/T models, drive vehicle for 5 minutes after the engine is warmed up to normal operating temperature.

*2: Rear window defogger switch, air conditioner switch, lighting switch are “OFF”. Cooling fans are not operating. Steering wheel is straight ahead.



Inspection Procedure

NHEC0650

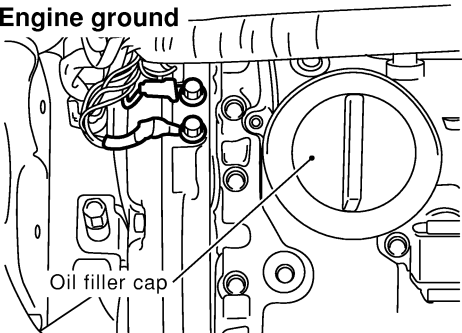
NOTE:

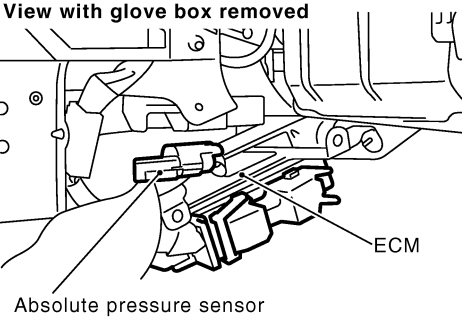
Perform “DATA MONITOR (SPEC)” mode in maximum scale display.

1. Perform “Basic Inspection”, EC-109.
2. Confirm that the testing conditions indicated above are met.
3. Select “B/FUEL SCHDL”, “A/F ALPHA-B1”, “A/F ALPHA-B2” and “MAS A/F SE-B1” in “DATA MONITOR (SPEC)” mode with CONSULT-II.
4. Make sure that monitor items are within the SP value.
5. If NG, go to “Diagnostic Procedure”, EC-141.

Diagnostic Procedure

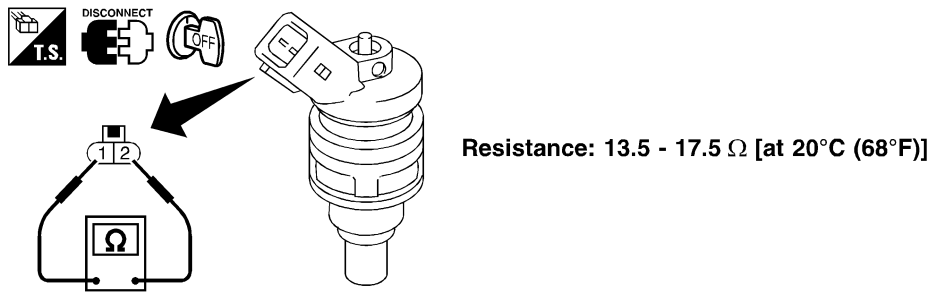
NHEC0063

1	RETIGHTEN GROUND SCREWS	<p>1. Turn ignition switch "OFF". 2. Loosen and retighten engine ground screws.</p> <div style="text-align: center;">  </div> <p style="text-align: right;">SEF255X</p>	<p>GI</p> <p>MA</p> <p>EM</p> <p>LC</p> <p>EC</p> <p>FE</p>
▶ GO TO 2.			

2	CHECK ABSOLUTE PRESSURE SENSOR CONNECTOR FOR WATER	<p>1. Disconnect absolute pressure sensor harness connector.</p> <div style="text-align: center;">  </div> <p style="text-align: right;">SEC004C</p> <p>2. Check sensor harness connector for water. Water should not exist.</p> <p style="text-align: center;">OK or NG</p>	<p>AT</p> <p>AX</p> <p>SU</p> <p>BR</p> <p>ST</p> <p>RS</p> <p>BT</p> <p>HA</p> <p>SC</p> <p>EL</p> <p>IDX</p>
▶ GO TO 3.			
▶ Repair or replace harness connector.			

DTC P0120 THROTTLE POSITION SENSOR

Diagnostic Procedure (Cont'd)

15	CHECK FUEL INJECTOR		
<p>1. Disconnect injector harness connector. 2. Check resistance between terminals as shown in the figure.</p>			
			
SEF964XA			
OK or NG			
OK	▶	GO TO 16.	
NG	▶	Replace fuel injector.	

16	CHECK THROTTLE POSITION SENSOR SHIELD CIRCUIT FOR OPEN AND SHORT		
<p>1. Turn ignition switch "OFF". 2. Disconnect joint connector-18 3. Check the following</p> <ul style="list-style-type: none"> ● Continuity between joint connector terminal 2 and ground ● Joint connector (Refer to EL-525, "HARNESS LAYOUT".) Continuity should exist. ● Also check harness for short to power. ● Then reconnect joint connector-18. 			
OK or NG			
OK	▶	GO TO 17.	
NG	▶	Repair open circuit or short to power in harness or connectors.	

17	CHECK INTERMITTENT INCIDENT		
Refer to "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT", EC-144.			
		▶	INSPECTION END

DTC P0131 (BANK 1), P0151 (BANK 2) HO2S1 (FRONT) (LEAN SHIFT MONITORING)

Diagnostic Procedure (Cont'd)

8	CHECK HO2S1 (FRONT) SHIELD CIRCUIT FOR OPEN AND SHORT	
	<p>1. Turn ignition switch "OFF".</p> <p>2. Disconnect joint connector-17 or joint connector-18.</p> <p>3. For circuit, refer to "Wiring Diagram", EC-192.</p> <p>4. Check the following.</p> <ul style="list-style-type: none"> ● Continuity between joint connector terminal 1 or 2 and ground ● Joint connector (Refer to EL-525, "HARNES LAYOUT".) <p style="margin-left: 20px;">Continuity should exist.</p> <p>5. Also check harness for short to power.</p> <p>6. Then reconnect joint connector-17 or joint connector-18.</p> <p style="text-align: center;">OK or NG</p>	
	OK	▶ GO TO 9.
	NG	▶ Repair open circuit or short to power in harness or connectors.
9	CHECK INTERMITTENT INCIDENT	
	<p>Refer to "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT", EC-144.</p> <p>For circuit, refer to "Wiring Diagram", EC-195.</p>	
	▶	INSPECTION END

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DTC P0134 (BANK 1), P0154 (BANK 2) HO2S1 (FRONT) (HIGH VOLTAGE)

Possible Cause

Possible Cause

NHEC0436

- Harness or connectors
(The sensor circuit is open or shorted.)
- Heated oxygen sensor1 (front)

5	DATA MONITOR	
	MONITOR	NO DTC
	ENG SPEED	XXX rpm
	COOLAN TEMP/S	XXX °C

SEF174Y

DTC Confirmation Procedure

NHEC0120

NOTE:

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

Ⓜ WITH CONSULT-II

NHEC0120S01

- 1) Start engine and warm it up to normal operating temperature.
- 2) Turn ignition switch "OFF" and wait at least 10 seconds.
- 3) Turn ignition switch "ON".
- 4) Select "DATA MONITOR" mode with CONSULT-II.
- 5) Restart engine and let it idle for 25 seconds.
- 6) If 1st trip DTC is detected, go to "Diagnostic Procedure", EC-235.

Ⓜ WITH GST

NHEC0120S02

- 1) Start engine and warm it up to normal operating temperature.
 - 2) Turn ignition switch "OFF" and wait at least 10 seconds.
 - 3) Restart engine and let it idle for 25 seconds.
 - 4) Turn ignition switch "OFF" and wait at least 10 seconds.
 - 5) Restart engine and let it idle for 25 seconds.
 - 6) Select "MODE 3" with GST.
 - 7) If DTC is detected, go to "Diagnostic Procedure", EC-235.
- **When using GST, "DTC Confirmation Procedure" should be performed twice as much as when using CONSULT-II because GST cannot display MODE 7 (1st trip DTC) concerning this diagnosis. Therefore, using CONSULT-II is recommended.**

DTC P0137 (BANK 1), P0157 (BANK 2) HO2S2 (REAR) (MIN. VOLTAGE MONITORING)

Diagnostic Procedure (Cont'd)

9	CHECK HO2S2 (REAR) SHIELD CIRCUIT FOR OPEN AND SHORT	
	<p>1. Turn ignition switch "OFF".</p> <p>2. Disconnect joint connector-17.</p> <p>3. Check the following.</p> <ul style="list-style-type: none"> ● Continuity between joint connector terminal 1 and ground ● Joint connector (Refer to EL-525, "HARNES LAYOUT".) <p style="margin-left: 20px;">Continuity should exist.</p> <p>4. Also check harness for short to power.</p> <p>5. Then reconnect joint connector-17.</p> <p style="text-align: center;">OK or NG</p>	
OK	▶	GO TO 10.
NG	▶	Repair open circuit or short to power in harness or connectors.

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10	CHECK INTERMITTENT INCIDENT	
	Refer to "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT", EC-144.	
	▶	INSPECTION END

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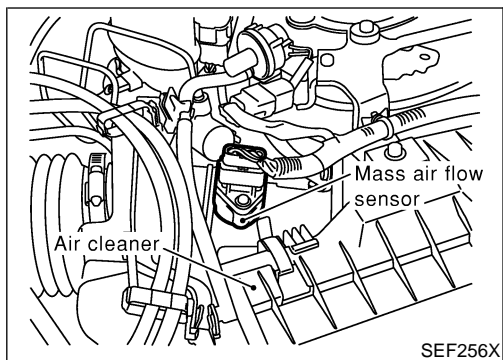
DTC P0140 (BANK 1), P0160 (BANK 2) HO2S2 (REAR) (HIGH VOLTAGE)

Overall Function Check (Cont'd)

- 4) Check the voltage when racing up to 4,000 rpm under no load at least 10 times.
(Depress and release accelerator pedal as soon as possible.)
The voltage should be below 2V during this procedure.
- 5) If NG, go to "Diagnostic Procedure", EC-281.

DTC P0172 (BANK 1), P0175 (BANK 2) FUEL INJECTION SYSTEM FUNCTION (RICH)

DTC Confirmation Procedure (Cont'd)



WITH GST

NHEC0174S02

- 1) Start engine and warm it up to normal operating temperature.
- 2) Turn ignition switch "OFF" and wait at least 10 seconds.
- 3) Disconnect mass air flow sensor harness connector. Then restart and run engine for at least 5 seconds at idle speed.
- 4) Stop engine and reconnect mass air flow sensor harness connector.
- 5) Select "MODE 7" with GST. Make sure 1st trip DTC P0100 is detected.
- 6) Select "MODE 4" with GST and erase the 1st trip DTC P0100.
- 7) Start engine again and let it idle for at least 10 minutes.
- 8) Select "MODE 7" with GST. The 1st trip DTC P0172 or P0175 should be detected at this stage, if a malfunction exists. If so, go to "Diagnostic Procedure", EC-304.
- 9) If it is difficult to start engine at step 7, the fuel injection system has a malfunction.
- 10) Crank engine while depressing accelerator pedal. If engine starts, go to "Diagnostic Procedure", EC-304. If engine does not start, check exhaust and intake air leak visually.

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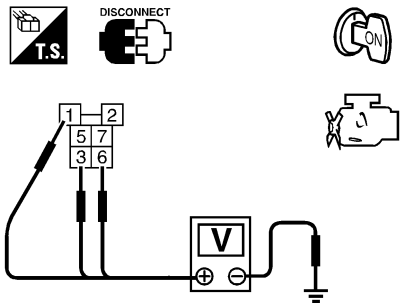
IDX

DTC P0217 COOLANT OVERTEMPERATURE ENRICHMENT PROTECTION

Diagnostic Procedure (Cont'd)

PROCEDURE A

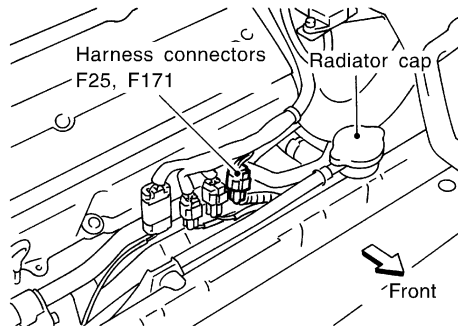
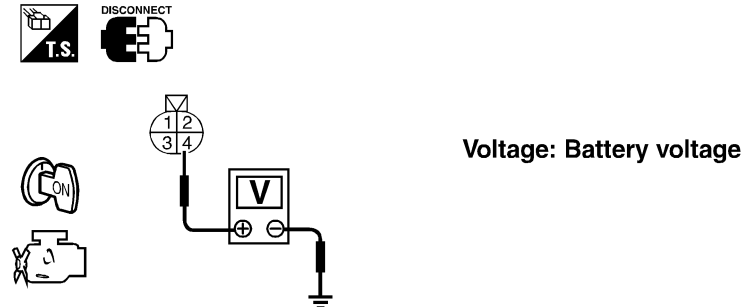
=NHEC0614S01

1	CHECK COOLING FAN POWER SUPPLY CIRCUIT
<p>1. Turn ignition switch "OFF". 2. Disconnect cooling fan relay-1. 3. Turn ignition switch "ON". 4. Check voltage between cooling fan relay-1 terminals 1, 3, 6 and ground with CONSULT-II or tester.</p>	
 <p>Voltage: Battery voltage</p> <p>SEF590X</p>	
OK or NG	
OK	▶ GO TO 3.
NG	▶ GO TO 2.

2	DETECT MALFUNCTIONING PART
<p>Check the following.</p> <ul style="list-style-type: none">● Joint connector-8● Joint connector-9● 15A fuse● 40A fusible links● Harness for open or short between cooling fan relay-1 and fuse● Harness for open or short between cooling fan relay-1 and battery	
	▶ Repair open circuit or short to ground or short to power in harness or connectors.

DTC P0335 CRANKSHAFT POSITION SENSOR (CKPS) (POS)

Diagnostic Procedure (Cont'd)

2	CHECK CKPS (POS) POWER SUPPLY CIRCUIT	<p>1. Disconnect harness connectors F25, F171.</p> <div style="text-align: center;">  </div> <p>2. Check voltage between harness connector F25 terminal 4 and ground with CONSULT-II or tester.</p> <div style="text-align: center;">  </div> <p>3. Also check harness for short to ground and short to power.</p> <p style="text-align: center;">OK or NG</p>	<p>SEF511WB</p> <p>SEF323X</p>
OK	▶	GO TO 4.	
NG	▶	GO TO 3.	

3	DETECT MALFUNCTIONING PART	<p>Check the following.</p> <ul style="list-style-type: none"> ● Harness connectors F25, F171 ● Harness connectors E15, F18 ● Harness for open or short between ECM and crankshaft position sensor (POS) ● Harness for open or short between ECM relay and crankshaft position sensor (POS) <p style="text-align: right;">▶ Repair open circuit or short to ground or short to power in harness or connectors.</p>	
----------	-----------------------------------	--	--

4	CHECK CKPS (POS) GROUND CIRCUIT FOR OPEN AND SHORT	<p>1. Check harness continuity between harness connector F25 terminal 2 and engine ground. Refer to Wiring Diagram. Continuity should exist.</p> <p>2. Also check harness for short to power.</p> <p style="text-align: center;">OK or NG</p>	
OK	▶	GO TO 5.	
NG	▶	Repair open circuit or short to power in harness or connectors.	


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DTC P0440 EVAP CONTROL SYSTEM (SMALL LEAK) (NEGATIVE PRESSURE)

Diagnostic Procedure (Cont'd)

11	CHECK EVAP CANISTER	
Weigh the EVAP canister with the EVAP canister vent control valve attached. The weight should be less than 1.8 kg (4.0 lb).		
OK or NG		
OK (With CONSULT-II)	▶	GO TO 13.
OK (Without CONSULT-II)	▶	GO TO 14.
NG	▶	GO TO 12.

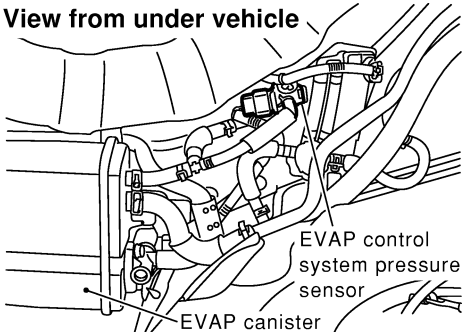
12	DETECT MALFUNCTIONING PART	
Check the following.		
<ul style="list-style-type: none"> ● EVAP canister for damage ● EVAP hose between EVAP canister and water separator for clogging or poor connection 		
	▶	Repair hose or replace EVAP canister.

13	CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION																					
<p> With CONSULT-II</p> <ol style="list-style-type: none"> 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 100.0%. 5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm. 																						
<table border="1" style="margin: auto;"> <tr> <th colspan="2">ACTIVE TEST</th> </tr> <tr> <td>PURG VOL CONT/V</td> <td>XXX %</td> </tr> <tr> <th colspan="2">MONITOR</th> </tr> <tr> <td>ENG SPEED</td> <td>XXX rpm</td> </tr> <tr> <td>A/F ALPHA-B1</td> <td>XXX %</td> </tr> <tr> <td>A/F ALPHA-B2</td> <td>XXX %</td> </tr> <tr> <td>HO2S1 MNTR (B1)</td> <td>LEAN</td> </tr> <tr> <td>HO2S1 MNTR (B2)</td> <td>LEAN</td> </tr> <tr> <td>THRTL POS SEN</td> <td>XXX V</td> </tr> <tr> <td> </td> <td> </td> </tr> </table>		ACTIVE TEST		PURG VOL CONT/V	XXX %	MONITOR		ENG SPEED	XXX rpm	A/F ALPHA-B1	XXX %	A/F ALPHA-B2	XXX %	HO2S1 MNTR (B1)	LEAN	HO2S1 MNTR (B2)	LEAN	THRTL POS SEN	XXX V			Vacuum should exist.
ACTIVE TEST																						
PURG VOL CONT/V	XXX %																					
MONITOR																						
ENG SPEED	XXX rpm																					
A/F ALPHA-B1	XXX %																					
A/F ALPHA-B2	XXX %																					
HO2S1 MNTR (B1)	LEAN																					
HO2S1 MNTR (B2)	LEAN																					
THRTL POS SEN	XXX V																					
SEF984Y																						
OK or NG																						
OK	▶	GO TO 16.																				
NG	▶	GO TO 15.																				

14	CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION	
<p> Without CONSULT-II</p> <ol style="list-style-type: none"> 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 17.
NG	▶	GO TO 15.

Diagnostic Procedure

NHEC0241

1	CHECK RUBBER TUBE		
<p>1. Turn ignition switch "OFF". 2. Check rubber tube connected to the EVAP control system pressure sensor for clogging, vent, kink, disconnection or improper connection.</p>			
<p>View from under vehicle</p> 			
SEF268X			
OK or NG			
OK	▶	GO TO 2.	
NG	▶	Reconnect, repair or replace.	

GI

MA

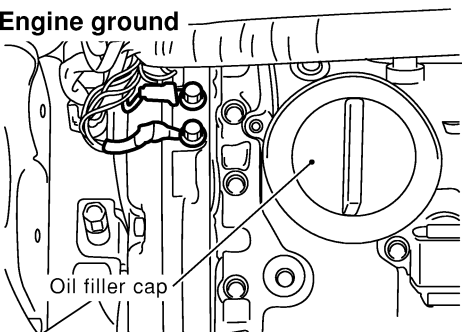
EM

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2	RETIGHTEN GROUND SCREWS		
<p>Loosen and retighten engine ground screws.</p>			
<p>Engine ground</p> 			
SEF255X			
▶		GO TO 3.	

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3	CHECK CONNECTOR		
<p>1. Disconnect EVAP control system pressure sensor harness connector. 2. Check sensor harness connector for water. Water should not exist.</p>			
OK or NG			
OK	▶	GO TO 4.	
NG	▶	Repair or replace harness connector.	

HA

SC

EL

IDX

DTC P0510 CLOSED THROTTLE POSITION SWITCH

DTC Confirmation Procedure

NHEC0260

4	DATA MONITOR	
	MONITOR	NO DTC
	ENG SPEED	XXX rpm
	COOLAN TEMP/S	XXX °C
	CLSD THL/P SW	ON

SEF197Y

6	DATA MONITOR	
	MONITOR	NO DTC
	COOLAN TEMP/S	XXX °C
	VHCL SPEED SE	XXX km/h
	THRTL POS SEN	XXX V

SEF198Y

DTC Confirmation Procedure

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

WITH CONSULT-II

NHEC0260S01

- 1) Start engine and warm it up to normal operating temperature.
- 2) Turn ignition switch "OFF", wait at least 10 seconds and then start engine.
- 3) Select "CLSD THL/P SW" in "DATA MONITOR" mode. If "CLSD THL/P SW" is not available, go to step 5.
- 4) Check the signal under the following conditions.

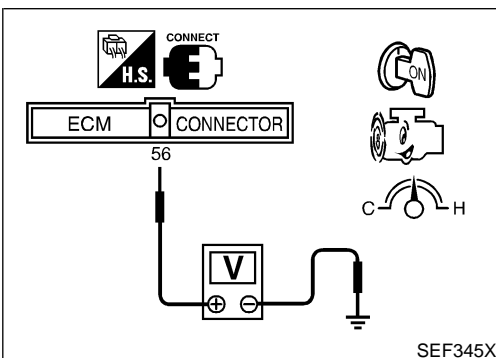
Condition	Signal indication
Throttle valve: Idle position	ON
Throttle valve: Slightly open	OFF

If the result is NG, go to "Diagnostic Procedure", EC-442.
If OK, go to following step.

- 5) Select "DATA MONITOR" mode with CONSULT-II.
- 6) Drive the vehicle for at least 5 consecutive seconds under the following condition.

THRTL POS SEN	More than 2.5V
VHCL SPEED SE	More than 4 km/h (2 MPH)
Selector lever	Suitable position
Driving location	Driving vehicle uphill (Increased engine load) will help maintain the driving conditions required for this test.

- 7) If 1st trip DTC is detected, go to "Diagnostic Procedure", EC-442.



Overall Function Check

NHEC0261

Use this procedure to check the overall function of the closed throttle position switch circuit. During this check, a 1st trip DTC might not be confirmed.

WITH GST

NHEC0261S01

- 1) Start engine and warm it up to normal operating temperature.
- 2) Check the voltage between ECM terminal 56 (Closed throttle position switch signal) and ground under the following conditions.

At idle: Battery voltage

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HA

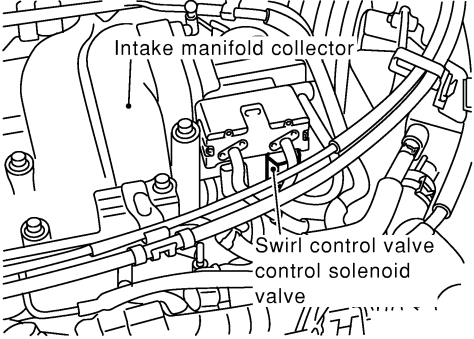
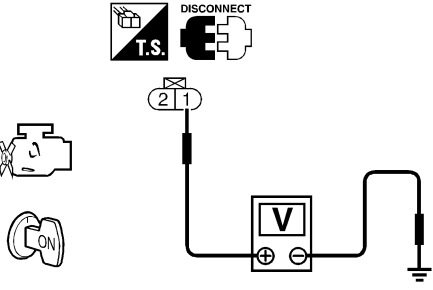
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IDX

DTC P1130 SWIRL CONTROL VALVE CONTROL SOLENOID VALVE

Diagnostic Procedure (Cont'd)

3	CHECK SWIRL CONTROL VALVE CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT
<p>1. Turn ignition switch "OFF". 2. Disconnect swirl control valve control solenoid valve harness connector.</p> <div style="text-align: center;">  <p>Intake manifold collector Swirl control valve control solenoid valve</p> </div> <p style="text-align: right;">SEF272X</p> <p>3. Turn ignition switch "ON". 4. Check voltage between swirl control valve control solenoid valve terminal 1 and ground with CONSULT-II or tester.</p> <div style="text-align: center;">  <p>Voltage: Battery voltage</p> <p>OK or NG</p> </div> <p style="text-align: right;">SEF619X</p>	
OK	▶ GO TO 5.
NG	▶ GO TO 4.

4	DETECT MALFUNCTIONING PART
<p>Check the following.</p> <ul style="list-style-type: none"> ● Harness connectors M46, F44 ● 15A fuse ● Harness for open or short between swirl control valve control solenoid valve and fuse 	
▶	Repair harness or connectors.

5	CHECK SWIRL CONTROL VALVE CONTROL SOLENOID VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT
<p>1. Turn ignition switch "OFF". 2. Disconnect ECM harness connector. 3. Check harness continuity between ECM terminal 29 and swirl control valve control solenoid valve terminal 2. Refer to Wiring Diagram. Continuity should exist. 4. Also check harness for short to ground and short to power.</p> <p style="text-align: center;">OK or NG</p>	
OK	▶ GO TO 6.
NG	▶ Repair open circuit, short to ground or short to power in harness connectors.

DTC P1211 ABS/TCS CONTROL UNIT

DTC Confirmation Procedure (Cont'd)

- 2) Select "DATA MONITOR" mode with CONSULT-II.
- 3) Start engine and let it idle for at least 3 seconds.
- 4) If 1st trip DTC is detected, go to "Diagnostic Procedure", EC-485.

GI

MA

EM

Overall Function Check

Use this procedure to check the overall function of ABS/TCS control unit. During this check, a DTC might not be confirmed.

NHEC0545

LC

PROCEDURE FOR MALFUNCTION B

NHEC0545S01

- 1) Lift up driving wheels.
- 2) Start engine and warm it up to normal operating temperature.
- 3) Place TCS OFF switch in "ON" position.
- 4) Drive vehicle with "D" position (OD "ON" or "OFF") and check engine running conditions as follows.

EC

FE

AT

Engine speed ("D" position)	Engine running condition
Idle	Normal
More than 1,600 rpm	Rough

AX

SU

- 5) If NG, go to "Diagnostic Procedure", EC-485.

BR

ST

Diagnostic Procedure

If the trouble is duplicated after "Procedure for malfunction A", perform "Procedure A". If the trouble is duplicated after "Procedure for malfunction B", perform "Procedure B".

NHEC0546

RS

BT

PROCEDURE A

Go to "SELF-DIAGNOSIS PROCEDURE" of "TROUBLE DIAGNOSES" in BR section.

NHEC0546S01

HA

PROCEDURE B

NHEC0546S02

SC

1	CHECK DRIVING CONDITION	
Ask a customer if he or she has driven the vehicle under abnormal condition such as: <ul style="list-style-type: none"> ● driving with front wheels slipping for a long time. ● driving with front wheels lifted up for a long time. 		
Yes or No		
Yes	▶	INSPECTION END (NO FAILURE)
No	▶	Go to BR-154, "Poor Acceleration".

EL

IDX

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CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

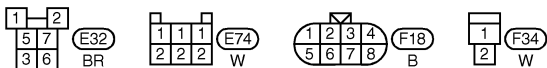
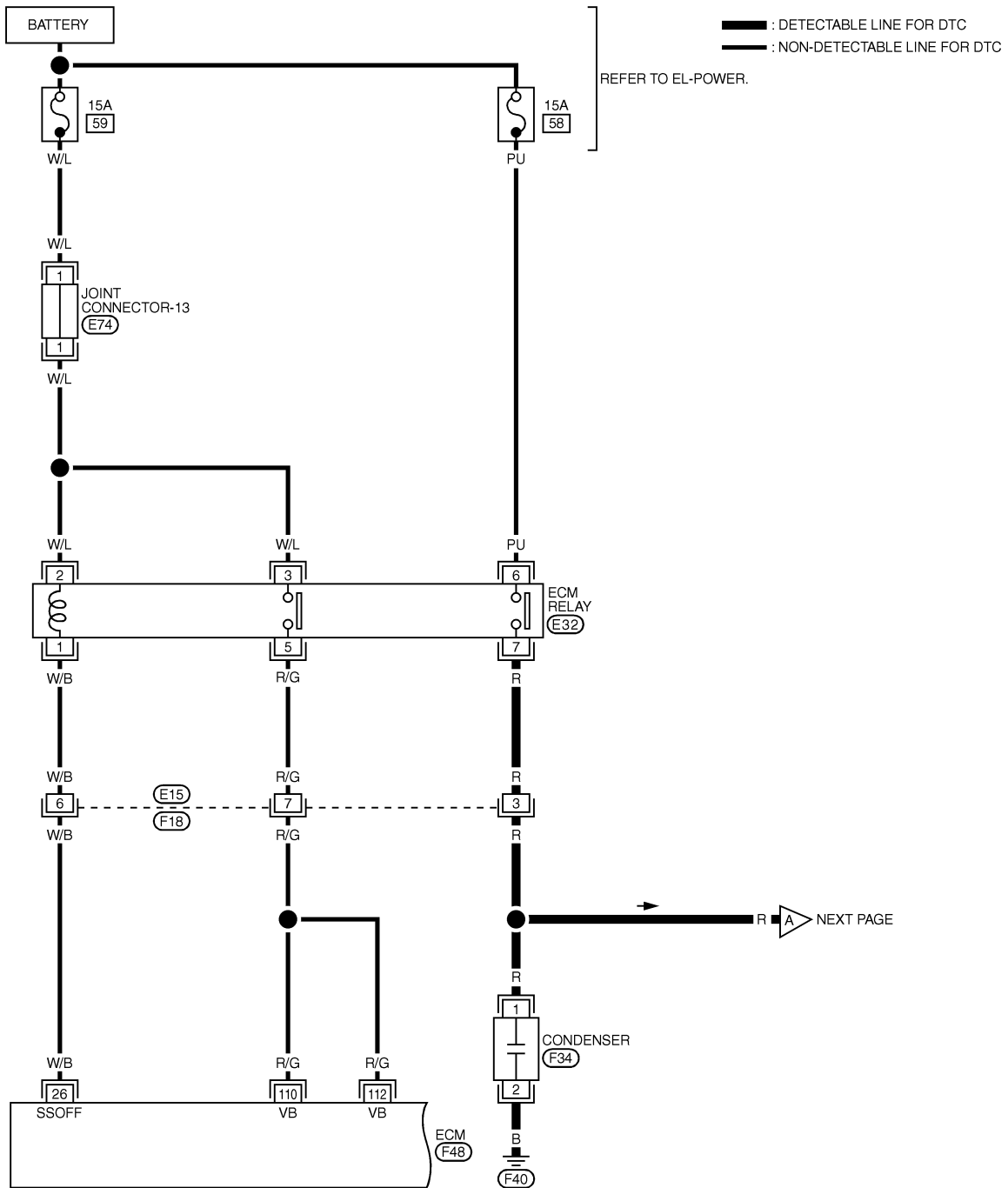
DTC P1320 IGNITION SIGNAL

Wiring Diagram

Wiring Diagram

NHEC0290

EC-IGN/SG-01



101	102	1	2	3	4	5	6	7	8	9	10							58	59	60	61	62	63	64	65	66	67	109	110				
103	104	11	12	13	14	15	16	17	18	19		39	40	41	42	43	44	45	46	47	48	68	69	70	71	72	73	74	75	76	111	112	
105	106	20	21	22	23	24	25	26	27	28	29	49	50	51	52	53	54	55	56	57		77	78	79	80	81	82	83	84	85	86	113	114
107	108	30	31	32	33	34	35	36	37	38												87	88	89	90	91	92	93	94	95	115	116	



On Board Diagnosis Logic

NHEC0316

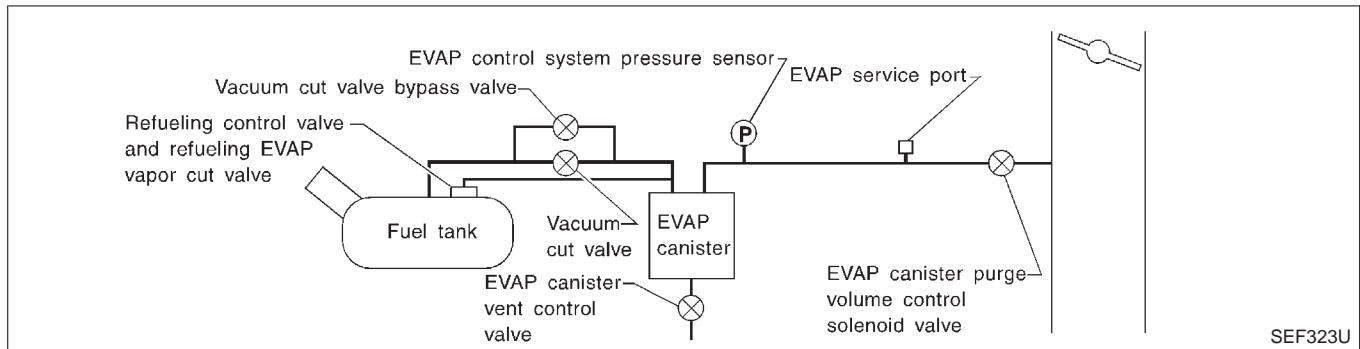
NOTE:

If DTC P1440 is displayed with P1448, perform trouble diagnosis for DTC P1448 first. (See EC-564.)

This diagnosis detects leaks in the EVAP purge line using of vapor pressure in the fuel tank.

The EVAP canister vent control valve is closed to shut the EVAP purge line. The vacuum cut valve bypass valve will then be opened to clear the line between the fuel tank and the EVAP canister purge volume control solenoid valve. The EVAP control system pressure sensor can now monitor the pressure inside the fuel tank.

If pressure increases, the ECM will check for leaks in the line between the vacuum cut valve and EVAP canister purge volume control solenoid valve.



Malfunction is detected when EVAP control system has a leak, EVAP control system does not operate properly.

CAUTION:

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

Possible Cause

NHEC0587

- Incorrect fuel tank vacuum relief valve
- Incorrect fuel filler cap used
- Fuel filler cap remains open or fails to close.
- Foreign matter caught in fuel filler cap.
- Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve.
- Foreign matter caught in EVAP canister vent control valve.
- EVAP canister or fuel tank leaks
- EVAP purge line (pipe and rubber tube) leaks

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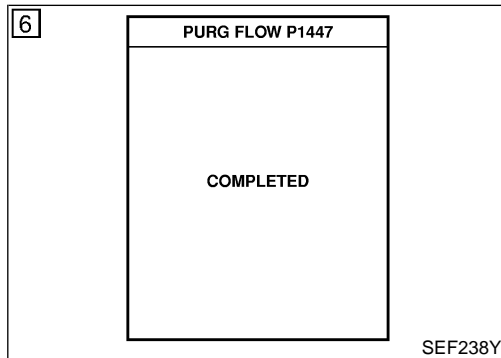
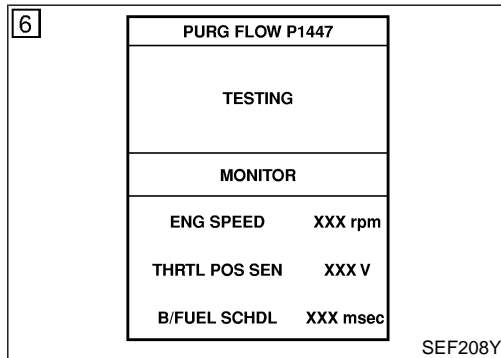
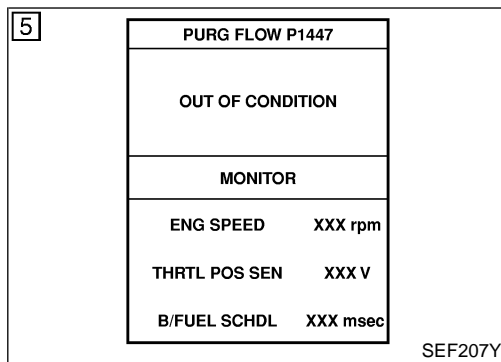
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IDX

DTC P1447 EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM PURGE FLOW MONITORING

DTC Confirmation Procedure



DTC Confirmation Procedure

NHEC0335

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

TESTING CONDITION:

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

WITH CONSULT-II

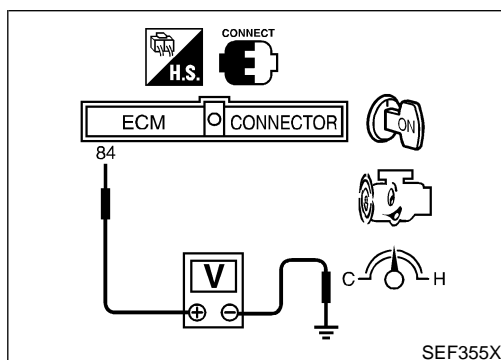
NHEC0335S01

- 1) Start engine and warm it up to normal operating temperature.
- 2) Turn ignition switch "OFF" and wait at least 10 seconds.
- 3) Start engine and let it idle for at least 70 seconds.
- 4) Select "PURG FLOW P1447" of "EVAPORATIVE SYSTEM" in "DTC CONFIRMATION" mode with CONSULT-II.
- 5) Touch "START".
If "COMPLETED" is displayed, go to step 7.
- 6) When the following conditions are met, "TESTING" will be displayed on the CONSULT-II screen. Maintain the conditions continuously until "TESTING" changes to "COMPLETED". (It will take at least 35 seconds.)

Selector lever	Suitable position
Vehicle speed	32 - 120 km/h (20 - 75 MPH)
ENG SPEED	500 - 3,000 rpm
B/FUEL SCHDL	1.3 - 8.1 msec
Engine coolant temperature	70 - 100°C (158 - 212°F)

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

- 7) Make sure that "OK" is displayed after touching "SELF-DIAG RESULTS". If "NG" is displayed, refer to "Diagnostic Procedure", EC-556.



Overall Function Check

NHEC0336

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

WITH GST

NHEC0336S01

- 1) Lift up drive wheels.
- 2) Start engine (TCS switch "OFF") and warm it up to normal operating temperature.
- 3) Turn ignition switch "OFF", wait at least 10 seconds.
- 4) Start engine and wait at least 70 seconds.

DTC P1490 VACUUM CUT VALVE BYPASS VALVE (CIRCUIT)

Possible Cause

Possible Cause

NHEC0592

- Harness or connectors
(The vacuum cut valve bypass valve circuit is open or shorted.)
- Vacuum cut valve bypass valve

GI

MA

EM

DTC Confirmation Procedure

NHEC0350

NOTE:

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

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle speed.

LC

EC

FE

AT

3	DATA MONITOR	
	MONITOR	NO DTC
	ENG SPEED	XXX rpm

SEF058Y

WITH CONSULT-II

NHEC0350S01

- 1) Turn ignition switch "ON".
- 2) Select "DATA MONITOR" mode with CONSULT-II.
- 3) Start engine and wait at least 5 seconds.
- 4) If 1st trip DTC is detected, go to "Diagnostic Procedure", EC-579.

AX

SU

BR

WITH GST

NHEC0350S02

Follow the procedure "WITH CONSULT-II" above.

ST

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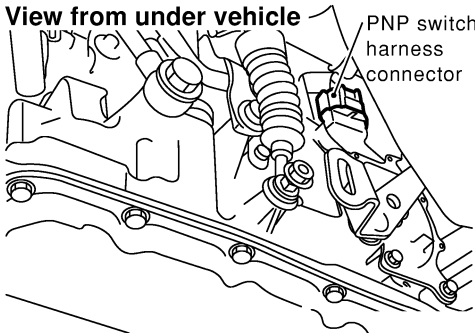
IDX

DTC P1706 PARK/NEUTRAL POSITION (PNP) SWITCH

Diagnostic Procedure

Diagnostic Procedure

NHEC0374

1	CHECK PNP SWITCH GROUND CIRCUIT FOR OPEN AND SHORT	
<p>1. Turn ignition switch "OFF". 2. Disconnect park/neutral position (PNP) switch harness connector.</p> <div style="text-align: center;">  <p>View from under vehicle</p> <p>PNP switch harness connector</p> </div>		
<p>3. Check harness continuity between PNP switch terminal 2 and engine ground. Refer to Wiring Diagram. Continuity should exist.</p> <p>4. Also check harness for short to power.</p> <p style="text-align: center;">OK or NG</p>		
OK	▶	GO TO 3.
NG	▶	GO TO 2.

SEF279X

2	DETECT MALFUNCTIONING PART	
<p>Check the following.</p> <ul style="list-style-type: none"> ● Harness connectors F10, F151 ● Harness for open or short between park/neutral position (PNP) switch and engine ground 		
		▶ Repair open circuit or short to power in harness or connectors.

3	CHECK PNP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT	
<p>1. Disconnect ECM harness connector. 2. Check harness continuity between ECM terminal 44 and PNP switch terminal 1. Refer to Wiring Diagram. Continuity should exist.</p> <p>3. Also check harness for short to ground and short to power.</p> <p style="text-align: center;">OK or NG</p>		
OK	▶	GO TO 5.
NG	▶	GO TO 4.

4	DETECT MALFUNCTIONING PART	
<p>Check the following.</p> <ul style="list-style-type: none"> ● Harness connectors F10, F151 ● Harness for open or short between ECM and park/neutral position (PNP) switch 		
		▶ Repair open circuit or short to ground or short to power in harness or connectors.

5	CHECK PARK/NEUTRAL POSITION (PNP) SWITCH	
<p>Refer to AT-105, "Diagnostic Procedure".</p> <p style="text-align: center;">OK or NG</p>		
OK	▶	GO TO 6.
NG	▶	Replace park/neutral position (PNP) switch.

FUEL PUMP

Diagnostic Procedure (Cont'd)

10	CHECK INTERMITTENT INCIDENT
Refer to "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT", EC-144.	
▶	INSPECTION END

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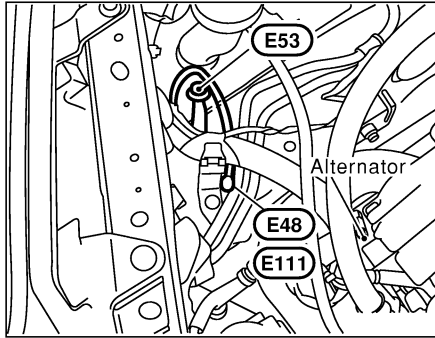
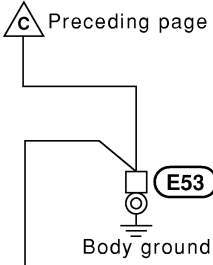
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NOTES

GROUND

Ground Distribution (Cont'd)



CON-NECTOR NUMBER	CONNECT TO
E1	Brake fluid level switch
E26	Hood switch
E42	Washer level switch
E43	Cooling fan motor-2
E44	Front fog lamp RH
E45	Front turn signal lamp RH
E49	Front side marker lamp RH
E59	Daytime light control unit (For Canada)
E69	Door mirror defogger relay
E97	Combination switch (Lighting switch)
E107	Headlamp LH (Without xenon headlamp)
E113	Headlamp RH (With xenon headlamp)
E115	Parking lamp RH
E117	Cornering lamp RH
E126	Cornering lamp relay

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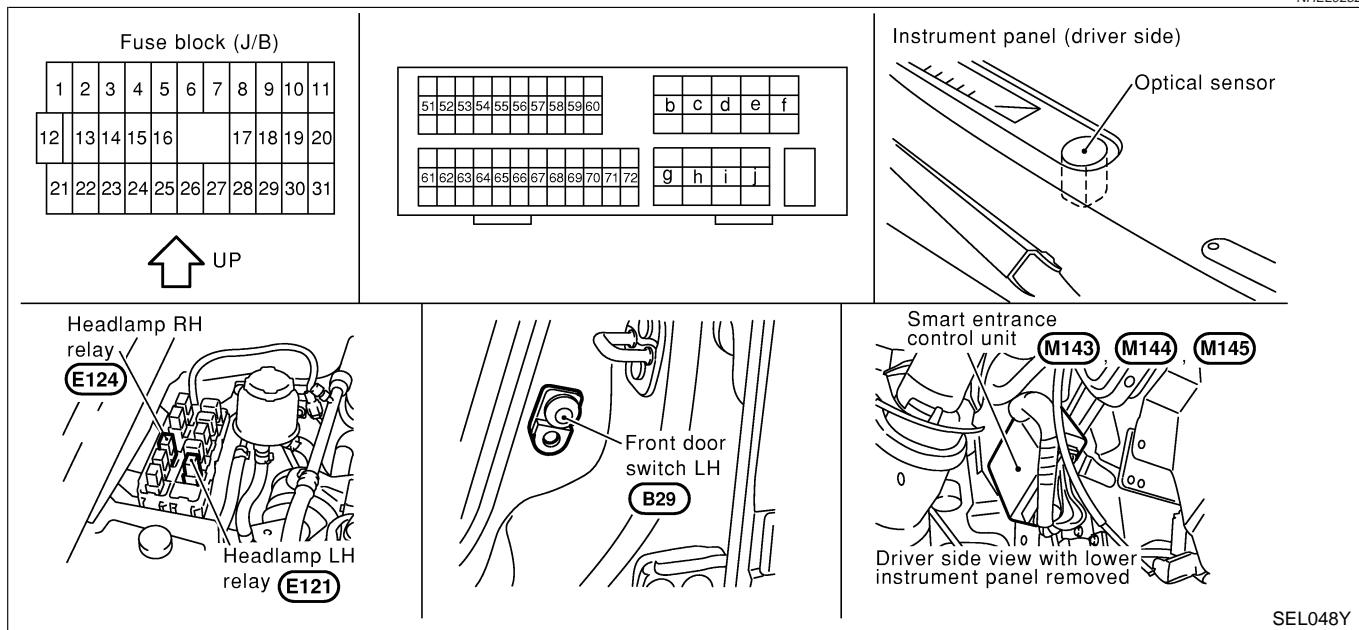
MEL788M

HEADLAMP (FOR USA) — XENON TYPE —

Component Parts and Harness Connector Location

Component Parts and Harness Connector Location

NHEL0252



SEL048Y

System Description

NHEL0253

The headlamp operation is controlled by the lighting switch which is built into the combination switch and smart entrance control unit. And the headlamp battery saver system is controlled by the smart entrance control unit.

OUTLINE

NHEL0253S01

Power is supplied at all times

- to headlamp LH relay terminals 1 and 6
- through 20A fuse (No. 54, located in the fuse and fusible link box), and
- to headlamp LH relay terminal 3
- through 15A fuse (No. 68, located in the fuse and fusible link box), and
- to headlamp RH relay terminals 1 and 6
- through 20A fuse (No. 55, located in the fuse and fusible link box), and
- to headlamp RH relay terminal 3
- through 15A fuse (No. 69, located in the fuse and fusible link box), and
- to smart entrance control unit terminal 49
- through 10A fuse [No. 13, located in the fuse block (J/B)].

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

- to smart entrance control unit terminal 27
- through 10A fuse [No. 10, located in the fuse block (J/B)].

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

- to smart entrance control unit terminal 26
- through 10A fuse [No. 1, located in the fuse block (J/B)].

Ground is supplied

- to smart entrance control unit terminals 43 and 64
- through body grounds M9, M25 and M87.

Power Supply to Low Beam and High Beam

NHEL0253S0101

When lighting switch is in 2ND or PASS position, ground is supplied

- to headlamp LH relay terminal 2 from smart entrance control unit terminal 21
- through smart entrance control unit terminal 22,
- from lighting switch terminal 12, and
- to headlamp RH relay terminal 2 from smart entrance control unit terminal 59




HEADLAMP (FOR CANADA) — CONVENTIONAL TYPE —

Trouble Diagnoses (Cont'd)

Symptom	Possible cause	Repair order	
RH high beam does not operate, but RH low beam does operate.	<ol style="list-style-type: none"> 1. Bulb 2. Headlamp RH relay 3. Headlamp RH relay circuit 4. Headlamp RH high beams circuit 5. Lighting switch 6. Lighting switch circuit 7. Daytime control unit 	<ol style="list-style-type: none"> 1. Check bulb. 2. Check headlamp RH relay. 3. Check harness between headlamp RH relay and daytime light control unit. 4. Check harness between daytime light control unit and headlamp RH. 5. Check lighting switch. 6. Check harness between daytime light control unit and lighting switch. 7. Check daytime control unit. (EL-69) 	GI MA EM
RH low beam does not operate, but RH high beam does operate.	<ol style="list-style-type: none"> 1. Bulb 2. Headlamp RH relay 3. Headlamp RH relay circuit 4. Open in RH low beams circuit 	<ol style="list-style-type: none"> 1. Check bulb. 2. Check headlamp RH relay. 3. Check harness between headlamp RH relay and headlamp RH. 4. Check harness between headlamp RH terminal 4 and ground. 	LC EC
High beam indicator does not work.	<ol style="list-style-type: none"> 1. Bulb 2. Open in high beam circuit 	<ol style="list-style-type: none"> 1. Check bulb in combination meter. 2. Check the following. <ol style="list-style-type: none"> a. Harness between daytime light control unit and combination meter for an open circuit b. Harness between combination meter and combination switch for an open circuit 	FE AT
Battery saver control does not operate properly.	<ol style="list-style-type: none"> 1. Door switch LH or RH circuit 2. Smart entrance control unit 	<ol style="list-style-type: none"> 1. Check the following. <ol style="list-style-type: none"> a. Harness between smart entrance control unit and LH or RH door switch for open or short circuit b. LH or RH door switch ground circuit c. LH or RH door switch 2. Check smart entrance control unit. (EL-406) 	AX SU
Daytime light control does not operate properly.	<ol style="list-style-type: none"> 1. Bulb 2. Fuse check 3. Parking brake switch 4. Parking brake switch circuit 5. Daytime control unit 	<ol style="list-style-type: none"> 1. Check bulb. 2. Check the following. <ol style="list-style-type: none"> a. 10A fuse [No. 28, located in fuse block (J/B)]. Verify battery positive voltage is present at terminal 3 of daytime light control unit. b. 10A fuse [No. 21, located in fuse block (J/B)]. Verify battery positive voltage is present at terminal 2 of daytime light control unit. 3. Check parking brake switch. 4. Check harness between parking brake switch and daytime light control unit. 5. Check daytime light control unit. (EL-69) 	BR ST RS BT

DAYTIME LIGHT CONTROL UNIT INSPECTION TABLE

NHEL0206S01

Terminal No.	Wire color	Item	Condition	Voltage (Approximate values)	
1	BR	Alternator	 When turning ignition switch to "ON"	Less than 1V	EL
			 When engine is running	Battery voltage	IDX
			 When turning ignition switch to "OFF"	Less than 1V	

STOP LAMP

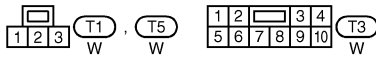
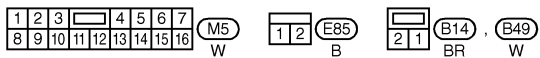
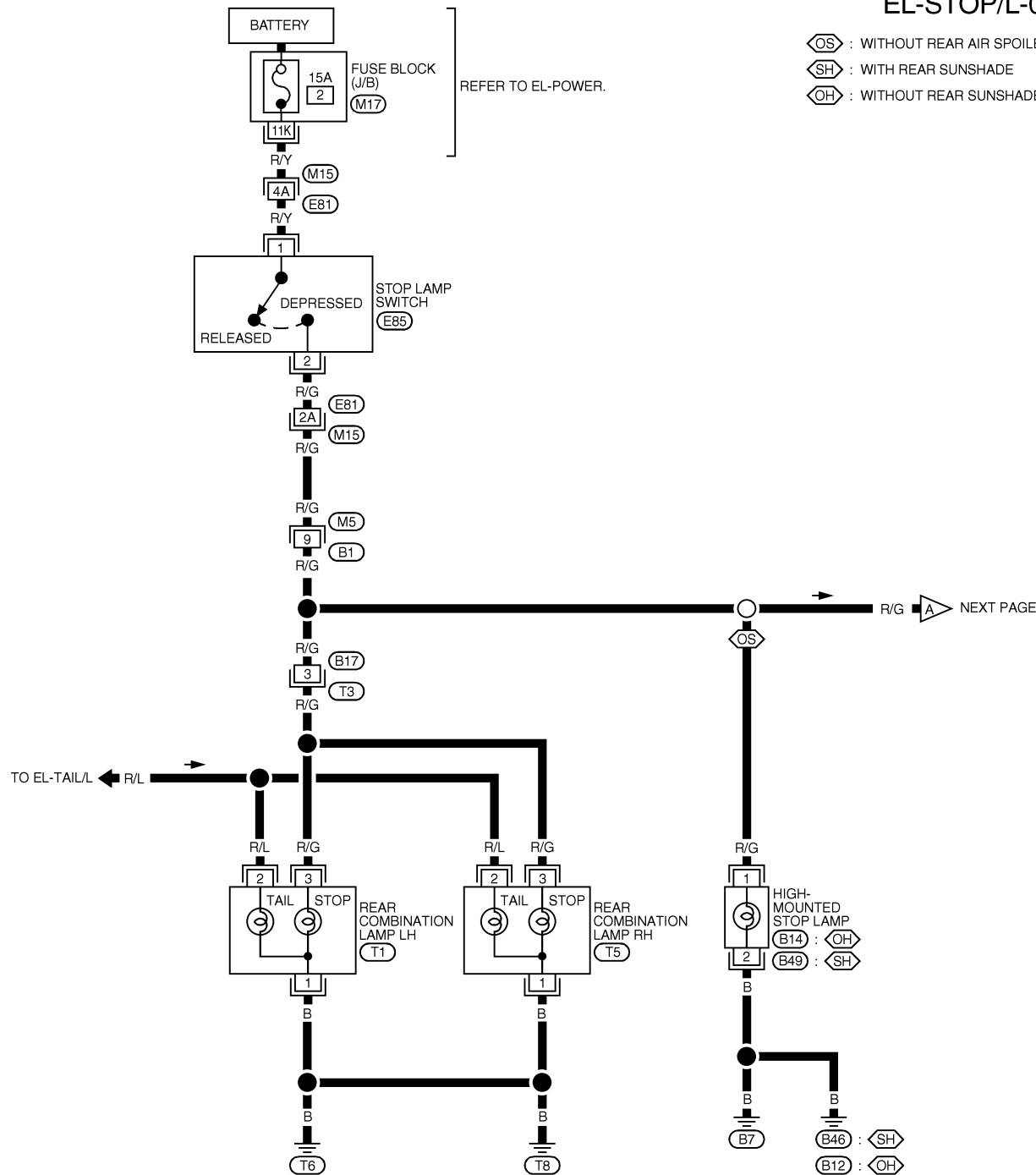
Wiring Diagram — STOP/L —

Wiring Diagram — STOP/L —

NHEL0025

EL-STOP/L-01

- ⊖ OS : WITHOUT REAR AIR SPOILER
- ⊖ SH : WITH REAR SUNSHADE
- ⊖ OH : WITHOUT REAR SUNSHADE



REFER TO THE FOLLOWING.
 (M15) -SUPER
 MULTIPLE JUNCTION (SMJ)
 (M17) -FUSE BLOCK-
 JUNCTION BOX (J/B)

MEL408M

ILLUMINATION

Wiring Diagram — ILL —

Wiring Diagram — ILL —

NHEL0037

EL-ILL-01

⊠RS : WITH REAR SUNSHADE
 ⊠OR : WITHOUT REAR SUNSHADE

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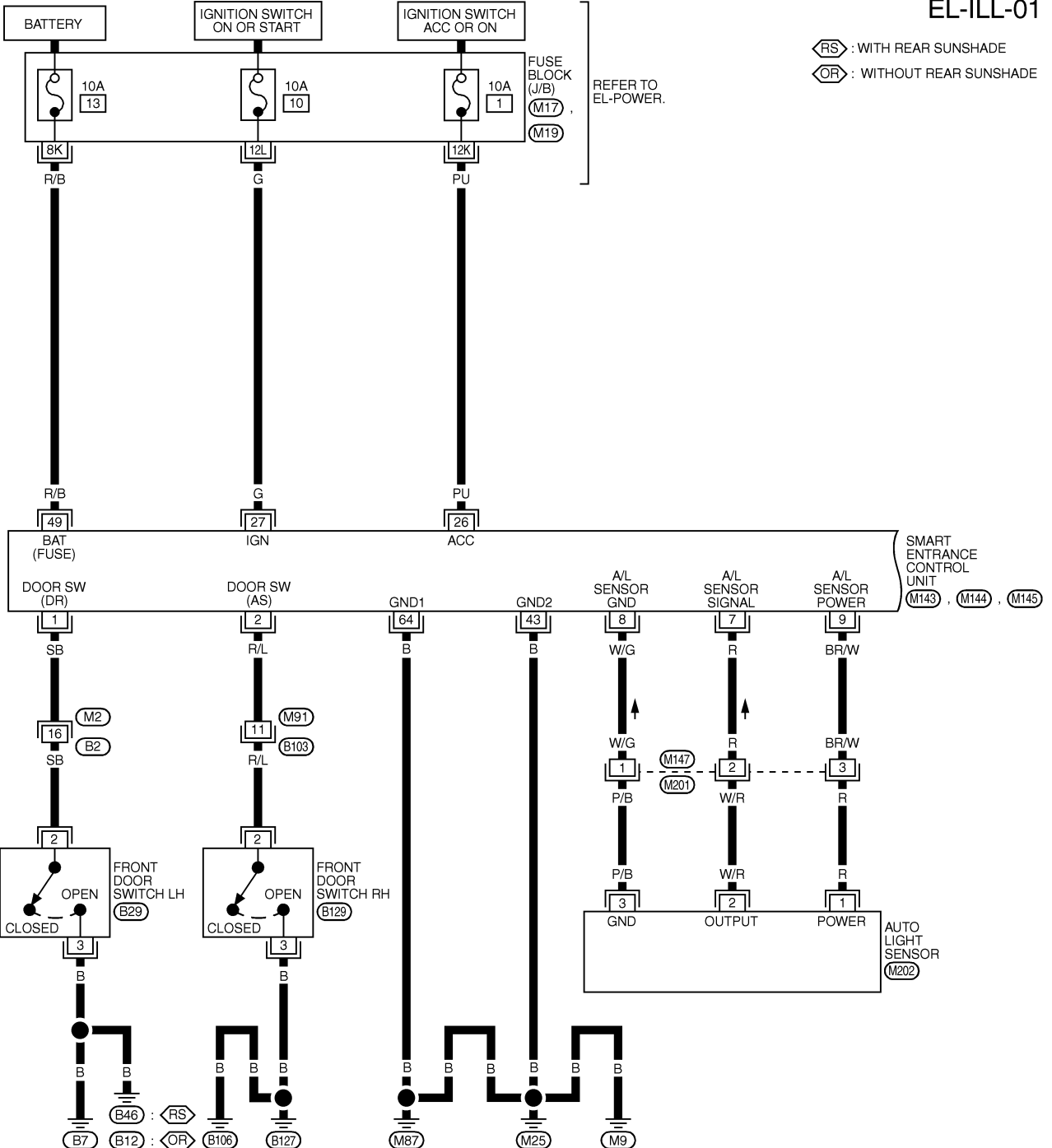
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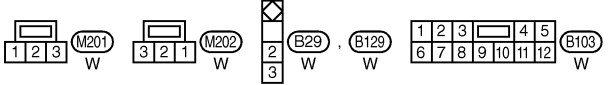
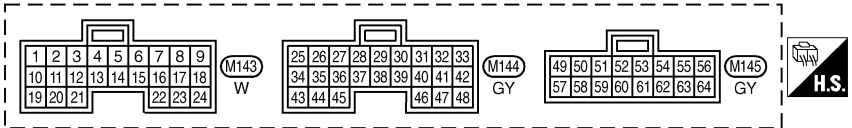
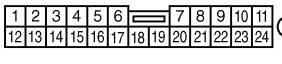
MEL419M



REFER TO EL-POWER.

SMART ENTRANCE CONTROL UNIT
 M143, M144, M145



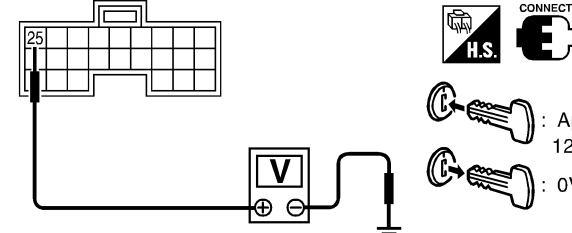
AUTO LIGHT SENSOR
 M202

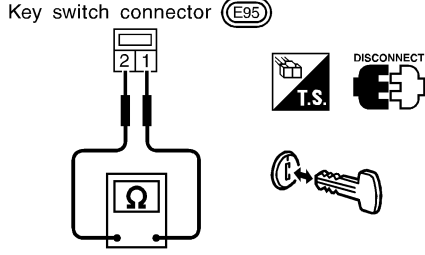


REFER TO THE FOLLOWING.
 M17, M19 - FUSE BLOCK-JUNCTION BOX (J/B)

INTERIOR, STEP, SPOT, VANITY MIRROR AND TRUNK ROOM LAMPS

Trouble Diagnoses for Interior Lamp Timer (Cont'd)

8	CHECK KEY SWITCH INPUT SIGNAL								
<p> With CONSULT-II Check key switch ("KEY ON SW") in "DATA MONITOR" mode with CONSULT-II.</p>									
<table border="1" style="margin: auto;"> <tr><th colspan="2">DATA MONITOR</th></tr> <tr><th colspan="2">MONITOR</th></tr> <tr><td>KEY ON SW</td><td>ON</td></tr> </table>		DATA MONITOR		MONITOR		KEY ON SW	ON	<p>When key is inserted to ignition key cylinder: KEY ON SW ON</p> <p>When key is removed from ignition key cylinder: KEY ON SW OFF</p>	
DATA MONITOR									
MONITOR									
KEY ON SW	ON								
SEL315W									
<p> Without CONSULT-II Check voltage between smart entrance control unit harness connector M144 terminal 25 (B/R) and ground.</p>									
<p>Smart entrance control unit connector</p> 		<p>Voltage [V]: Condition of key switch: Key is inserted. Approx. 12 Condition of key switch: Key is removed. 0</p>							
SEL011Y									
OK or NG									
OK	▶	GO TO 10.							
NG	▶	GO TO 9.							

9	CHECK KEY SWITCH (INSERT)		
Check continuity between terminals 1 and 2.			
<p>Key switch connector (E95)</p> 		<p>Continuity: Condition of key switch: Key is inserted. Yes Condition of key switch: Key is removed. No</p>	
SEL311W			
OK or NG			
OK	▶	<p>Check the following.</p> <ul style="list-style-type: none"> ● 10A fuse [No. 13, located in fuse block (J/B)] ● Harness for open or short between key switch and fuse ● Harness for open or short between smart entrance control unit and key switch 	
NG	▶	Replace key switch.	

METERS AND GAUGES

Trouble Diagnoses (Cont'd)

INSPECTION/THERMAL TRANSMITTER

=NH/EL0046S09

1	CHECK THERMAL TRANSMITTER	
Refer to "THERMAL TRANSMITTER CHECK" (EL-162).		
OK or NG		
OK	▶	GO TO 2.
NG	▶	Replace.

2	CHECK HARNESS FOR OPEN OR SHORT	
<ol style="list-style-type: none"> 1. Disconnect combination meter connector and thermal transmitter connector. 2. Check continuity between combination meter terminal 18 and thermal transmitter terminal 1. Continuity should exist. 3. Check continuity between combination meter terminal 18 and ground. Continuity should not exist. 		
SEL184W		
OK or NG		
OK	▶	Thermal transmitter is OK.
NG	▶	Repair harness or connector.

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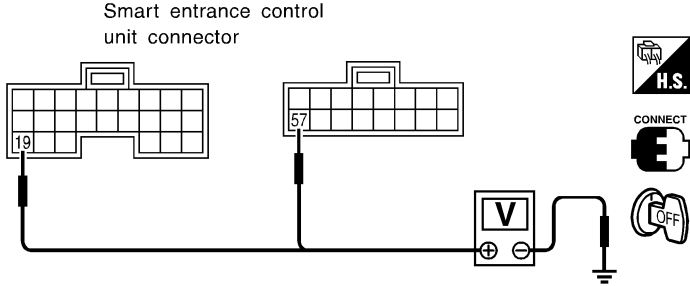
IDX

WARNING CHIME

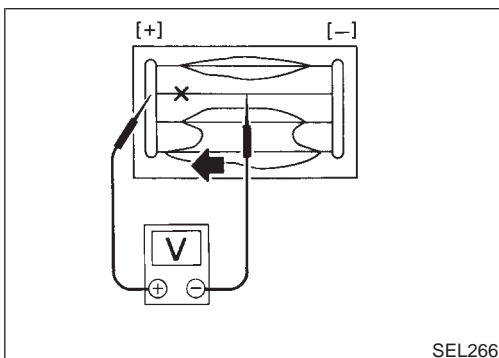
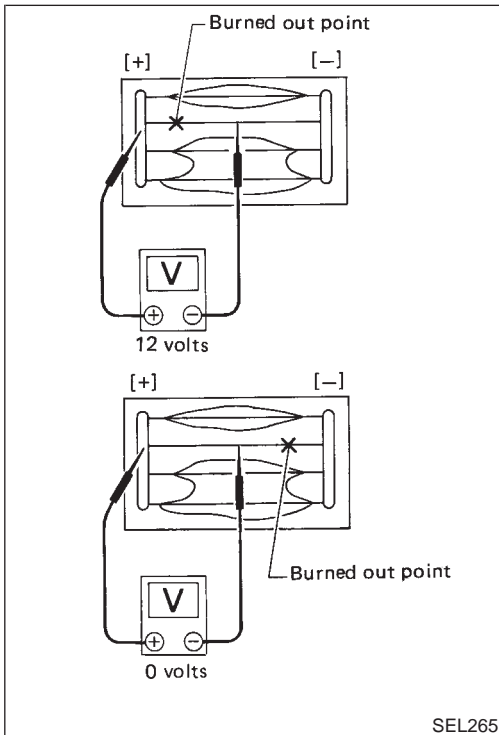
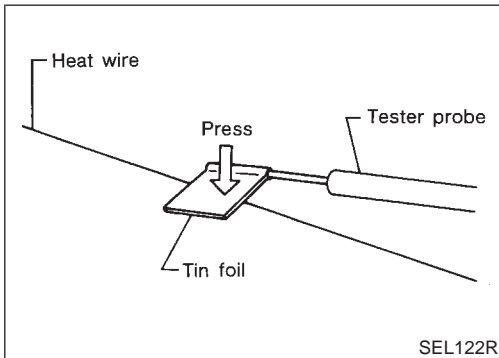
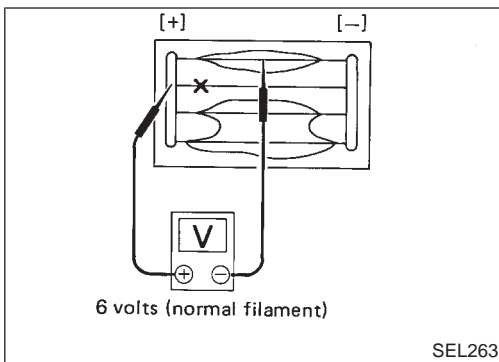
Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 1 (LIGHTING SWITCH INPUT SIGNAL CHECK)

=NH0055S03

1	CHECK LIGHTING SWITCH INPUT SIGNAL							
<p> With CONSULT-II Check lighting switch ("LIGHT SW 1ST") in "DATA MONITOR" mode with CONSULT-II.</p>								
<table border="1" style="margin: auto;"> <tr><th colspan="2">DATA MONITOR</th></tr> <tr><th colspan="2">MONITOR</th></tr> <tr><td>LIGHT SW 1ST</td><td>OFF</td></tr> </table>			DATA MONITOR		MONITOR		LIGHT SW 1ST	OFF
DATA MONITOR								
MONITOR								
LIGHT SW 1ST	OFF							
		<p>When lighting switch is in 1st or 2nd position: LIGHT SW 1ST ON</p> <p>When lighting switch is in OFF position: LIGHT SW 1ST OFF</p>						
		SEL991X						
<p> Without CONSULT-II Check voltage between smart entrance control unit terminal 19 (M143, Y/B) or 57 (M145, GY) and ground.</p>								
<p>Smart entrance control unit connector</p> 								
		<p>Voltage [V]: Condition of lighting switch: 1ST or 2ND Approx. 12 Condition of lighting switch: OFF 0</p>						
		SEL992X						
OK or NG								
OK	▶	Lighting switch is OK.						
NG	▶	<p>Check the following.</p> <ul style="list-style-type: none"> ● 10A fuse (No. 60, located in the fuse and fusible link box) ● Harness for open or short between smart entrance control unit and tail lamp relay 						

=NHEL0077



Filament Check

1. Attach probe circuit tester (in volt range) to middle portion of each filament.

- When measuring voltage, wrap tin foil around the top of the negative probe. Then press the foil against the wire with your finger.

2. If a filament is burned out, circuit tester registers 0 or 12 volts.

3. To locate burned out point, move probe to left and right along filament. Test needle will swing abruptly when probe passes the point.

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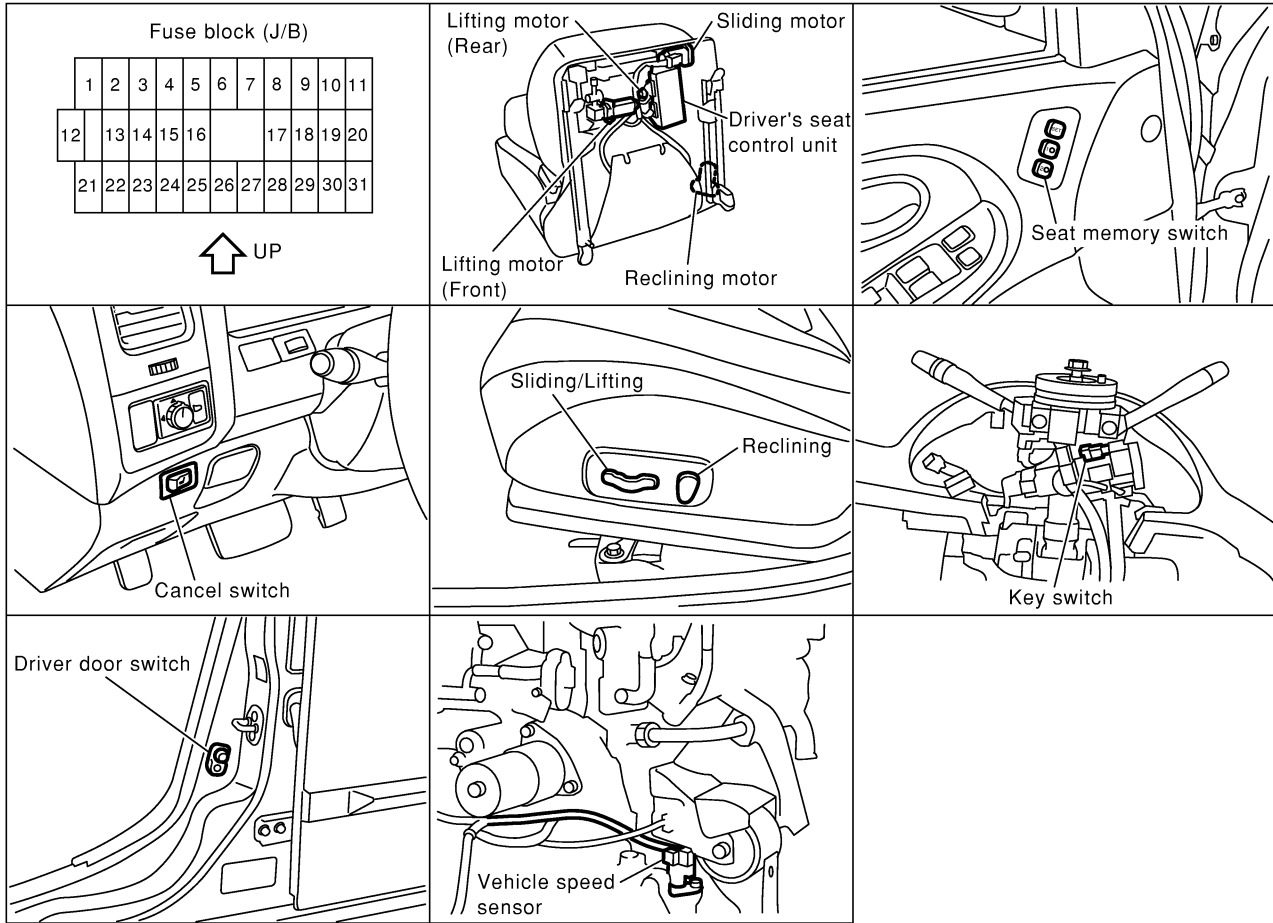
IDX

AUTOMATIC DRIVE POSITIONER

Component Parts and Harness Connector Location

Component Parts and Harness Connector Location

NHEL0272



SEL591W

DIAGNOSTIC PROCEDURE 5 [Lifting encoder (rear) check]

=NHLE0277S08

1	CHECK LIFTING ENCODER (REAR) OUTPUT SIGNAL	
<p>Measure voltage between seat control unit LH terminal 30 and ground with CONSULT-II or oscilloscope when power seat lifting (rear) is operated.</p>		
SEL615W		
OK or NG		
OK	▶	Lifting encoder (rear) is OK.
NG	▶	GO TO 2.

2	CHECK LIFTING ENCODER (REAR) INPUT SIGNAL	
<p>Check voltage between seat control unit LH terminal 17 and ground.</p>		
SEL616W		
OK or NG		
OK	▶	GO TO 3.
NG	▶	Replace seat control unit LH.

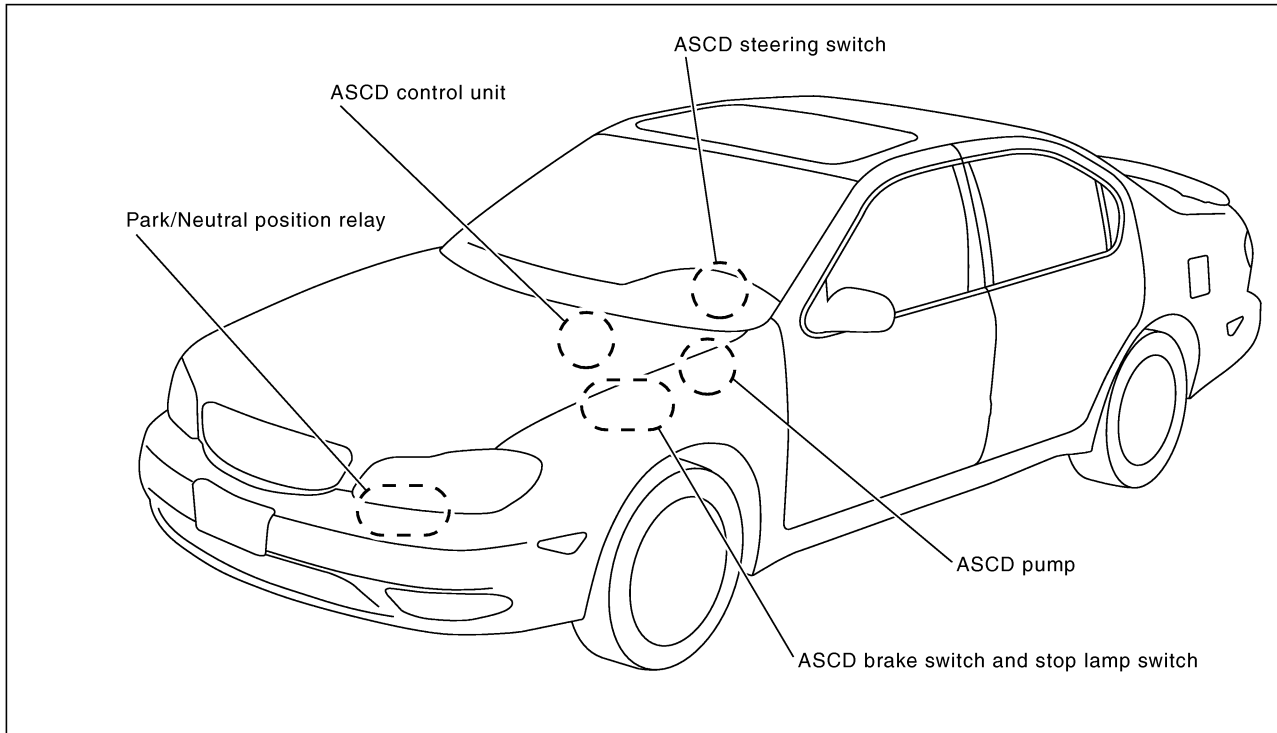
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AUTOMATIC SPEED CONTROL DEVICE (ASCD)

Component Parts and Harness Connector Location

Component Parts and Harness Connector Location

NHEL0094

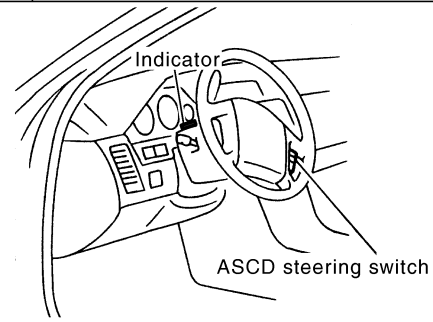
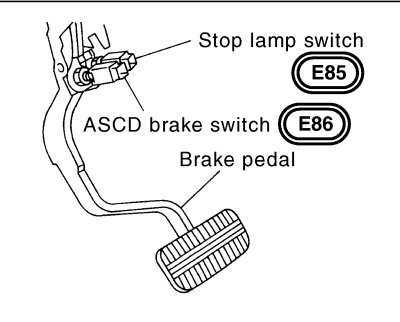
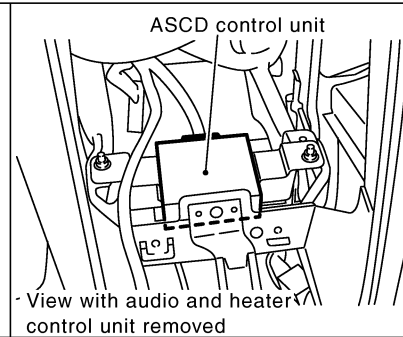
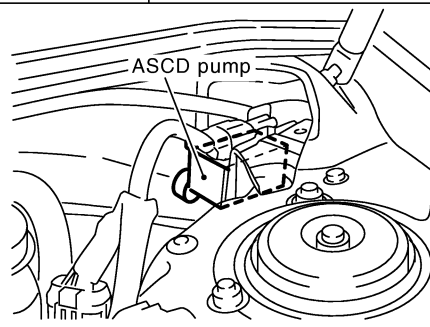
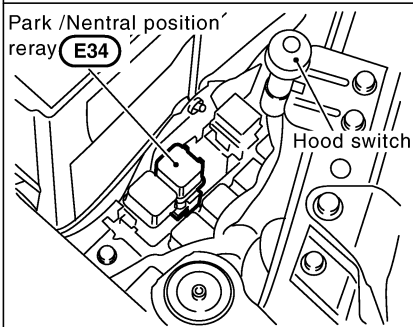


Fuse block (J/B)

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16			17	18	19	20
21	22	23	24	25	26	27	28	29	30	31



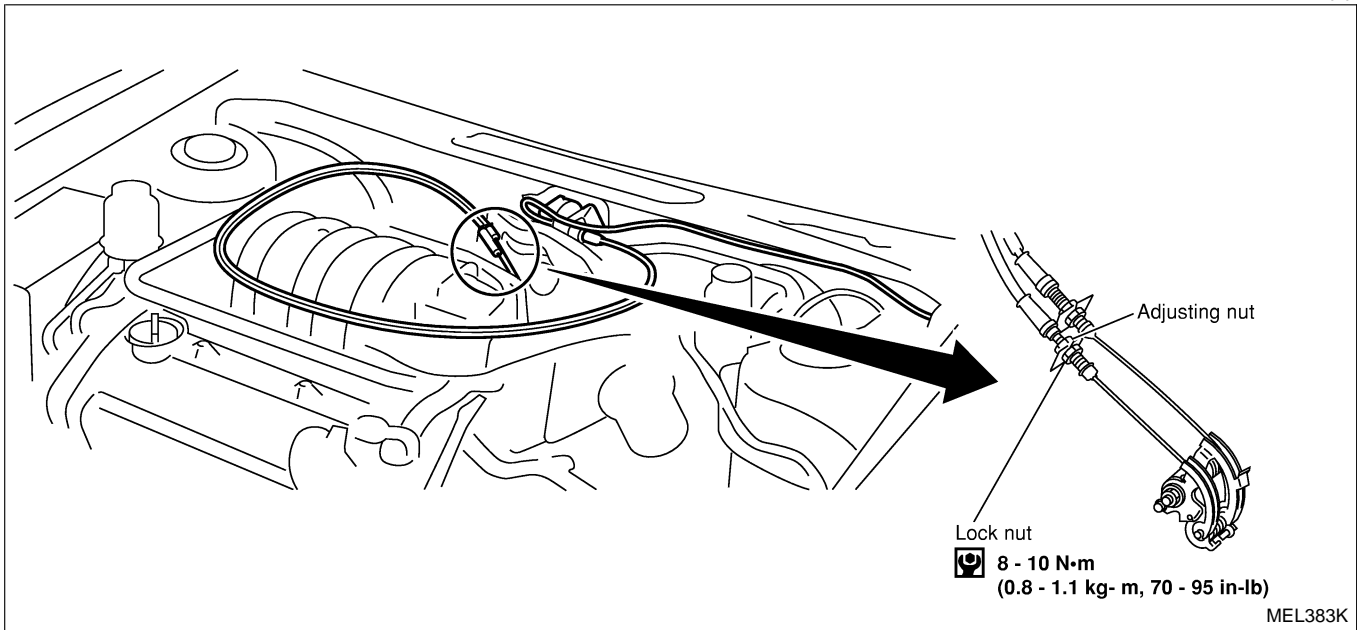
51	52	53	54	55	56	57	58	59	60		b	c	d	e	f
61	62	63	64	65	66	67	68	69	70	71	72	g	h	i	j



SEL051X

ASCD Wire Adjustment

=NHLE0101



CAUTION:

- Be careful not to twist ASCD wire when removing it.
- Do not tense ASCD wire excessively during adjustment.

Adjust the tension of ASCD wire in the following manner.

1. Loosen lock nut and adjusting nut.
2. Make sure that accelerator wire is properly adjusted. Refer to FE-3, "ACCELERATOR CONTROL SYSTEM".
3. Tighten adjusting nut just until throttle drum starts to move.
4. Loosen adjusting nut again 1/2 to 1 turn.
5. Tighten lock nut.

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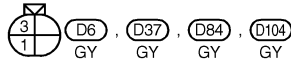
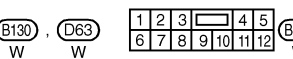
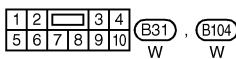
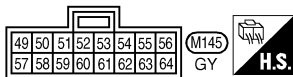
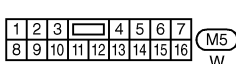
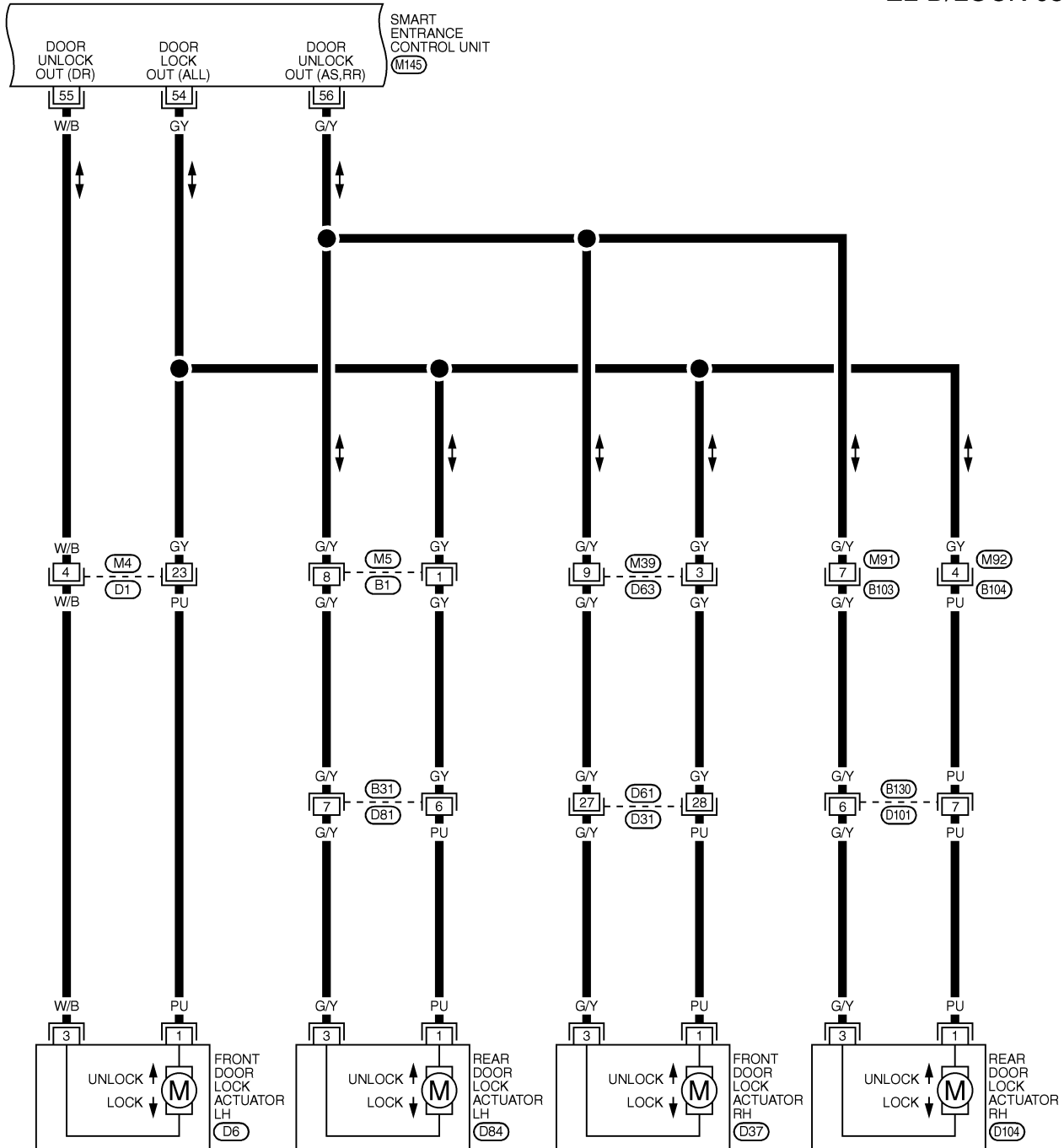
POWER DOOR LOCK

Wiring Diagram — D/LOCK — (Cont'd)

FIG. 3

NHEL0109S03

EL-D/LOCK-03

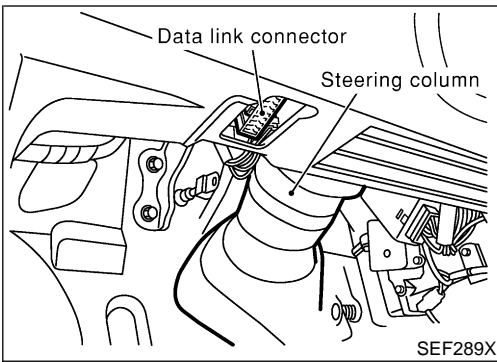


REFER TO THE FOLLOWING.
 (D1) , (D31) -SUPER
 MULTIPLE JUNCTION (SMJ)

MEL469M

MULTI-REMOTE CONTROL SYSTEM

CONSULT-II Inspection Procedure



CONSULT-II Inspection Procedure

NHEL0241

NHEL0241S01

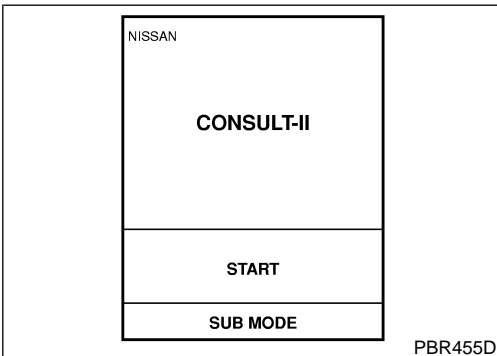
“MULTI REMOTE ENT”

1. Turn ignition switch “OFF”.
2. Connect “CONSULT-II” to the data link connector.

GI

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EM



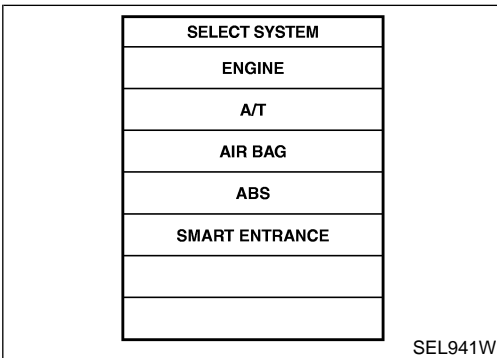
3. Turn ignition switch “ON”.
4. Touch “START”.

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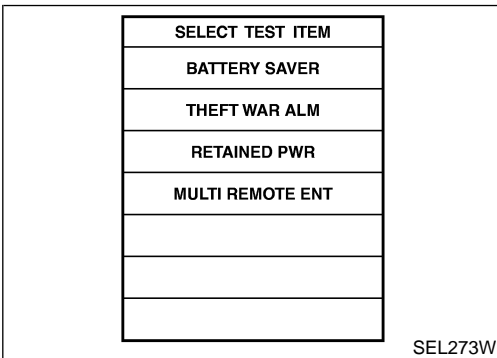
5. Touch “SMART ENTRANCE”.

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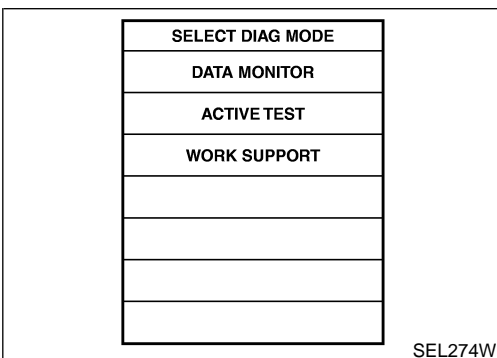
6. Touch “MULTI REMOTE ENT”.

RS

BT

HA

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7. Select diagnosis mode.
“DATA MONITOR”, “ACTIVE TEST” and “WORK SUPPORT” are available.

EL

IDX

VEHICLE SECURITY (THEFT WARNING) SYSTEM

System Description (Cont'd)

- through 10A fuse [No. 13, located in the fuse block (J/B)]
- to smart entrance control unit terminal 49.

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

- through 10A fuse [No. 10, located in the fuse block (J/B)]
- to smart entrance control unit terminal 27.

With the ignition switch in the ACC or ON position, power is supplied

- through 10A fuse [No. 1, located in the fuse block (J/B)]
- to smart entrance control unit terminal 26.

Ground is supplied

- to smart entrance control unit terminals 43 and 64
- through body grounds M9, M25 and M87.

INITIAL CONDITION TO ACTIVATE THE SYSTEM

The operation of the vehicle security system is controlled by the doors, hood and trunk lid.

NHLE0196S03

Pattern A

To activate the vehicle security system, the smart entrance control unit must receive signals indicating the doors, hood and trunk lid are closed.

NHLE0196S0301

When a door is open, smart entrance control unit terminal 1, 2 or 3 receives a ground signal from each door switch.

When the hood is open, smart entrance control unit terminal 6 receives a ground signal

- from terminal 1 of the hood switch
- through body grounds E11, E22 and E53.

When the trunk lid is open, smart entrance control unit terminal 13 receives a ground signal

- from terminal 1 of the trunk room lamp switch
- through body grounds T6 and T8.

When smart entrance control unit receives LOCK signal from key cylinder switch or multi-remote controller and none of the described conditions exist, the vehicle security system will automatically shift to armed mode.

Pattern B

To activate the vehicle security system, the smart entrance control unit must receive signal indicating any door (including hood and trunk lid) is opened.

NHLE0196S0302

When the front doors are locked with key, lock/unlock switch or multi-remote controller and then all doors are closed, the vehicle security system will automatically shift to armed mode.

VEHICLE SECURITY SYSTEM ACTIVATION

Pattern A

With all doors (including hood and trunk lid) close if the key is used to lock doors, terminal 11 receives a ground signal

NHLE0196S04

NHLE0196S0401

- from terminal 5 (with IVCS) or 3 (without IVCS) of the key cylinder switch LH
- through body grounds M9, M25 and M87.

If this signal, or lock signal from remote controller is received by the smart entrance control unit, the vehicle security system will activate automatically.

NOTE:

Vehicle security system can be set even though all doors are not locked.

Pattern B

With any door (including hood and trunk lid) open if lock/unlock switch is used to lock doors, terminal 5 receives a ground signal

NHLE0196S0402

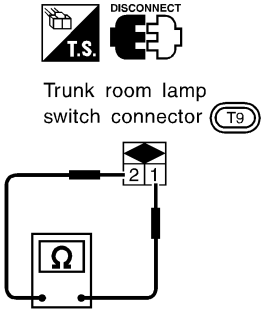
- from terminal 6 of lock/unlock switch LH, or
- from terminal 8 of lock/unlock switch RH
- through body grounds M9, M25 and M87, or

With any door (including hood and trunk lid) open if the key is used to lock doors, terminal 11 receives a ground signal

- from terminal 5 (with IVCS) or 3 (without IVCS) of the key cylinder switch LH
- through body grounds M9, M25 and M87.

VEHICLE SECURITY (THEFT WARNING) SYSTEM

Trouble Diagnoses (Cont'd)

<p>3</p>	<p>CHECK TRUNK ROOM LAMP SWITCH</p> <p>1. Disconnect trunk room lamp switch connector. 2. Check continuity between trunk room lamp switch terminals 1 and 2.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Trunk room lamp switch connector (T9)</p> </div> <div style="text-align: center;"> <p>Continuity: Condition: Closed No Condition: Open Yes</p> </div> </div> <p style="text-align: right;">SEL242W</p> <p style="text-align: center;">OK or NG</p>
<p>OK</p>	<p>▶ Check the following.</p> <ul style="list-style-type: none"> ● Trunk room lamp switch ground circuit ● Harness for open or short between smart entrance control unit and trunk room lamp switch
<p>NG</p>	<p>▶ Replace trunk room lamp switch.</p>

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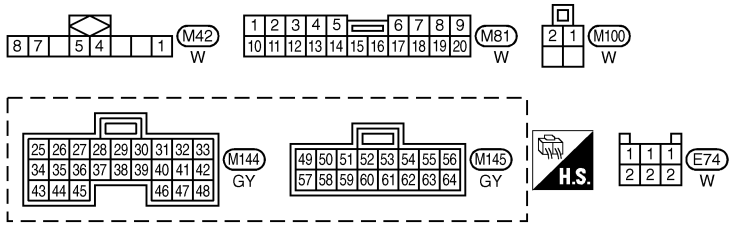
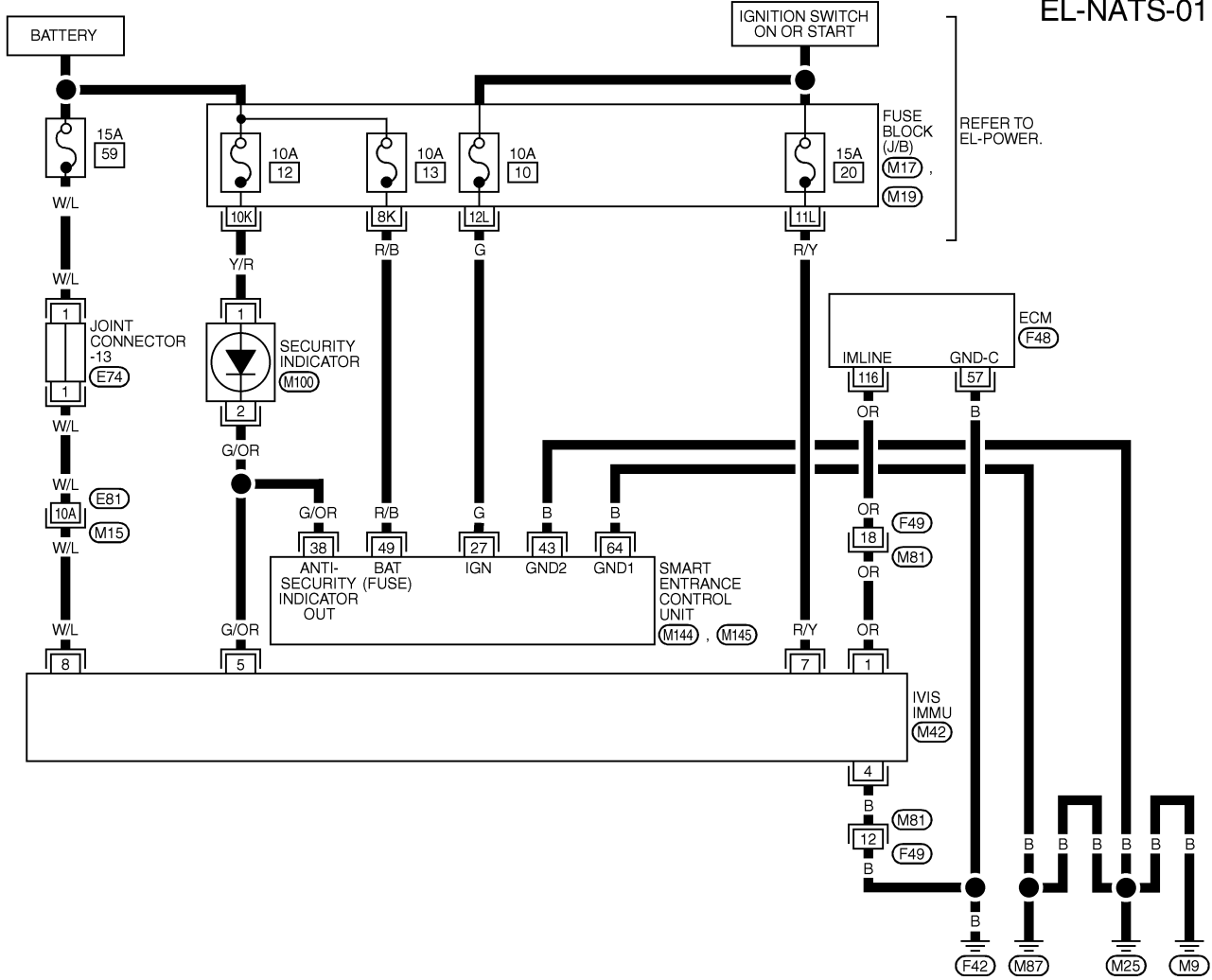
IVIS (INFINITI VEHICLE IMMOBILIZER SYSTEM — NATS)

Wiring Diagram — NATS —

Wiring Diagram — NATS —

NHEL0175

EL-NATS-01



REFER TO THE FOLLOWING.

- (M15) -SUPER
- MULTIPLE JUNCTION (SMJ)
- (M17), (M19) -FUSE BLOCK-JUNCTION BOX (J/B)
- (F48) -ELECTRICAL UNITS-

MEL486M

SMART ENTRANCE CONTROL UNIT TERMINALS AND REFERENCE VALUE BETWEEN EACH TERMINAL AND GROUND

TERMINAL	WIRE COLOR	ITEM	CONDITION	DATA (DC)
27	G	IGNITION SWITCH (ON)	IGNITION KEY IS IN "ON" POSITION	12V
38	G/OR	SECURITY INDICATOR	GOES OFF → ILLUMINATES	12V → 0V
43	B	GROUND	-	-
49	R/B	POWER SOURCE (FUSE)	-	12V
64	B	GROUND	-	-

SEL984X

unit, and the system executes automatic dialing to the Communicator Response Center.

If the alarm is reset before 7 seconds has elapsed, the INFINITI Communicator will not place a call to the Communicator Response Center.

- This function operates regardless of ignition switch position.
- While this function is operating, the operator can covertly monitor what is happening inside the vehicle through the hands-free microphone.

GI

MA

Remote Door Unlock

NHELO285S0406

- When the door is locked with the key inside the vehicle, the door can be unlocked by contacting the Communicator Response Center (Proof that the person calling is the owner must be received by the Communicator Response Center.)
- When the ignition key is in the "OFF" position, the system is in the sleep mode. Therefore, driver side outside door handle must be pulled for more than 10 seconds to wake up the system.
- To perform remote door unlock, call the Communicator Response Center and follow the operator's instructions.

EM

LC

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NOTE:

- **When the system contacts the Communicator Response Center, data including the vehicle location is transmitted to the Communicator Response Center.**
- **Communication with the Communicator Response Center is not completed until the completion signal is transmitted from the Communicator Response Center. (Any calls to the Communicator Response Center can only be terminated by Communicator Response Center.)**
- **Functions other than alarm notification and remote door unlock operate while the ignition switch is ON and only for three minutes after the switch is turned OFF.**
- **Once a call to the Communicator Response Center is made, the communication continues regardless of the ignition key switch position.**
- **All the voice communication with the Communicator Response Center is made through the hands-free telephone.**

AT

AX

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DATA TRANSMITTING

NHELO285S05

When contact to the Communicator Response Center is made, vehicle sends electrical data including type of activation (i.e., emergency call or alarm notification), vehicle location, time, etc.

HA

SC

SLEEP/WAKE UP CONTROL

NHELO285S06

3 minutes after the ignition switch is turned OFF, the system goes into the SLEEP MODE to save battery power supply. Communication with Communicator Response Center is not available in the SLEEP MODE.

EL

To wake up the system, perform either of the following operations.

IDX

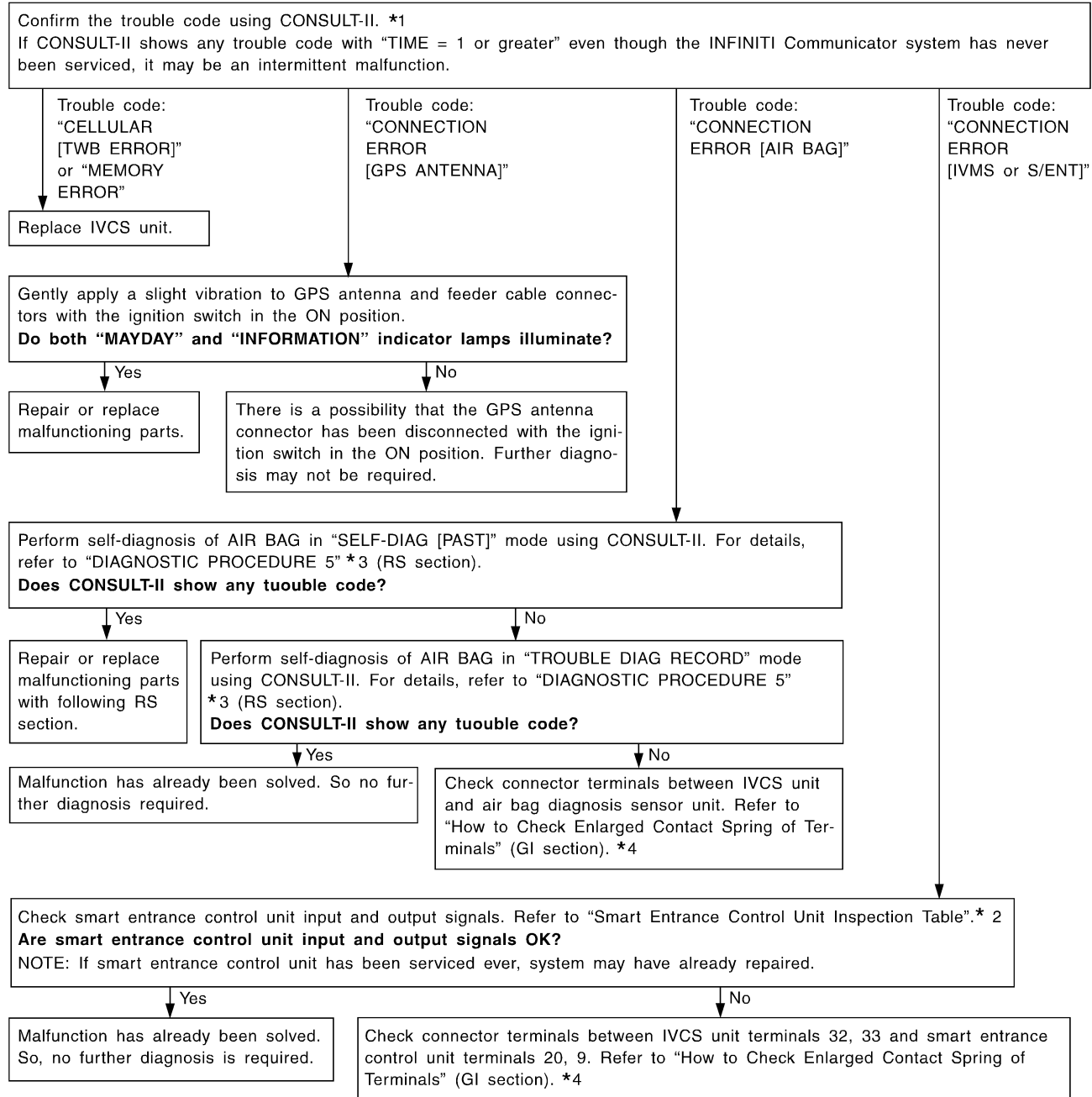
- Turn Ignition switch ON.
- Pull driver side outside door handle for more than 10 seconds. (Operation for door unlock function)

INFINITI COMMUNICATOR (IVCS)

Trouble Diagnoses for Intermittent Incident (Cont'd)

NH0290S02

DIAGNOSTIC PROCEDURE



SEL107WE

*1 EL-445

*3 RS-50

*4 GI-22

*2 EL-406

NOTE:

Enlarged spring contact of terminals may be cause of intermittent malfunction for "CONNECTION ERROR [AIR BAG]/[IVMS or S/ENT]". When you inspect terminals for enlarged contact, refer to GI-22, "How to Check Enlarged Contact Spring of Terminals".

NHEL0299S0201

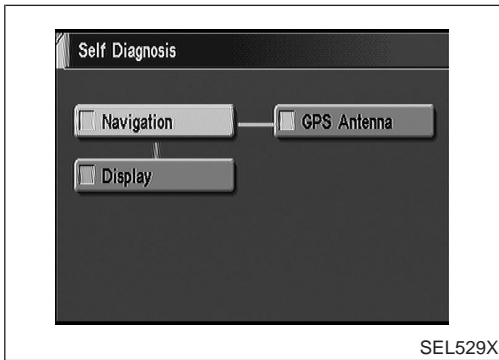


“Self Diagnosis”

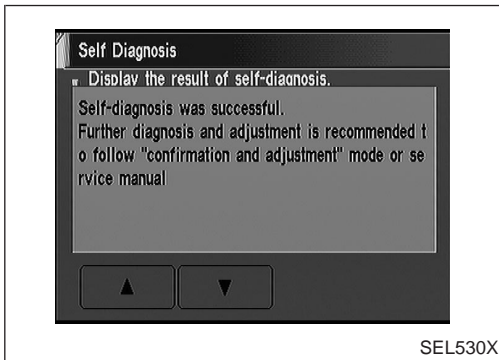
1. Start the engine.
2. Push “OPEN/CLOSE” switch and then open the display.
3. Push both “MAP” and “D/N” switches at the same time for more than 5 seconds.
4. Select “Self Diagnosis”.



5. Self-diagnosis will be performed.



6. Diagnosis results will be displayed. Diagnosis results are indicated by display color. For details refer to EL-484, “SELF-DIAGNOSIS RESULTS”.



To obtain detailed diagnosis results on the screen, touch “Navigation” or “Display” or “GPS Antenna”.

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DRIVING TEST

During the driving test, diagnose the system by checking the difference of symptoms with each sensor ON or OFF. =NHHEL0303S03

Test Pattern 1

Test method in which current position adjustment is not made according to GPS data. NHHEL0303S0301

- Remove the GPS antenna connector from the NAVI control unit. Drive the vehicle.
Before driving the vehicle, perform "Adjust Current Location" MODE (EL-501).

Test Pattern 2

Test procedure in which map matching is not used. NHHEL0303S0302

- Before driving the vehicle, perform "Adjust Current Location" MODE (EL-501). With the ignition switch OFF and the map CD-ROM removed from the NAVI control unit, drive the vehicle. After driving the vehicle, reinstall the map CD-ROM. Compare the saved driving tracks for the vehicle's current location with roads on the map.

Example

<The position marker consistently indicates the wrong position when driving in the same area. Determine if this is the result of the map matching function or the GPS function.> NHHEL0303S0303

→ Perform test pattern 1.

<To verify the accuracy of the road configuration shown on the display>

→ Perform test patterns 1 and 2.

- Compare the map and the saved driving tracks. The precision of the saved driving tracks is within several hundred meters.

<To make distance calibration and adjustments>

→ Perform test patterns 1 and 2.

- Make adjustments by driving the vehicle over a known course (highway or other road where distances are clearly marked). Calibrate the distance against the known distance. Use the formula below.

Calibration value = Screen display distance/Actual distance

HARNESS LAYOUT

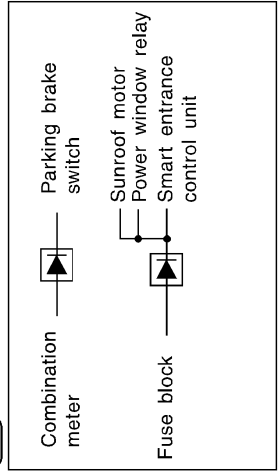
Main Harness (Cont'd)

Main harness

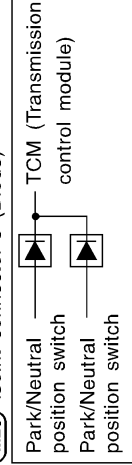
★ A4	M2	BR/24	: To	B2
A4	M3	W/12	: To	B4
A4	M4	SMJ	: To	D1
★ A3	M5	W/16	: To	B1
★ A3	M6	W/18	: To	B3
C1	M7	W/18	: To	R3 (With IVCS)
C2	M8	W/12	: To	R2 (Without IVCS)
★ A3	M9	-	: Body ground	
B3	M13	L/4	: Diode	
★ A3	M15	SMJ	: To	E81
A3	M16	W/4	: Telephone	
★ B4	M17	W/12	: Fuse block (J/B)	
C4	M18	W/6	: Fuse block (J/B)	
★ C4	M19	W/16	: Fuse block (J/B)	
A4	M20	L/4	: Power window relay	
C4	M21	B/3	: Combination flasher unit	
C3	M23	W/3	: Illumination control switch	
C3	M24	W/10	: Door mirror remote control switch	
★ B3	M25	-	: Body ground	
B4	M28	W/16	: Data link connector	
C2	M29	★ 1	: Joint connector-3 (Diode)	
D3	M30	W/4	: To	M151
F3	M31	W/4	: Fan control amp.	
★ C2	M32	BR/20	: Combination meter	
★ C3	M33	W/24	: Combination meter	
★ D2	M34	BR/24	: Combination meter	

C2	M35	W/2	: Diode	
G2	M38	W/16	: To	D62
G3	M39	W/10	: To	D63
C3	M42	W/8	: IVIS IMMU	
D3	M44	W/2	: In-vehicle sensor	
D3	M45	L/6	: TCS on/off switch (With TCS)	
D4	M46	W/18	: To	F44
★ D4	M47	W/20	: To	F45
D4	M49	W/3	: Mode door motor	
D4	M51	W/3	: Air mix door motor	
D4	M52	BR/24	: ASCD control unit	
E4	M53	B/2	: Cigarette lighter	
E4	M55	W/8	: Hazard switch	
F3	M59	GY/20	: A/C auto amp.	
F4	M60	GY/16	: A/C auto amp.	
G3	M61	W/6	: Audio unit	
F3	M62	W/10	: Audio unit	
E4	M68	W/16	: Audio unit (With IVCS or With navigation system)	
F4	M71	W/2	: Antenna amp. (Via sub-harness)	
F4	M72	W/2	: Asitray illumination	
F5	M74	L/4	: Heated seat switch LH	
F4	M75	W/4	: Heated seat switch RH	
E5	M76	GY/8	: A/T device	
G4	M78	B/2	: Power socket	
F4	M80	W/3	: Intake sensor	

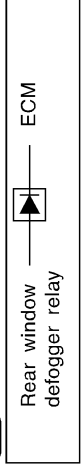
M13 : Diode



M29 : Joint connector-3 (Diode)



M35 : Diode



★ : Be sure to connect and lock the connectors securely after repair work.
 Failure to do so may cause the ECM to have diagnostic trouble codes.
Do not disconnect these connectors except in the case of working according to WORK FLOW of TROUBLE DIAGNOSES in EC and AT sections.

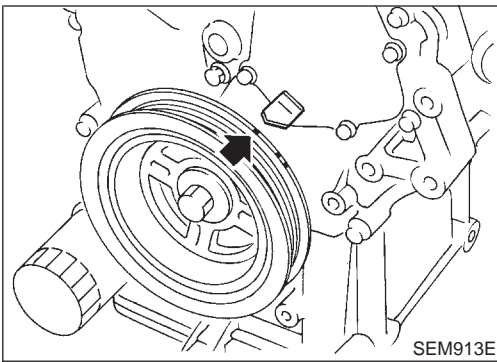
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CONTENTS (Cont'd)

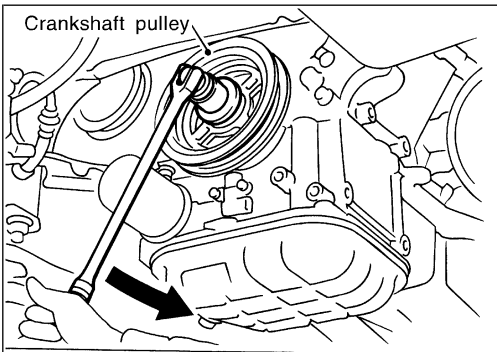
SERVICE DATA AND SPECIFICATIONS (SDS)	72	Piston, Piston Ring and Piston Pin	79
General Specifications	72	AVAILABLE PISTON	79
Compression Pressure	72	PISTON RING	80
Cylinder Head	72	PISTON PIN	80
Valve	73	Connecting Rod	80
VALVE	73	Crankshaft	81
VALVE CLEARANCE	73	Available Main Bearing	82
AVAILABLE SHIMS	73	UNDERSIZE	82
VALVE SPRING	75	Available Connecting Rod Bearing	83
VALVE LIFTER	75	CONNECTING ROD BEARING	83
VALVE GUIDE	76	UNDERSIZE	83
Valve Seat	76	Miscellaneous Components	83
Camshaft and Camshaft Bearing	77	BEARING CLEARANCE	83
Cylinder Block	78		

TIMING CHAIN

Removal (Cont'd)

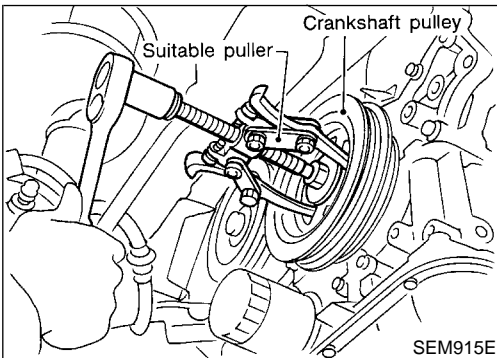
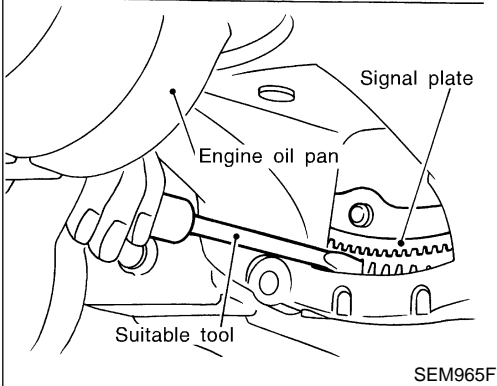


18. Set No. 1 piston at TDC on the compression stroke by rotating crankshaft.

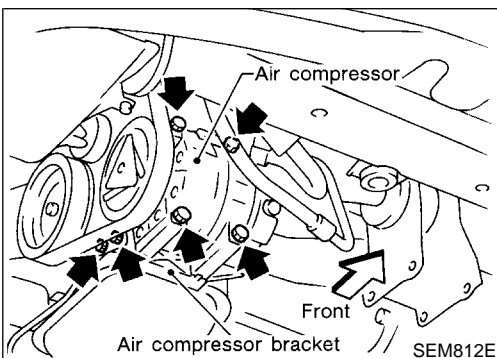


19. Loosen crankshaft pulley bolt. (At this time remove oil pan rear cover plate and set a suitable tool to ring gear so that crankshaft cannot rotate.)

- Be careful not to damage the signal plate teeth.



20. Remove crankshaft pulley with a suitable puller.



21. Remove air compressor and bracket.
 22. Remove front exhaust tube and its support.
 23. Hang engine at right and left side engine slingers with a suitable hoist.
 24. Remove right side engine mounting, mounting bracket and nuts.
 25. Remove center member assembly.
 26. Remove upper and lower oil pans.
- For procedures described in steps 21 through 26, refer to "Removal", EM-13.

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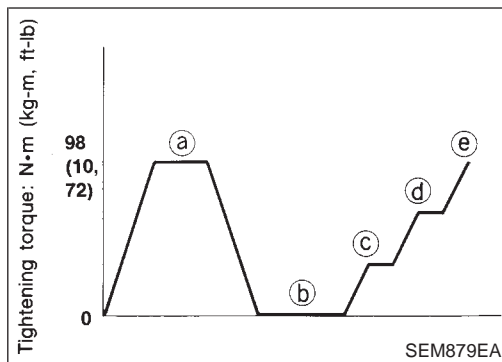
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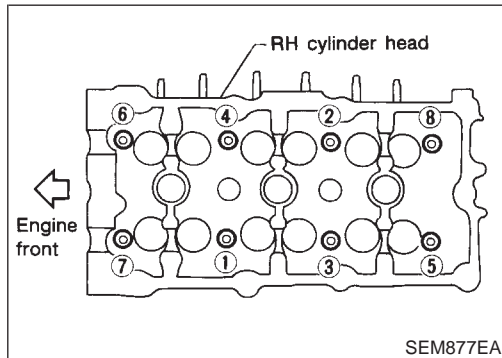
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CYLINDER HEAD

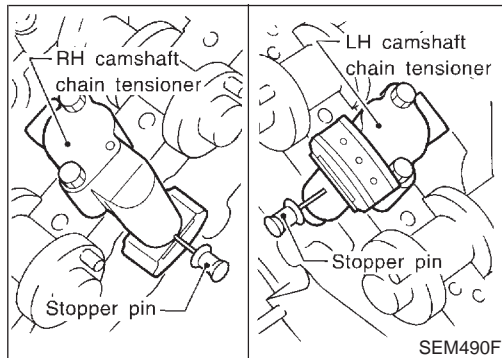
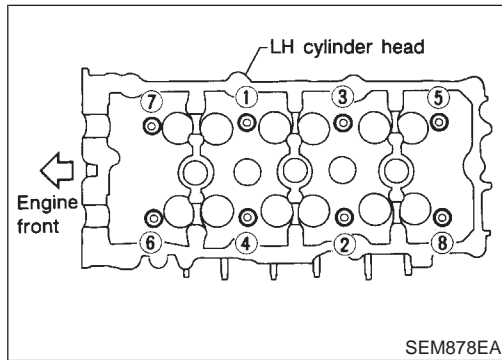
Installation (Cont'd)



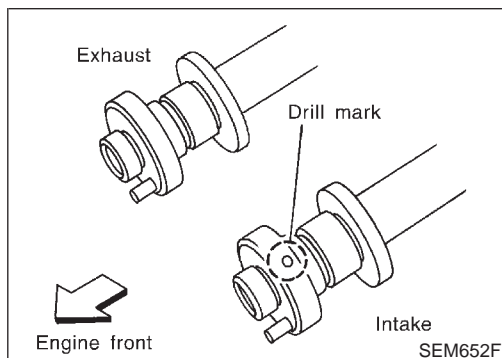
- **Tightening procedure:**
 - a. Tighten all bolts to 98 N-m (10 kg-m, 72 ft-lb).
 - b. Completely loosen all bolts.
 - c. Tighten all bolts to 34 to 44 N-m (3.5 to 4.5 kg-m, 25 to 33 ft-lb).
 - d. Turn all bolts 90 to 95 degrees clockwise.
 - e. Turn all bolts 90 to 95 degrees clockwise.



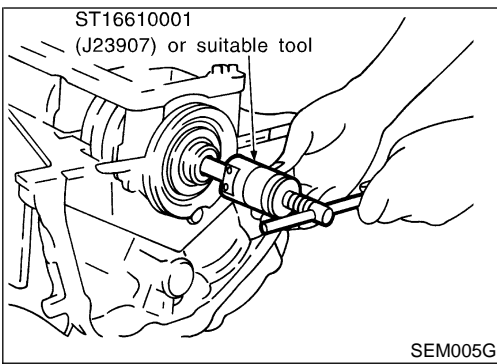
- **Tighten in numerical order shown in the figure.**



6. Install camshaft chain tensioners on both sides of cylinder head.



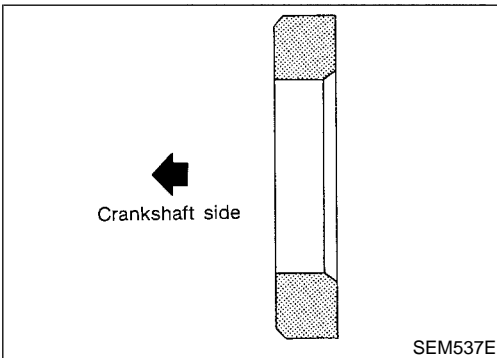
7. Install exhaust and intake camshafts and camshaft brackets.
 - **Intake camshaft has a drill mark on camshaft sprocket mounting flange. Install it on the intake side.**



REPLACING PILOT CONVERTER

NHEM0028S04

1. Remove pilot converter using tool or suitable tool.



2. Install pilot converter as shown.

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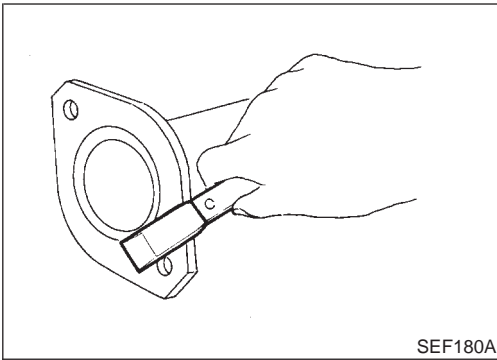
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EXHAUST SYSTEM

Removal and Installation

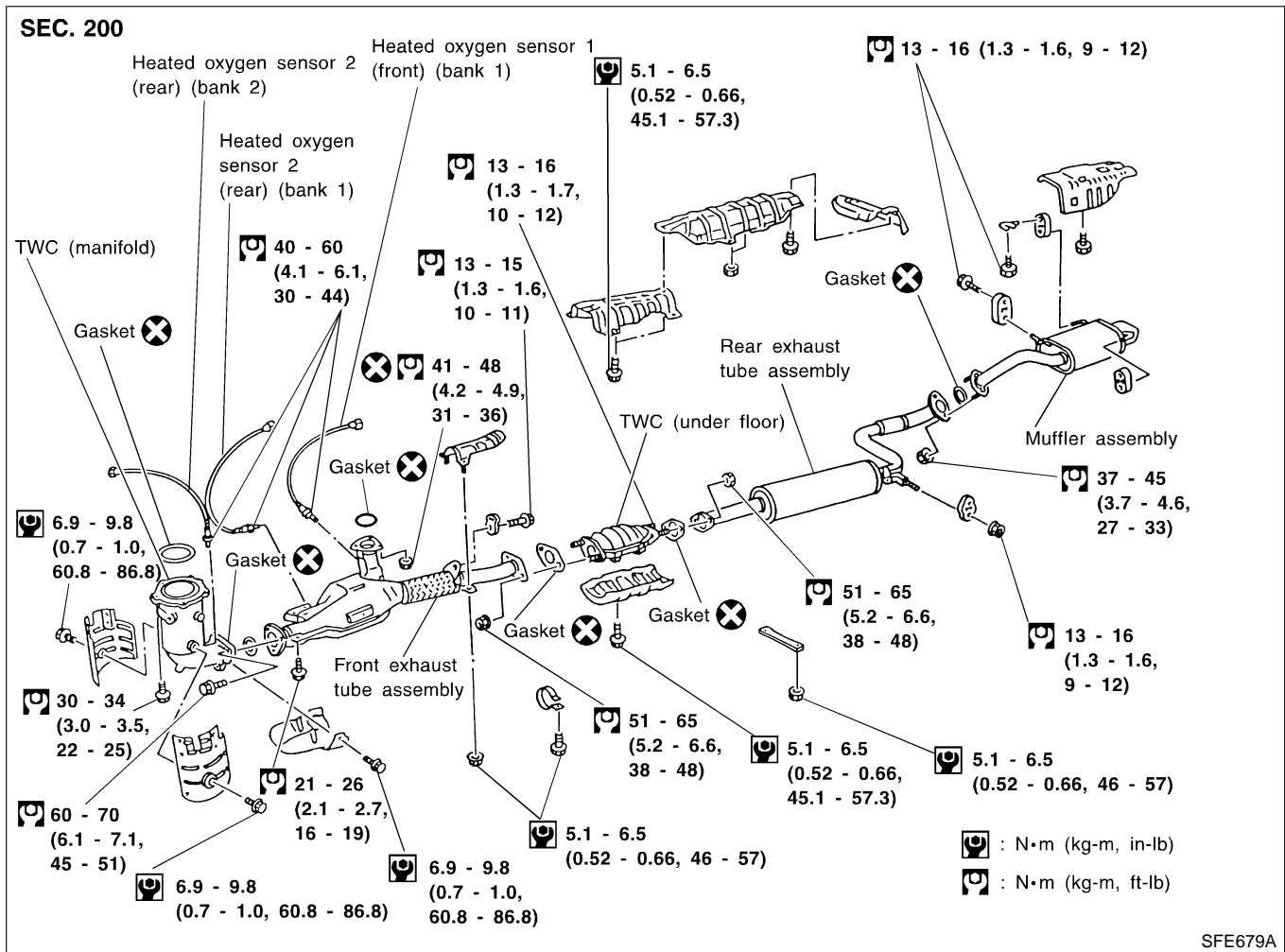
NHFE0005



Removal and Installation

CAUTION:

- Always replace exhaust gaskets with new ones when reassembling. If gasket remains on flange surface, scrape off completely as shown at left.
- With engine running, check all tube connections for exhaust gas leaks, and entire system for unusual noises.
- Check to ensure that mounting brackets and mounting insulators are installed properly and free from undue stress. Improper installation could result in excessive noise or vibration.
- Discard any heated oxygen 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 a new oxygen sensor, clean exhaust system threads using oxygen sensor thread cleaner tool, J-43897-18 or J-43897-12, and apply anti-seize lubricant.
- Do not overtorque the oxygen sensor. Doing so may cause damage to the oxygen sensor, resulting in the MIL coming on.



HOW TO READ WIRING DIAGRAMS

Description (Cont'd)

Number	Item	Description
20	System branch	<ul style="list-style-type: none"> This shows that the system branches to another system identified by cell code (section and system).
21	Page crossing	<ul style="list-style-type: none"> This arrow shows that the circuit continues to another page identified by cell code. The C will match with the C on another page within the system other than the next or preceding pages.
22	Shielded line	<ul style="list-style-type: none"> The line enclosed by broken line circle shows shield wire.
23	Component box in wave line	<ul style="list-style-type: none"> This shows that another part of the component is also shown on another page (indicated by wave line) within the system.
24	Component name	<ul style="list-style-type: none"> This shows the name of a component.
25	Connector number	<ul style="list-style-type: none"> This shows the connector number. The letter shows which harness the connector is located in. Example: M: main harness. For detail and to locate the connector, refer to EL-528, "Main Harness". A coordinate grid is included for complex harnesses to aid in locating connectors.
26	Ground (GND)	<ul style="list-style-type: none"> The line spliced and grounded under wire color shows that ground line is spliced at the grounded connector.
27	Ground (GND)	<ul style="list-style-type: none"> This shows the ground connection. For detailed ground distribution information, refer to EL-19, "Ground Distribution".
28	Connector views	<ul style="list-style-type: none"> This area shows the connector faces of the components in the wiring diagram on the page.
29	Common component	<ul style="list-style-type: none"> Connectors enclosed in broken line show that these connectors belong to the same component.
30	Connector color	<ul style="list-style-type: none"> This shows a code for the color of the connector. For code meaning, refer to wire color codes, Number 14 of this chart.
31	Fusible link and fuse box	<ul style="list-style-type: none"> This shows the arrangement of fusible link(s) and fuse(s), used for connector views of "POWER SUPPLY ROUTING" in EL section. The open square shows current flow in, and the shaded square shows current flow out.
32	Reference area	<ul style="list-style-type: none"> This shows that more information on the Super Multiple Junction (SMJ), Electrical Units, exists at the end of the manual. Refer to GI-19 for details.

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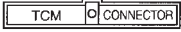
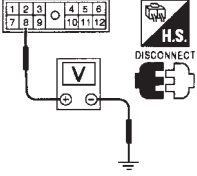



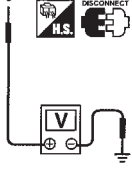




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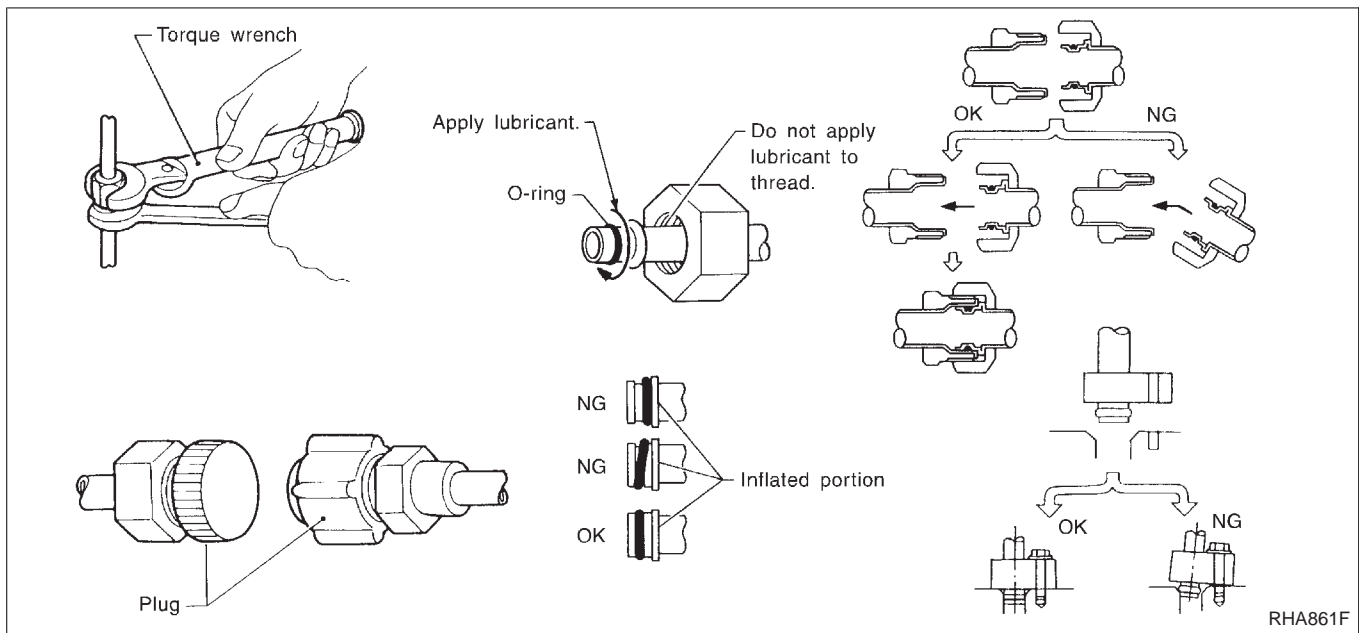
HOW TO FOLLOW TROUBLE DIAGNOSES

Key to Symbols Signifying Measurements or Procedures (Cont'd)

Symbol	Symbol explanation	Symbol	Symbol explanation
	Check after engine is warmed up sufficiently.		<p>Pin terminal check for SMJ type ECM and TCM connectors.</p> <p>For details regarding the terminal arrangement, refer to the electrical reference pages at the end of the manual.</p> 
	Voltage should be measured with a voltmeter.		
	Circuit resistance should be measured with an ohmmeter.		
			
	Current should be measured with an ammeter.		
	Procedure with CONSULT-II		
	Procedure without CONSULT-II		

PRECAUTIONS

Precautions for Refrigerant Connection (Cont'd)



Precautions for Servicing Compressor

NHHA0157

- Plug all openings to prevent moisture and foreign matter from entering.
- When the compressor is removed, store it in the same position as it is when mounted on the car.
- When replacing or repairing compressor, follow "Maintenance of Lubricant Quantity in Compressor" exactly. Refer to HA-109.
- Keep friction surfaces between clutch and pulley clean. If the surface is contaminated, with lubricant, wipe it off by using a clean waste cloth moistened with thinner.
- After compressor service operation, turn the compressor shaft by hand more than five turns in both directions. This will equally distribute lubricant inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for one hour.
- After replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation.

Precautions for Service Equipment RECOVERY/RECYCLING EQUIPMENT

NHHA0158

NHHA0158S01

Be certain to follow the manufacturers instructions for machine operation and machine maintenance. Never introduce any refrigerant other than that specified into the machine.

ELECTRONIC LEAK DETECTOR

NHHA0158S02

Be certain to follow the manufacturer's instructions for tester operation and tester maintenance.

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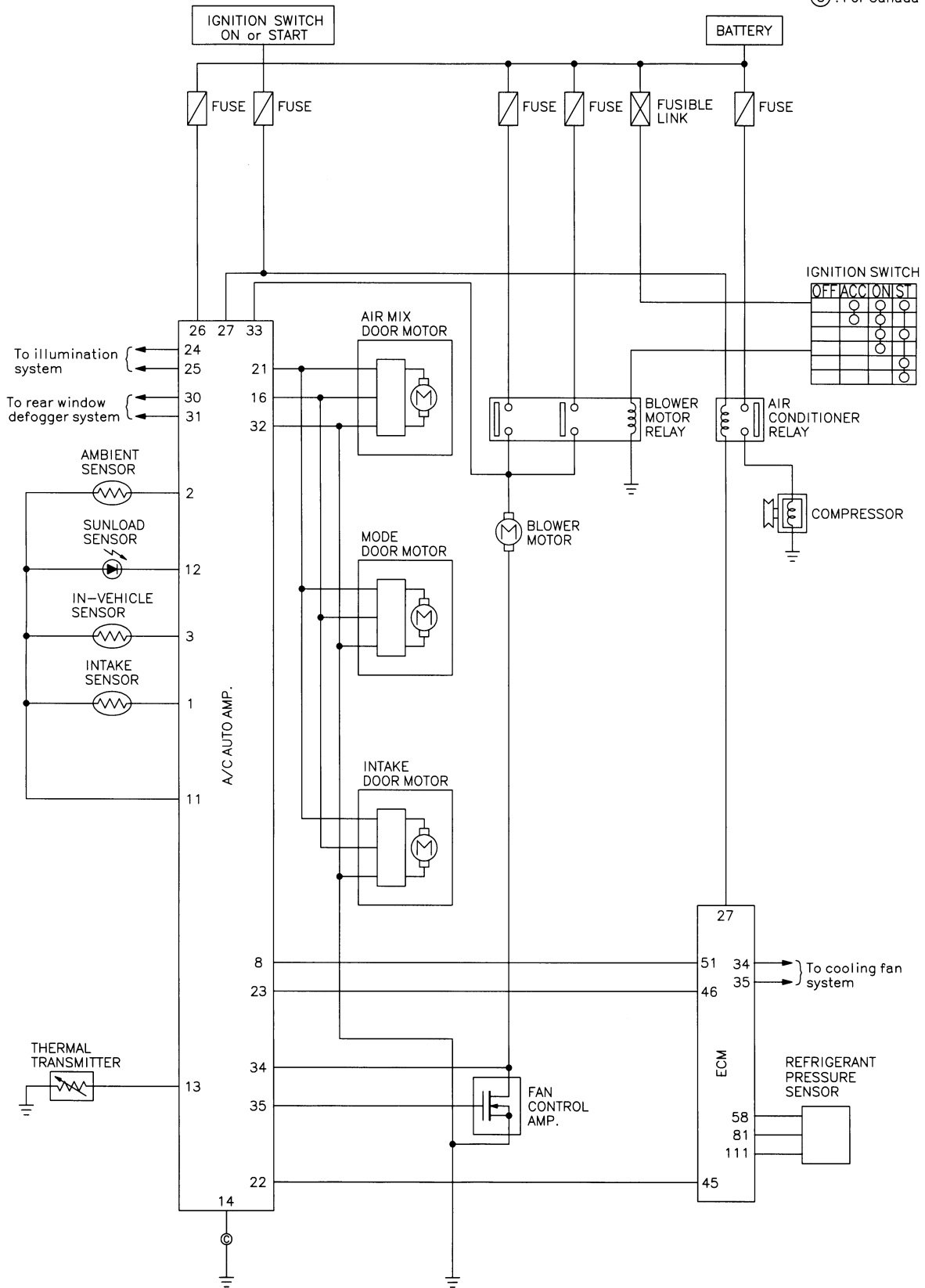
TROUBLE DIAGNOSES

Circuit Diagram

Circuit Diagram

NHHA0173

© : For Canada



MHA914A

Mode Door Motor

TROUBLE DIAGNOSIS PROCEDURE FOR MODE DOOR MOTOR (LAN)

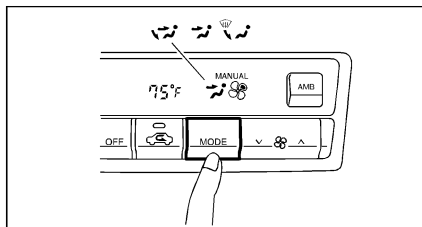
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SYMPTOM:

- Air outlet does not change.
- Mode door motor does not operate normally.

INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Discharge air

- a. Press mode switch four times and DEF button.
- b. Each position indicator should change shape.

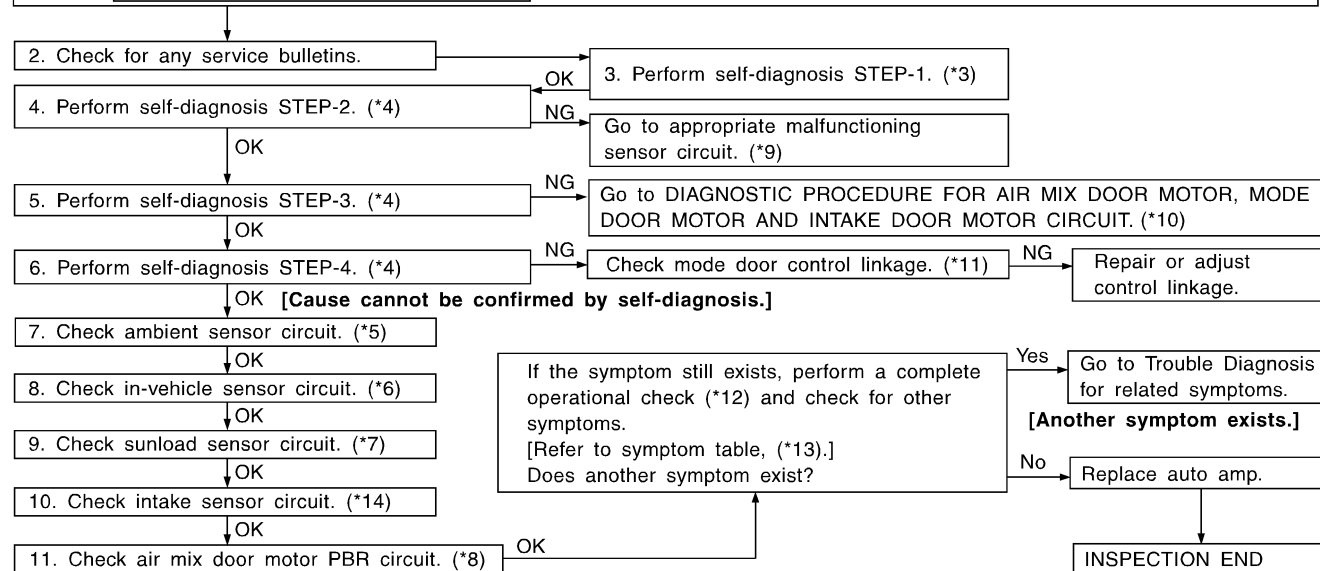
Discharge air flow

Mode control knob	Air outlet/distribution		
	Face	Foot	Defroster
	100%	–	–
	60%	40%	–
	–	80%	20%
	–	60%	40%
	–	–	100%

- c. Confirm that discharge air comes out according to the air distribution table at left. Refer to “Discharge Air Flow” (*1).

NOTE:

- If OK (symptom cannot be duplicated), perform complete operational check (*2).
- If NG (symptom is confirmed), continue with STEP-2 following.
- Confirm that the compressor clutch is engaged (visual inspection) and intake door position is at FRESH when DEF is selected. Intake door position is checked in the next step.



*1: HA-26
 *2: HA-47
 *3: HA-36
 *4: HA-37
 *5: HA-93
 *6: HA-97

*7: HA-100
 *8: HA-106
 *9: FUNCTION CONFIRMATION PROCEDURE (HA-37), see No. 13.
 *10: HA-55

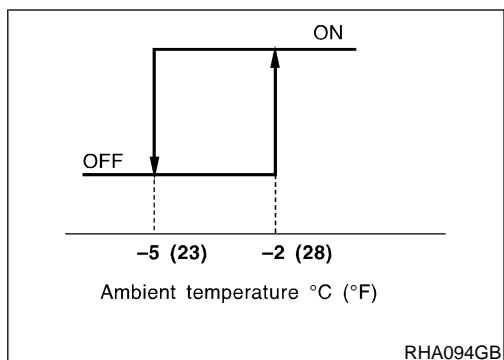
*11: HA-58
 *12: HA-47
 *13: HA-46
 *14: HA-104

RHA370H

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TROUBLE DIAGNOSES

Magnet Clutch (Cont'd)

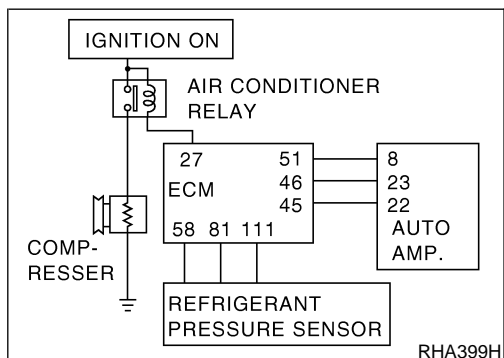


SYSTEM DESCRIPTION

Auto amplifier controls compressor operation by ambient temperature and signal from ECM. =NHHA0202

Low Temperature Protection Control

Auto amplifier will turn the compressor "ON" or "OFF" as determined by a signal detected by ambient sensor. NHHA0202S01
 When ambient temperatures are greater than -2°C (28°F), the compressor turns "ON". The compressor turns "OFF" when ambient temperatures are less than -5°C (23°F).



DIAGNOSTIC PROCEDURE

SYMPTOM: Magnet clutch does not engage when AUTO switch is ON. NHHA0203

1	CHECK POWER SUPPLY FOR COMPRESSOR	<p>Disconnect compressor harness connector. Do approx. 12 volts exist between compressor harness terminal No. 1 and body ground?</p> <div style="text-align: center;"> <p>Compressor connector (A3)</p> </div> <p style="text-align: right;">RHA096GC</p> <p style="text-align: center;">Yes or No</p>
Yes	▶	<p>Check magnet clutch coil.</p> <ol style="list-style-type: none"> 1. If NG, replace magnet clutch. Refer to HA-112. 2. Go to "FUNCTION CONFIRMATION PROCEDURE", "Self-diagnosis", HA-37 and perform self-diagnosis STEP 4. <p style="padding-left: 20px;">Confirm that magnet clutch operation is normal.</p>
No	▶	<p>Disconnect A/C relay. And GO TO 2.</p>

TROUBLE DIAGNOSES

In-vehicle Sensor Circuit (Cont'd)

3	CHECK IN-VEHICLE SENSOR	
Refer to HA-100.		
OK or NG		
OK	▶	1. Replace auto amp. 2. Go to "FUNCTION CONFIRMATION PROCEDURE", "Self-diagnosis", HA-37 and perform self-diagnosis STEP 2. Confirm that code No. 20 is displayed.
NG	▶	1. Replace in-vehicle sensor. 2. Go to "FUNCTION CONFIRMATION PROCEDURE", "Self-diagnosis", HA-37 and perform self-diagnosis STEP 2. Confirm that code No. 20 is displayed.

4	CHECK IN-VEHICLE SENSOR CIRCUIT BETWEEN IN-VEHICLE SENSOR AND AUTO AMP. (LCU)	
1. Disconnect auto amp. (LCU) harness connector. 2. Check circuit continuity between in-vehicle sensor harness terminal No. 1 and auto amp. (LCU) harness terminal No. 3.		
<p>Auto amp. (LCU) connector (M59)</p> <p>In-vehicle sensor (M44)</p> <p>OR/L</p> <p>OR/L</p> <p>RHA479GC</p>		
<p>Continuity should exist. If OK, check harness for short.</p> <p style="text-align: center;">OK or NG</p>		
OK	▶	1. Replace auto amp. (LCU). 2. Go to "FUNCTION CONFIRMATION PROCEDURE", "Self-diagnosis", HA-37 and perform self-diagnosis STEP 2. Confirm that code No. 20 is displayed.
NG	▶	Repair harness or connector.

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SERVICE PROCEDURE

15. Evacuate and recharge A/C system and perform the leak test to confirm no refrigerant leaks.
16. Conduct A/C performance test to ensure system works properly.

Fluorescent Dye Leak Detector

PRECAUTIONS FOR FLUORESCENT DYE LEAK DETECTION

- The fluorescent dye leak detector is not a replacement for an electronic refrigerant leak detector. The fluorescent dye leak detector should be used in conjunction with an electronic refrigerant leak detector (J-41995) to pinpoint refrigerant leaks.
- For your safety and your customer's satisfaction, read and follow all manufacturer's operating instructions and precautions prior to performing the work.
- Refer to "Precautions for Leak Detection Dye", HA-3.

NHHA0274

CHECKING SYSTEM FOR LEAKS USING THE FLUORESCENT LEAK DETECTOR

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

NHHA0275

DYE INJECTION

(This procedure is only necessary when re-charging the system or when the compressor has seized and was replaced.)

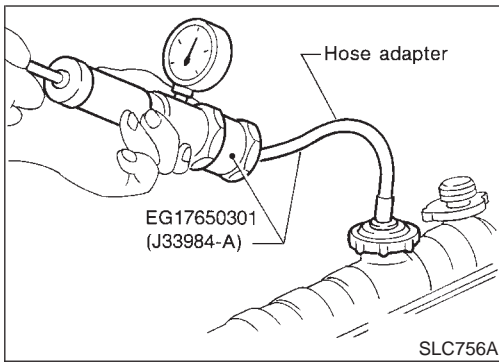
Refer to "Precaution for Leak Detection Dye", HA-3.

1. Check A/C system static (at rest) pressure. Pressure must be at least 345 kPa (3.5 kg/cm², 50 psi).
2. Pour one bottle (1/4 ounce/7.4 cc) of the A/C refrigerant dye into the injector tool (J-41459).
3. Connect the injector tool to the A/C LOW PRESSURE side service fitting.
4. Start engine and switch A/C ON.
5. With the A/C operating (compressor running), inject one bottle (1/4 ounce/7.4 cc) of fluorescent dye through the low-pressure service valve using dye injector tool J-41459 (refer to the manufacture's operating instructions).

NHHA0276

ENGINE COOLING SYSTEM

System Check (Cont'd)



CHECKING COOLING SYSTEM FOR LEAKS

NHLC0016S04

To check for leakage, apply pressure to the cooling system with a tester.

Testing pressure:
157 kPa (1.6 kg/cm², 23 psi)

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

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Water Pump

REMOVAL AND INSTALLATION

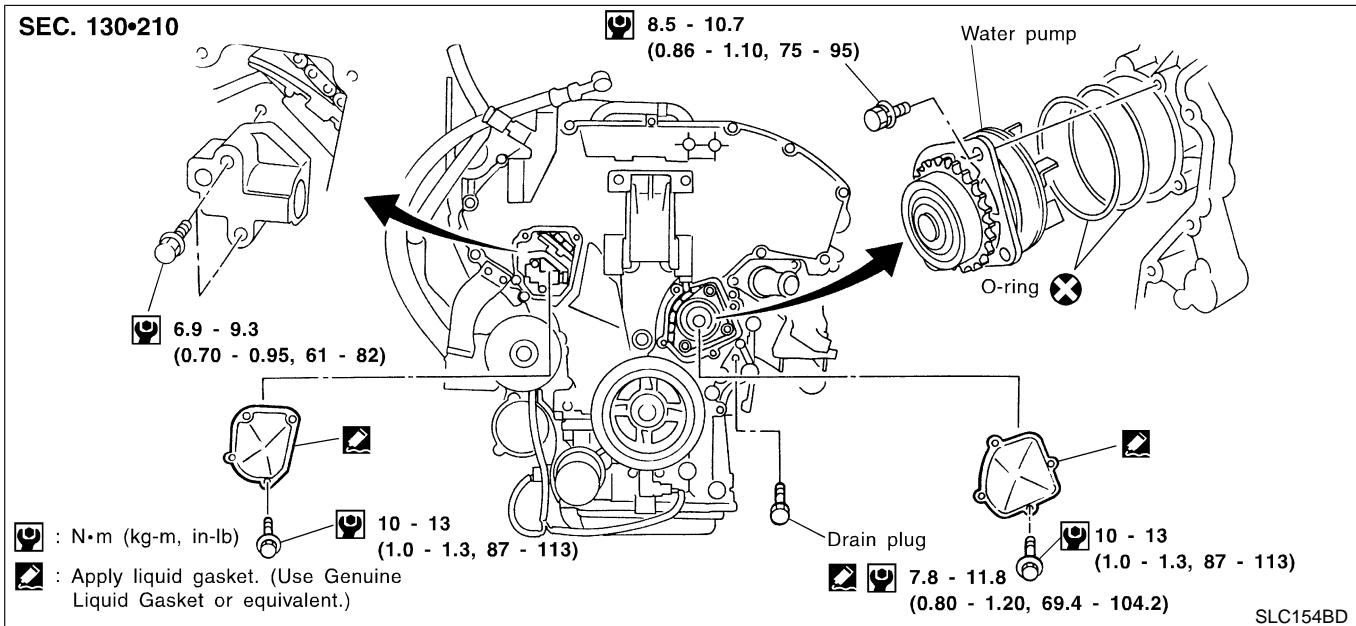
NHLC0017

- CAUTION:**
- When removing water pump assembly, be careful not to get coolant on drive belt.
 - Water pump cannot be disassembled and should be replaced as a unit.
 - After installing water pump, connect hose and clamp securely, then check for leaks using radiator cap tester.

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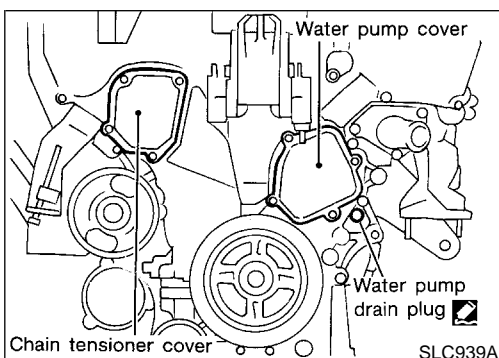
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REMOVAL

NHLC0018

1. Drain coolant from drain plugs on radiator and right side of cylinder block. Refer to MA-14, "Changing Engine Coolant".
2. Remove right side engine mounting, mounting bracket and nuts.
3. Remove drive belts and idler pulley bracket.
4. Remove water pump drain plug.
5. Remove chain tensioner cover and water pump cover.

PERIODIC MAINTENANCE

Schedule 2 (Cont'd)

NHMA0005S0202

CHASSIS AND BODY MAINTENANCE

Abbreviations: R = Replace, I = Inspect, I = Inspect. Correct or replace if necessary.

MAINTENANCE OPERATION	Miles x 1,000 (km x 1,000) Months	MAINTENANCE INTERVAL								Reference Section - Page or - Content Title	
		7.5 (12) 6	15 (24) 12	22.5 (36) 18	30 (48) 24	37.5 (60) 30	45 (72) 36	52.5 (84) 42	60 (96) 48		
Perform at number of miles, kilometers or months, whichever comes first.											
Brake lines & cables		I	I		I		I				MA-24
Brake pads & rotors		I	I		I		I				MA-24
Automatic transaxle fluid		I	I		I		I				MA-21
Steering gear & linkage, axle & suspension parts											MA-25 NOTE (2)
Tire rotation	NOTE (3)										MA-4
Front drive shaft boots		I	I		I		I				AX-4, "Drive Shaft"
Exhaust system											MA-21
Supplemental air bag system and supplemental side air bag systems	NOTE (1)										RS-19, "Maintenance Items"
Ventilation air filter		R			R		R				HA-123, "Ventilation Air Filter"
ASCD vacuum hoses		I			I		I				EL-297, "ASCD ACTUATOR/PUMP CHECK"

NOTE:

- (1) Inspect the supplemental air bag systems 10 years after the date of manufacture noted on the FMVSS certification label.
- (2) Refer to SU-6, "Front Suspension Parts", SU-19, "Rear Suspension Parts", AX-3, "Front Axle Parts" and AX-18, "Rear Axle Parts".
- (3) Refer to "Tire rotation" under the "General maintenance" heading earlier in this section.

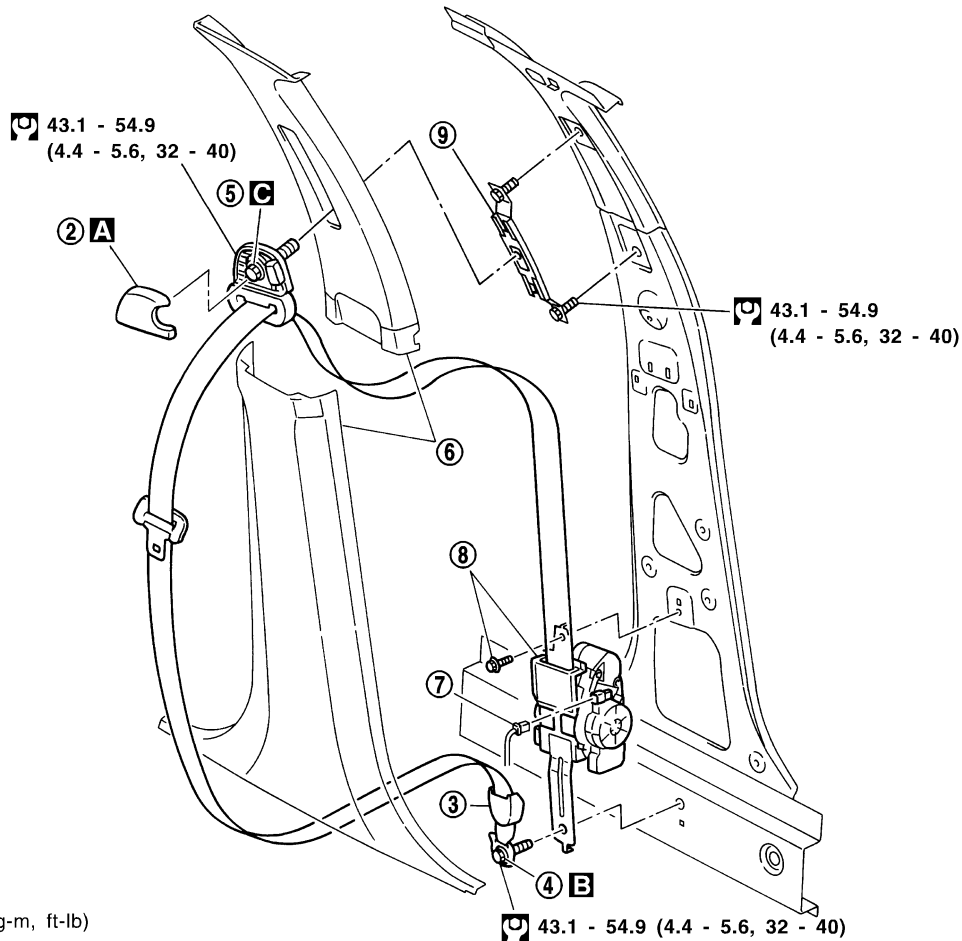
Front Seat Belt

REMOVAL AND INSTALLATION

=NHR50003

1. Slide the seat all the way forward and tilt the seatback toward the front.
2. Remove adjuster cover. **A**
3. Slide floor anchor cover.
4. Remove floor anchor bolt. **B**
5. Remove shoulder anchor bolt. **C**
6. Remove front and rear kicking plate, then remove center pillar upper and lower garnish. Refer to BT-32, "SIDE AND FLOOR TRIM" for details.
7. Disconnect seat belt pre-tensioner connector.
8. Remove the screw securing seat belt pre-tensioner retractor, then remove seat belt and seat belt pre-tensioner retractor.
9. Remove bolts securing seat belt adjuster, then remove seat belt adjuster.

SEC. 796•868



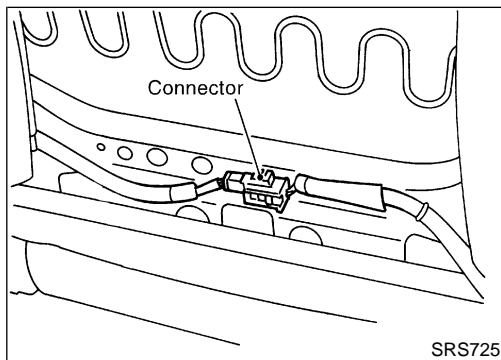
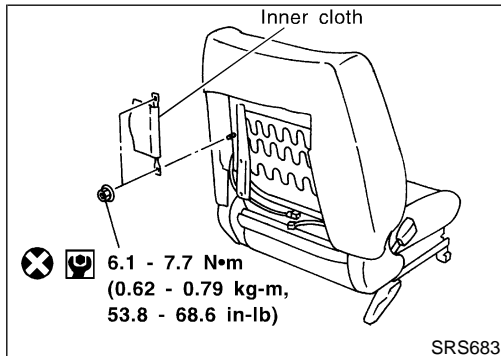
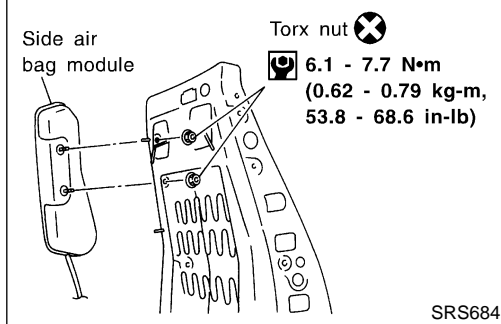
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SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

Side Air Bag Module (Cont'd)

SEC. 870



INSTALLATION

NHRS0021

1. Install side air bag module on seat back frame with new torx nuts coated with bonding agent.
2. Install side air bag connector.
3. Install the seat back trim. Refer to BT-46, "Front Seat".
4. Secure the inner cloth which covers the side air bag module with nuts.
5. Connect side air bag module connector.
6. Install seat back board with new clips.
7. Connect both battery cables.
8. Go to "SRS Operation Check", RS-44 and perform self-diagnosis to ensure entire SRS operates properly. (Use CONSULT-II or air bag warning lamp.)

Disposal of Air Bag Module and Seat Belt Pre-tensioner

NHRS0022

- Before disposing of air bag module and seat belt pre-tensioner, or vehicles equipped with such systems, deploy the systems. If such systems have already been deployed due to an accident, dispose of them as indicated in "DISPOSING OF AIR BAG MODULE AND SEAT BELT PRE-TENSIONER" (RS-33).
- When deploying the air bag module and seat belt pre-tensioner, always use the Special Service Tool; Deployment tool KV99106400 (J38381).
- When deploying the air bag module and seat belt pre-tensioner, stand at least 5 m (16 ft) away from the deployment component.
- When deploying air bag module and seat belt pre-tensioner, a fairly loud noise is made, followed by smoke being released. The smoke is not poisonous, however, be careful not to inhale smoke since it irritates the throat and can cause choking.
- Always activate one air bag module at a time.
- Due to heat, leave air bag module unattended for more than 30 minutes after deployment. Also leave seat belt pre-tensioner unattended for more than 10 minutes after deployment.
- Be sure to wear gloves when handling a deployed air bag

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

 Trouble Diagnoses with CONSULT-II (Cont'd)

SELECT SYSTEM
ENGINE
A/T
AIR BAG

SRS771

5. Touch "AIR BAG".

SELECT DIAG MODE
SELF-DIAG [CURRENT]
SELF-DIAG [PAST]
TROUBLE DIAG RECORD
ECU DISCRIMINATED NO.

SRS697

6. Touch "SELF-DIAG [PAST]".

SELF-DIAG [PAST]	
DTC RESULTS:	
AIR BAG MODULE [OPEN]	

SRS700

7. If diagnostic codes are displayed on "SELF-DIAG [PAST]", go to step 10.

SELF-DIAG [PAST]	
DTC RESULTS:	
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	

SRS702

If no malfunction is detected on "SELF-DIAG [PAST]", touch "BACK" and go back to "SELECT DIAG MODE".

SELECT DIAG MODE
SELF-DIAG [CURRENT]
SELF-DIAG [PAST]
TROUBLE DIAG RECORD
ECU DISCRIMINATED NO.

SRS697

8. Touch "TROUBLE DIAG RECORD".

NOTE:
With "TROUBLE DIAG RECORD", diagnosis results previously erased by a reset operation can be displayed.

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BATTERY

How to Handle Battery (Cont'd)

Battery electrolyte temperature °C (°F)	Add to specific gravity reading
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

NHSC0003S04

CAUTION:

- Do not “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. Do not turn on the charger first, as this may cause a spark.
- If battery electrolyte temperature rises above 60°C (140°F), stop charging. Always charge battery at a temperature below 60°C (140°F).

Charging Rates

NHSC0003S0401

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

Do not charge at more than 50 ampere rate.

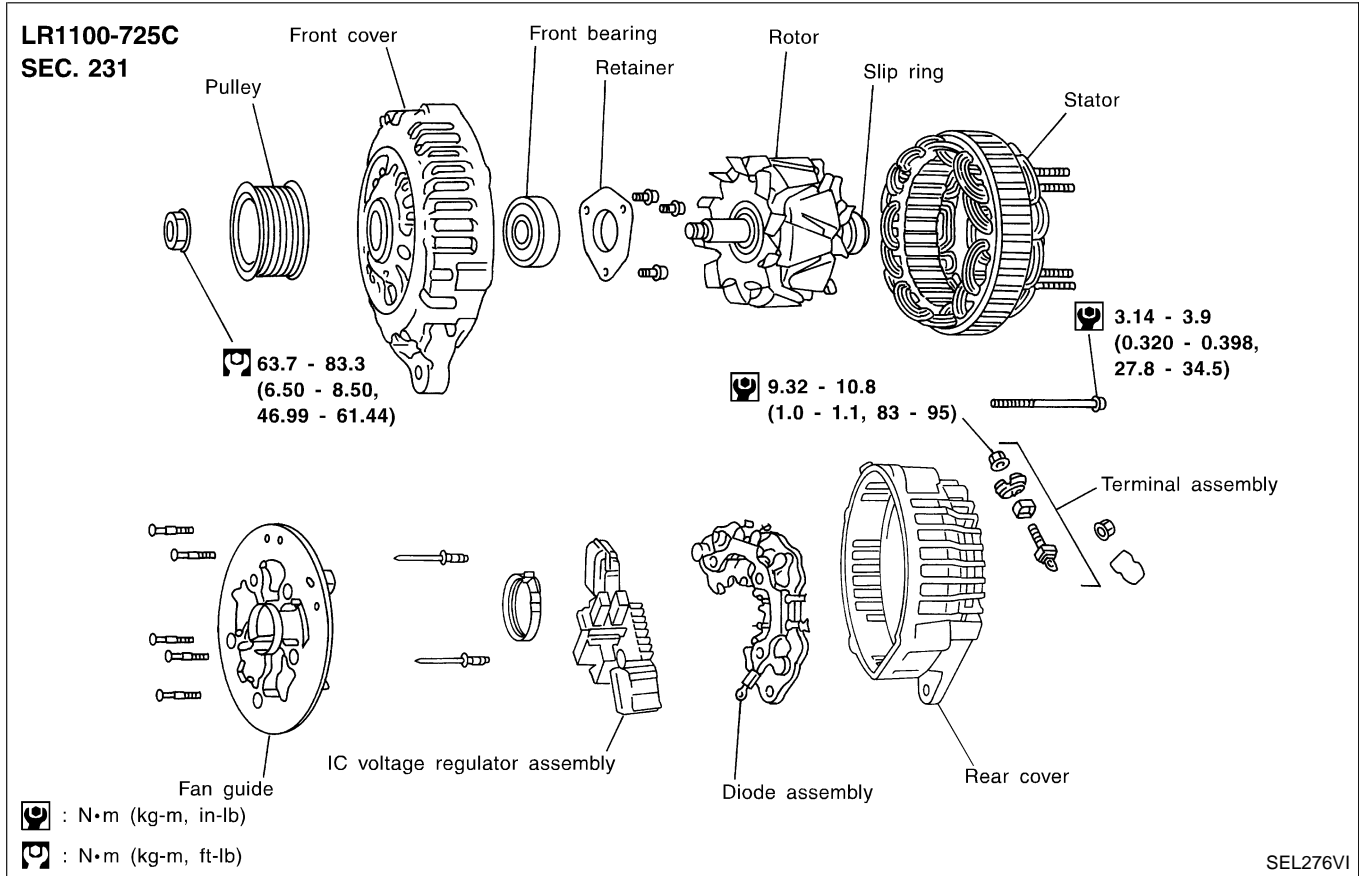
NOTE:

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 .050, the battery should be replaced.

Construction

NHSC0012

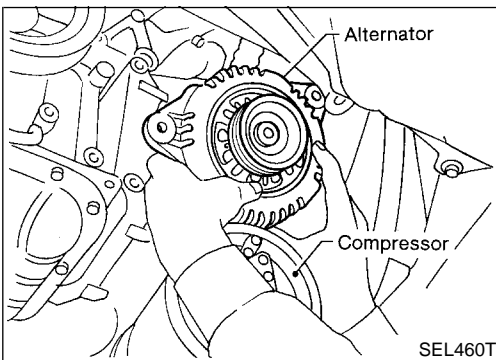


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Removal and Installation

REMOVAL

1. Remove engine undercover RH.
2. Remove side inspection cover RH.
3. Loosen belt idler pulley.
4. Remove drive belt.
5. Remove A/C compressor mounting bolts (four).
6. Slide A/C compressor forward.
7. Disconnect alternator harness connector.
8. Remove alternator upper bolt and lower bolt.

NHSC0013

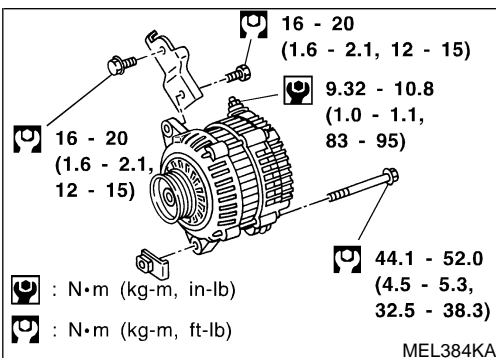
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NHSC0013S02

INSTALLATION

To install, reverse the removal procedure.

IDX

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