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NISSAN PATHFINDER

MODEL R50 SERIES

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CLUTCH AND BAND CHART

NAAT0012S03

Shift position		Reverse clutch	High clutch	Forward clutch	Overrun clutch	Band servo			Forward one-way clutch	Low one-way clutch	Low & reverse brake	Lock-up	Remarks
						2nd apply	3rd release	4th apply					
P													PARK POSITION
R		○									○		REVERSE POSITION
N													NEUTRAL POSITION
D*4	1st			○	*1D				B	B			Automatic shift 1 ⇔ 2 ⇔ 3 ⇔ 4
	2nd			○	*1A	○			B				
	3rd		○	○	*1A	*2C	C		B			*5○	
	4th		○	C		*3C	C	○				○	
2	1st			○	○				B	B			Automatic shift 1 ⇔ 2
	2nd			○	○	○			B				
1	1st			○	○				B	B	○		Locks (held stationary) in 1st speed 1 ⇐ 2
	2nd			○	○	○			B				

*1: Operates when overdrive control switch is being set in "OFF" position.

*2: Oil pressure is applied to both 2nd "apply" side and 3rd "release" side of band servo piston. However, brake band does not contract because oil pressure area on the "release" side is greater than that on the "apply" side.

*3: Oil pressure is applied to 4th "apply" side in condition *2 above, and brake band contracts.

*4: A/T will not shift to 4th when overdrive control switch is set in "OFF" position.

*5: Operates when overdrive control switch is "OFF".

○ : Operates.

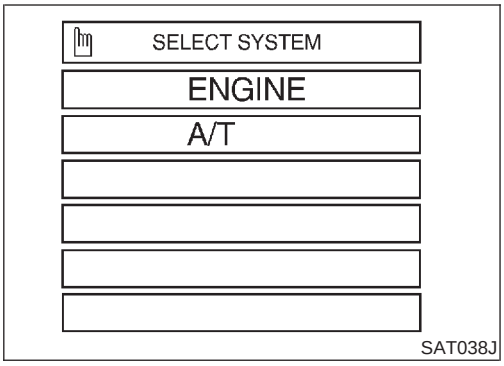
A: Operates when throttle opening is less than 3/16, activating engine brake.

B: Operates during "progressive" acceleration.

C: Operates but does not affect power transmission.

D: Operates when throttle opening is less than 3/16, but does not affect engine brake.

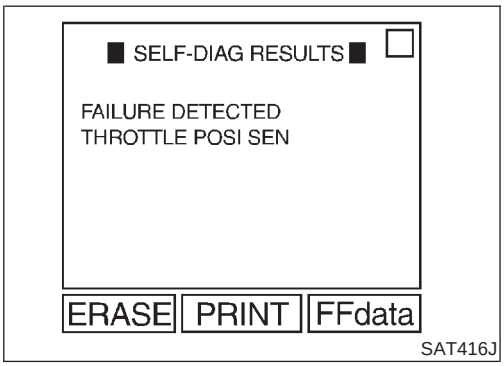
CONSULT (Cont'd)



SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT)

NAAT0184S01

1. Turn on CONSULT and touch "ENGINE" for OBD-II detected items or touch "A/T" for TCM self-diagnosis.
   If A/T is not displayed, check TCM power supply and ground circuit. Refer to AT-92. If result is NG, refer to EL-9, "Schematic".



2. Touch "SELF-DIAG RESULTS".
   Display shows malfunction experienced since the last erasing operation.
   CONSULT performs REAL-TIME SELF-DIAGNOSIS.
   Also, any malfunction detected while in this mode will be displayed at real time.

SELF-DIAGNOSTIC RESULT TEST MODE

NAAT0184S02

Detected items (Screen terms for CONSULT, "SELF-DIAG RESULTS" test mode)		Malfunction is detected when ...	TCM self-diagnosis	OBD-II (DTC)
"A/T"	"ENGINE"		O/D OFF Available by O/D OFF indicator lamp or "A/T" on CONSULT	SERVICE ENGINE SOON Available by malfunction indicator lamp*2, "ENGINE" on CONSULT or GST
PNP switch circuit		• TCM does not receive the correct voltage signal (based on the gear position) from the switch.	—	P0705
—	PNP SW/CIRC			
Revolution sensor		• TCM does not receive the proper voltage signal from the sensor.	X	P0720
VHCL SPEED SEN·A/T	VEH SPD SEN/CIR AT			
Vehicle speed sensor (Meter)		• TCM does not receive the proper voltage signal from the sensor.	X	—
VHCL SPEED SEN·MTR	—			
A/T 1st gear function		• A/T cannot be shifted to the 1st gear position even if electrical circuit is good.	—	P0731*1
—	A/T 1ST GR FNCTN			
A/T 2nd gear function		• A/T cannot be shifted to the 2nd gear position even if electrical circuit is good.	—	P0732*1
—	A/T 2ND GR FNCTN			
A/T 3rd gear function		• A/T cannot be shifted to the 3rd gear position even if electrical circuit is good.	—	P0733*1
—	A/T 3RD GR FNCTN			
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			

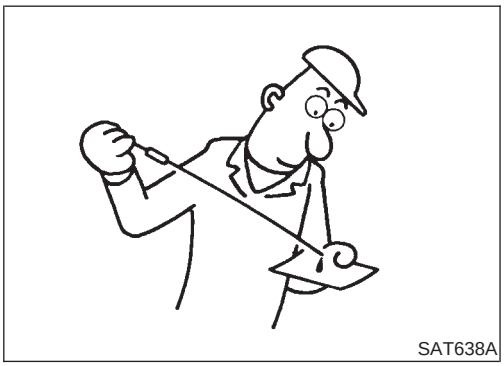
A/T Fluid Check

NAAT0021

FLUID LEAKAGE CHECK

NAAT0021S01

1. Clean area suspected of leaking. — for example, mating surface of converter housing and transmission case.
2. Start engine, apply foot brake, place selector lever in “D” position and wait a few minutes.
3. Stop engine.
4. Check for fresh leakage.


SAT638A

FLUID CONDITION CHECK

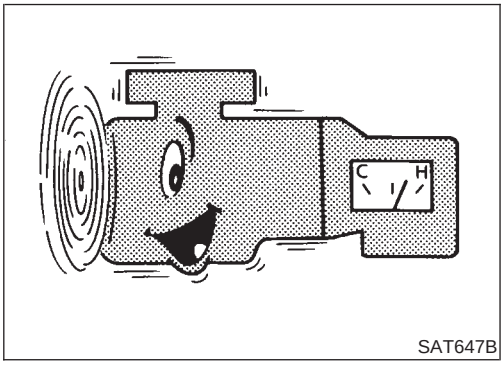
NAAT0021S02

Fluid color	Suspected problem
Dark or black with burned odor	Wear of frictional material
Milky pink	Water contamination — Road water entering through filler tube or breather
Varnished fluid, light to dark brown and tacky	Oxidation — Over or under filling, — Overheating

FLUID LEVEL CHECK

NAAT0021S03

Refer to MA-24, “Checking A/T Fluid”.



SAT647B

Stall Test

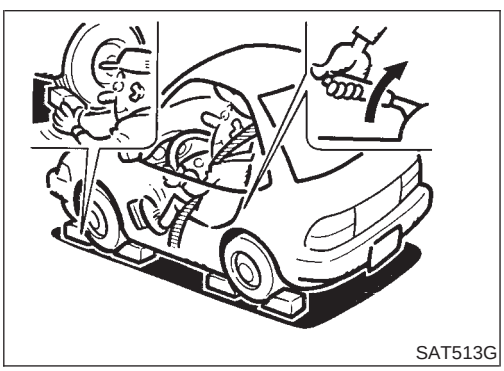
NAAT0022

STALL TEST PROCEDURE

NAAT0022S01

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)


SAT513G

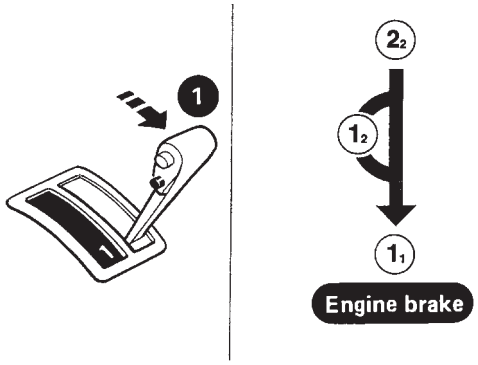
3. Set parking brake and block wheels.
4. Install a tachometer where it can be seen by driver during test.

- **It is good practice to put a mark on point of specified engine rpm on indicator.**

Road Test (Cont'd)

7	CHECK ENGINE BRAKE

Does vehicle decelerate by engine brake?



SAT778B

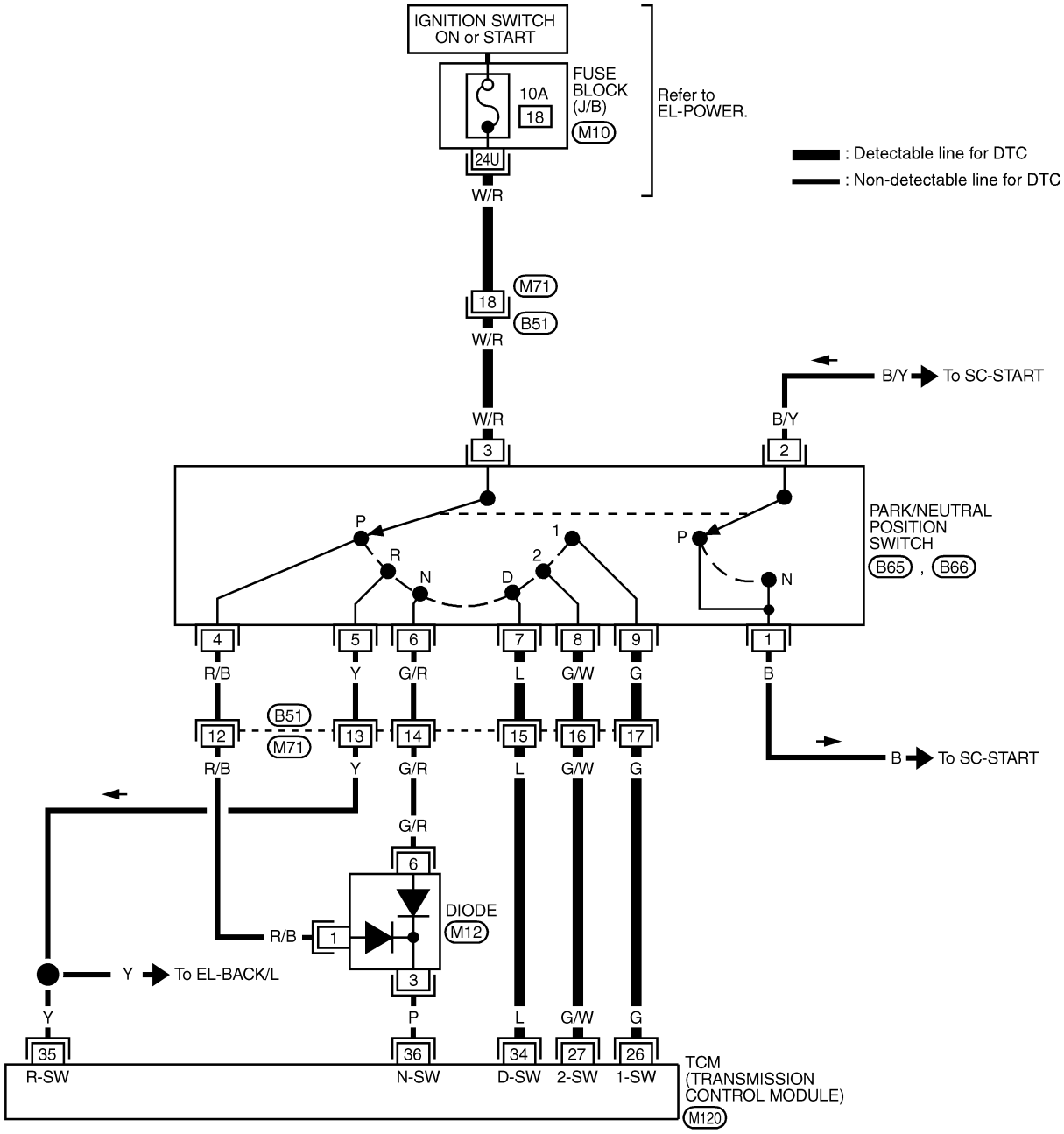
Yes or No

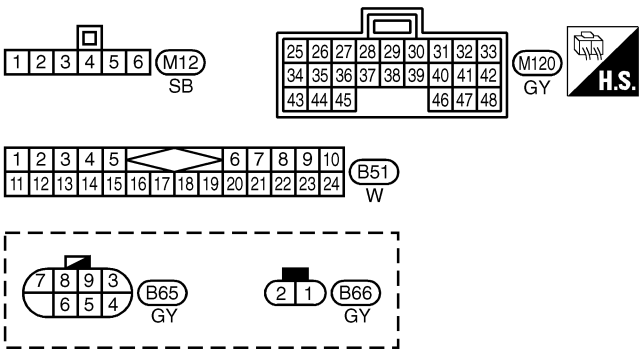
Yes ▶	1. Stop vehicle. 2. Perform self-diagnosis. Refer to TCM SELF-DIAGNOSTIC PROCEDURE (No Tools), AT-46.
No ▶	Go to "20. Vehicle Does Not Decelerate By Engine Brake", AT-247.

Wiring Diagram — AT — PNP/SW

NAAT0186

AT-PNP/SW-01





Refer to last page (Foldout page).
M10

MAT753A

Malfunction for P0731 exists.	2 → 2 → 3 → 3
	4 → 3 → 3 → 4

8) Make sure that "OK" is displayed. (If "NG" is displayed, refer to "DIAGNOSTIC PROCEDURE".)
Refer to "DIAGNOSTIC PROCEDURE", AT-124.
Refer to shift schedule, AT-345.

With GST

1) Start engine and warm up ATF.
2) Accelerate vehicle to 20 to 25 km/h (12 to 16 MPH) under the following condition and release the accelerator pedal completely.
THROTTLE POSI: Less than 1.0/8
Selector lever: D position (OD "ON")
Refer to shift schedule, AT-345.
3) Depress accelerator pedal to WOT (more than 7.0/8 of "THROTTLE POSI") quickly from a speed of 20 to 25 km/h (12 to 16 MPH). (It will take approximately 3 seconds.)
4) Select "MODE 7" with GST.

No Tools

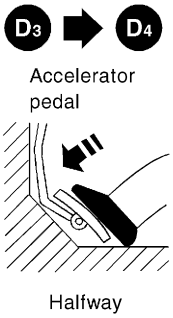
1) Start engine and warm up ATF.
2) Accelerate vehicle to 20 to 25 km/h (12 to 16 MPH) under the following condition and release the accelerator pedal completely.
THROTTLE POSI: Less than 1.0/8
Selector lever: D position (OD "ON")
Refer to shift schedule, AT-345.
3) Depress accelerator pedal to WOT (more than 7.0/8 of "THROTTLE POSI") quickly from a speed of 20 to 25 km/h (12 to 16 MPH). (It will take approximately 3 seconds.)
4) Perform self-diagnosis for ECM.
Refer to EC section ["Malfunction Indicator Lamp (MIL)", "ON BOARD DIAGNOSTIC SYSTEM DESCRIPTION"].

Diagnostic Procedure

NAAT0049

1	CHECK SHIFT UP (D_3 TO D_4)

During “Cruise test − Part 1”, AT-71.
Does A/T shift from D_3 to D_4 at the specified speed?



SAT988H

Yes or No

Yes	▶	GO TO 9.
No	▶	GO TO 2.

2	CHECK LINE PRESSURE

Perform line pressure test. Refer to AT-62.

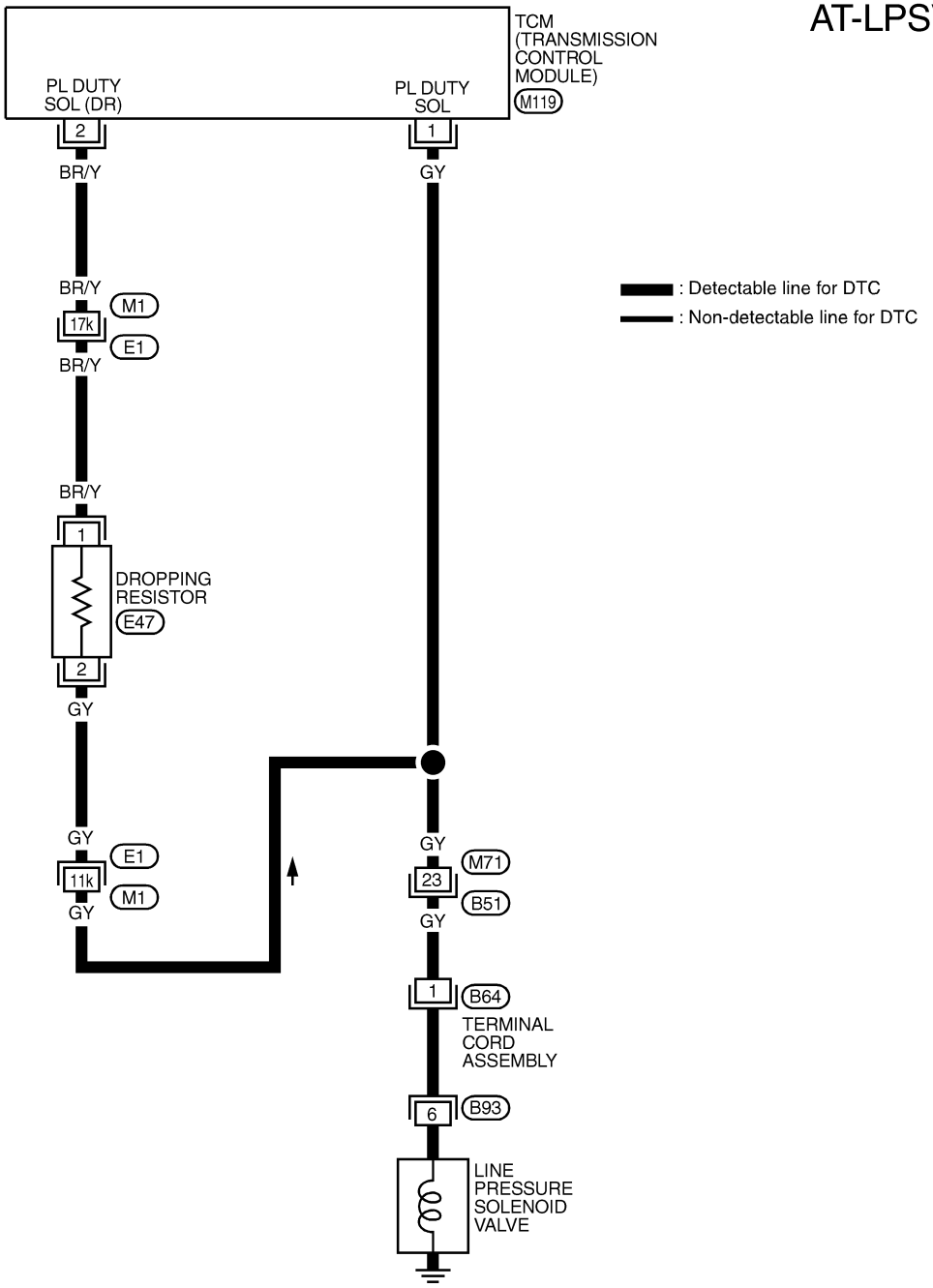
OK or NG

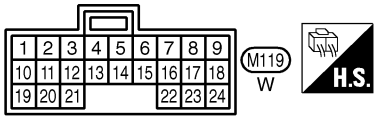
OK	▶	GO TO 3.
NG	▶	GO TO 6.

Wiring Diagram — AT — LPSV

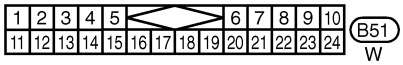
NAAT0196

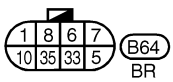
AT-LPSV-01

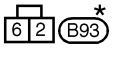












* : This connector is not shown in "HARNESS LAYOUT" in EL section.

Refer to last page (Foldout page).
M1 , E1

MAT763A

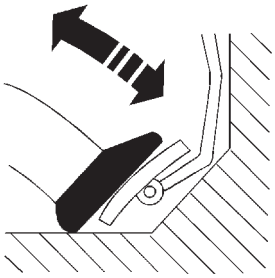
3	CHECK THROTTLE POSITION SWITCH CIRCUIT (With CONSULT)

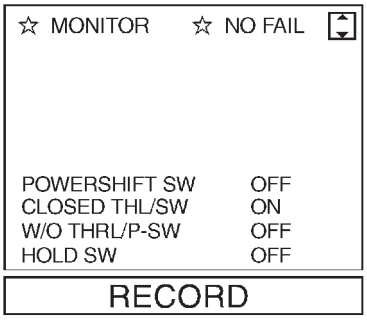
With CONSULT

1. Turn ignition switch to "ON" position.
   (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT.
3. Apply vacuum to the throttle opener, then check the following. Refer to steps 1 and 2 of "Preparation", "TCM SELF-DIAGNOSTIC PROCEDURE (No Tools)", AT-46.
4. Read out "CLOSED THL/SW" and "W/O THRL/P-SW" depressing and releasing accelerator pedal.
   Check the signal of throttle position switch is indicated properly.

Accelerator pedal condition	Data monitor	
	CLOSED THL/SW	W/O THRL/P-SW
Released	ON	OFF
Fully depressed	OFF	ON

MTBL0011





SAT052I

OK or NG

OK	▶	GO TO 5.
NG	▶	**Check the following items:** ● Throttle position switch Refer to "Component Inspection", AT-187. ● Harness for short or open between ignition switch and throttle position switch (Main harness) ● Harness for short or open between throttle position switch and TCM (Main harness)

Diagnostic Procedure

=NAAT0216

1	CHECK DTC	
With CONSULT 1. Turn ignition switch “ON” and select “SELF DIAG RESULTS” mode for A/T with CONSULT. 2. Move selector lever to “R” position. 3. Depress accelerator pedal (Full throttle position). 4. Touch “ERASE”. 5. Turn ignition switch “OFF” position for 10 seconds. PERFORM DIAGNOSTIC TROUBLE CODE (DTC) CONFIRMATION PROCEDURE. See previous page. **Is the “CONTROL UNIT (EEP ROM)” displayed again?**		
Yes	▶	Replace TCM.
No	▶	**INSPECTION END**

9. A/T Does Not Shift: $D_1 \rightarrow D_2$ Or Does Not Kickdown: $D_4 \rightarrow D_2$

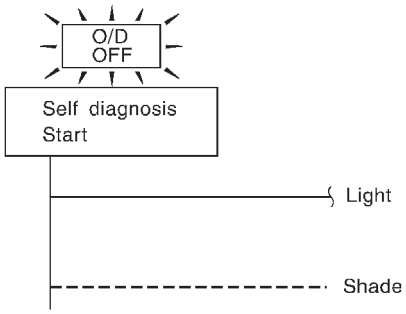
=NAAT0081

SYMPTOM:

A/T does not shift from D_1 to D_2 at the specified speed.
A/T does not shift from D_4 to D_2 when depressing accelerator pedal fully at the specified speed.

1	CHECK SYMPTOM	
Are "7. Vehicle Does Not Creep Forward In "D", "2" Or "1" Position" and "8. Vehicle Cannot Be Started From D_1" OK?		
Yes or No		
Yes	▶	GO TO 2.
No	▶	Go to "7. Vehicle Does Not Creep Forward In "D", "2" Or "1" Position" and "8. Vehicle Cannot Be Started From D_1", AT-221, 224.

2	CHECK PNP SWITCH CIRCUIT	
With CONSULT Does "ECU INPUT SIGNALS" in Data Monitor show damage to PNP switch circuit?		
Without CONSULT Does self-diagnosis show damage to PNP switch circuit?		



SAT367J

Yes or No		
Yes	▶	Check PNP switch circuit. Refer to "DTC P0705", AT-102.
No	▶	GO TO 3.

3	CHECK VEHICLE SPEED SENSOR·A/T AND VEHICLE SPEED SENSOR·MTR CIRCUIT	
Check vehicle speed sensor·A/T (revolution sensor) and vehicle speed sensor·MTR circuit. Refer to "DTC P0720 and VEHICLE SPEED SENSOR·MTR", AT-113, 202.		
OK or NG		
OK	▶	GO TO 4.
NG	▶	Repair or replace vehicle speed sensor·A/T (revolution sensor) and vehicle speed sensor·MTR circuits.

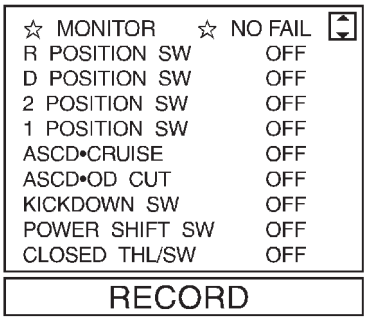
DIAGNOSTIC PROCEDURE

=NAAT0204S03

NOTE:
The diagnostic procedure includes inspections for the overdrive control and throttle position switch circuits.

1	CHECK PNP SWITCH CIRCUIT (With CONSULT)

With CONSULT
1. Turn ignition switch to "ON" position.
   (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT.
3. Read out "P", "R", "N", "D", "2" and "1" position switches moving selector lever to each position. Check the signal of the selector lever position is indicated properly.



SAT761I

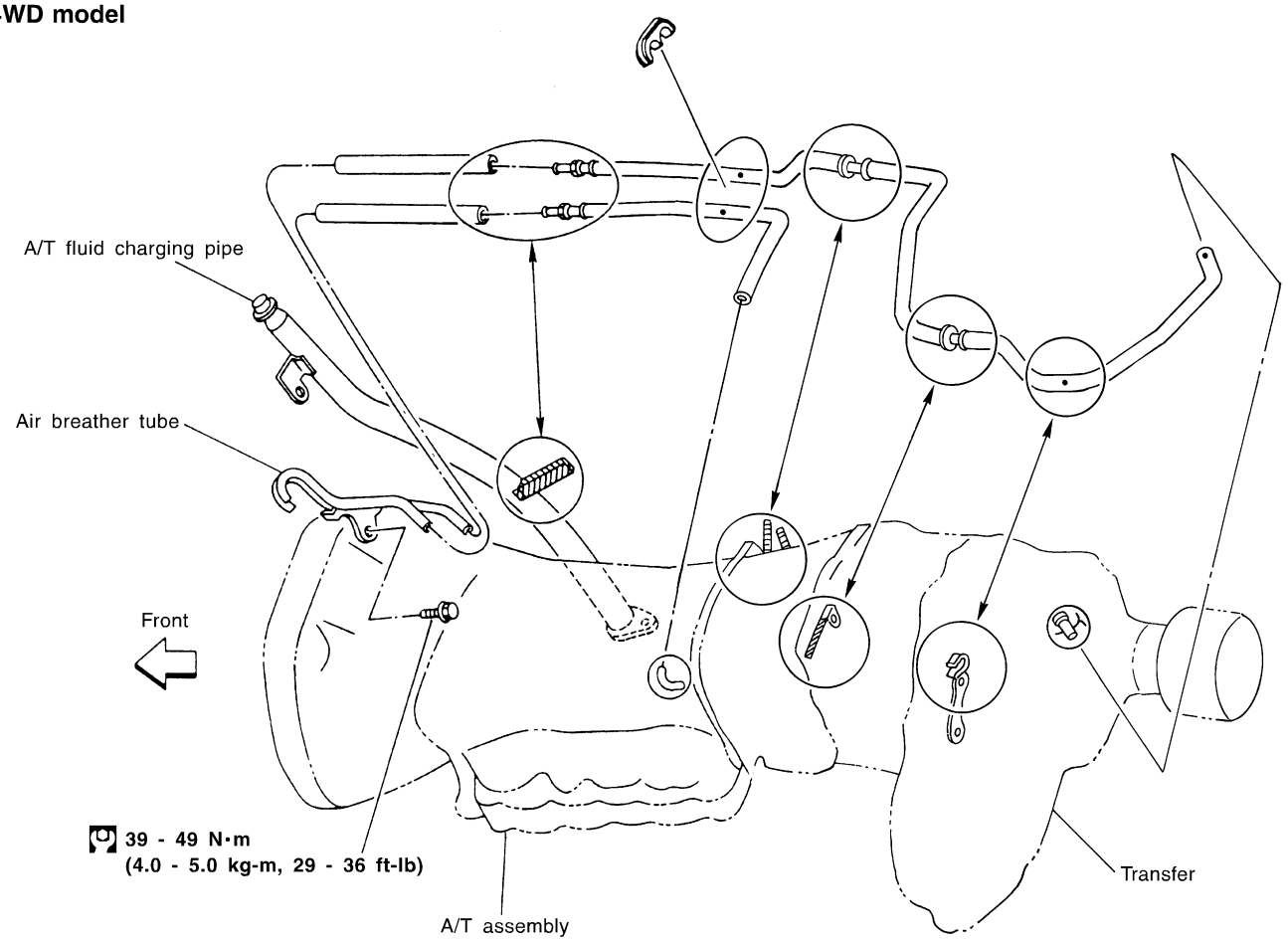
OK or NG

OK	▶	GO TO 3.
NG	▶	**Check the following items:** ● PNP switch Refer to "Component Inspection", AT-253. ● Harness for short or open between ignition switch and PNP switch (Main harness) ● Harness for short or open between PNP switch and TCM (Main harness)

AIR BREATHER HOSE

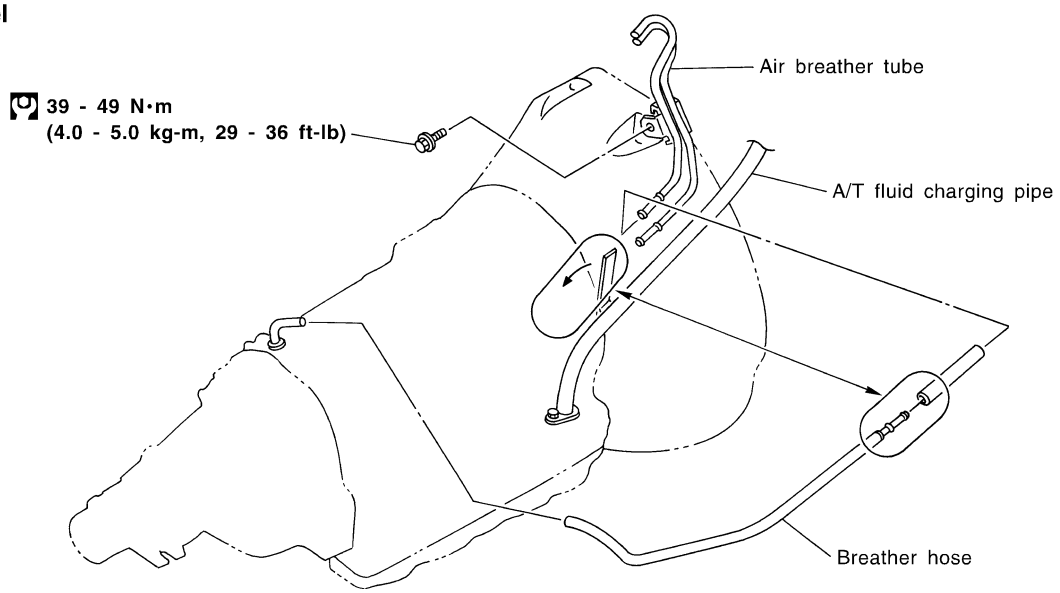
NAAT0107S01

4WD model



SAT572J

2WD model



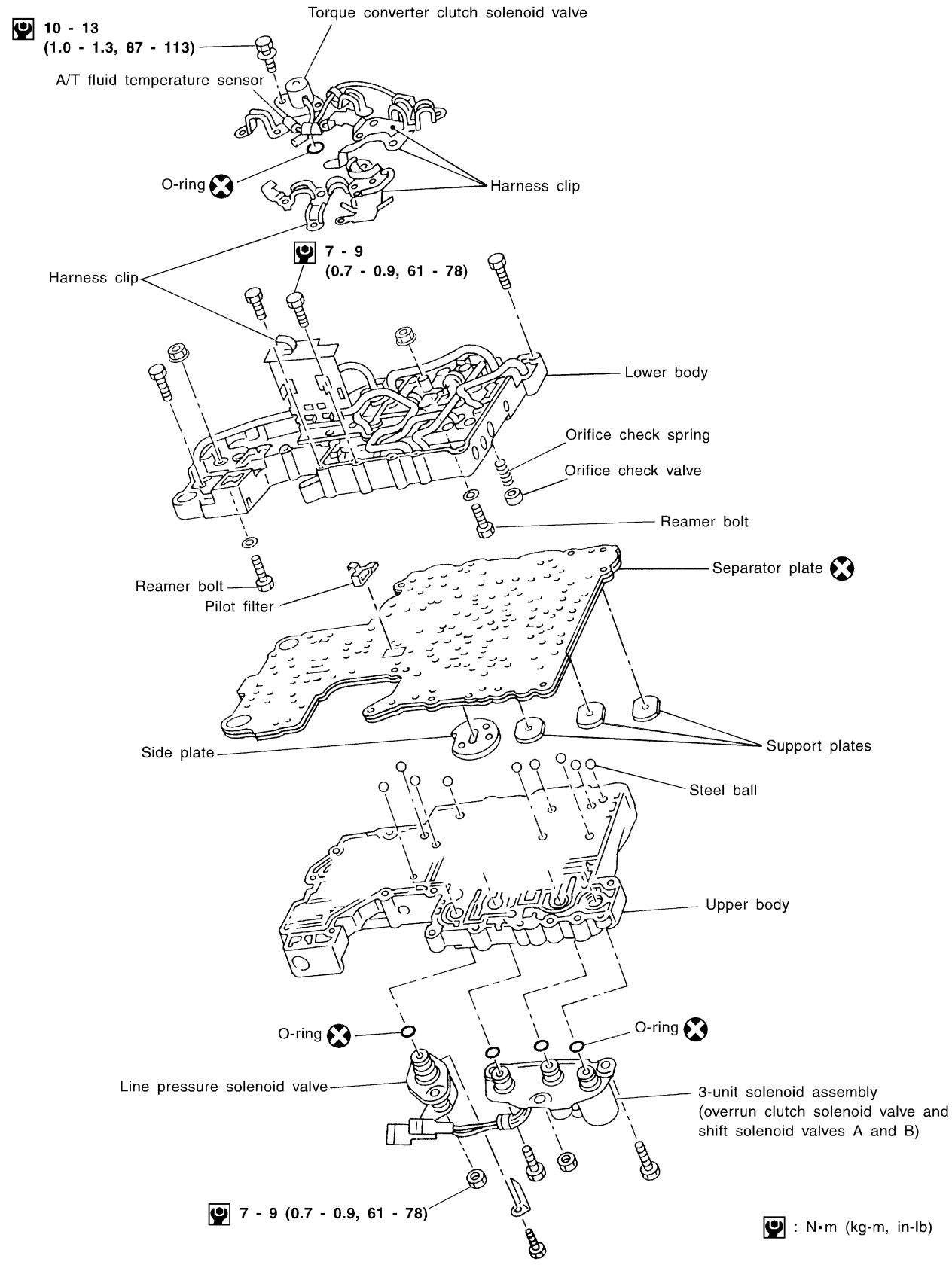
SAT573J

Control Valve Assembly

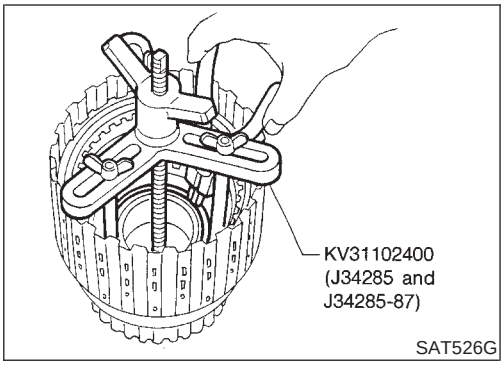
COMPONENTS

NAAT0116

SEC. 317

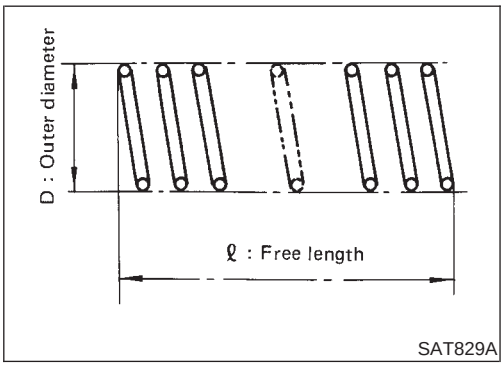


SAT534J



SAT526G

- Removal and installation of return springs

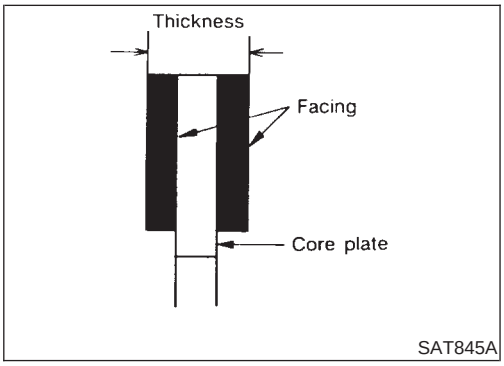


SAT829A

- Inspection of forward clutch and overrun clutch return springs

  Inspection standard:

  Refer to SDS, AT-346.



SAT845A

- Inspection of forward clutch drive plates

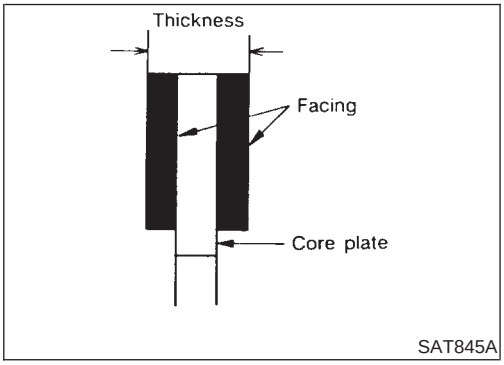
  Thickness of drive plate:

  Standard

  1.52 - 1.67 mm (0.0598 - 0.0657 in)

  Wear limit

  1.40 mm (0.0551 in)



SAT845A

- Inspection of overrun clutch drive plates

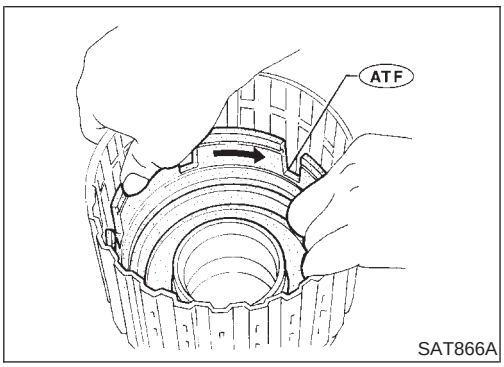
  Thickness of drive plate:

  Standard

  1.90 - 2.05 mm (0.0748 - 0.0807 in)

  Wear limit

  1.80 mm (0.0709 in)

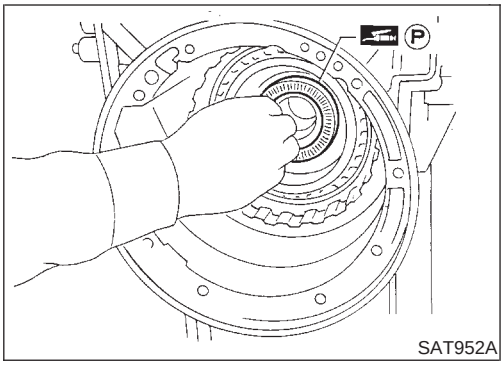


SAT866A

- Installation of forward clutch piston and overrun clutch piston

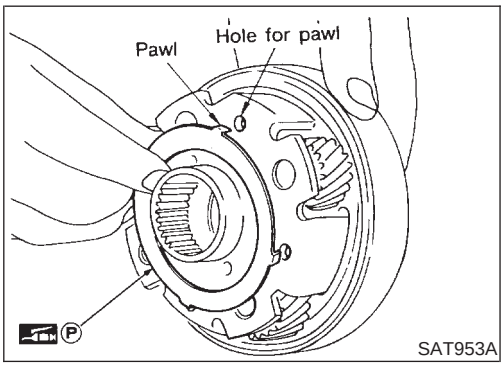
a) Install forward clutch piston by turning it slowly and evenly.

- **Apply ATF to inner surface of clutch drum.**



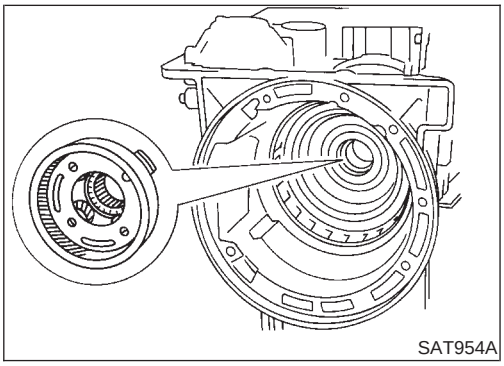
SAT952A

j. Install needle bearing onto rear internal gear.
- **Apply petroleum jelly to needle bearing.**

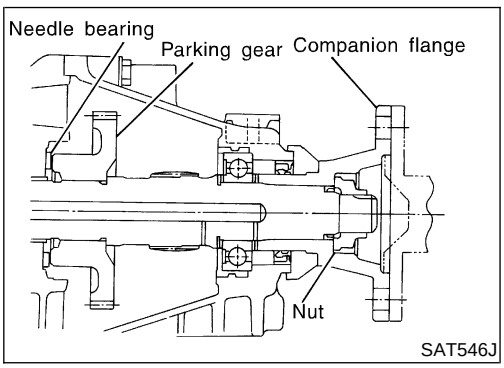


SAT953A

k. Install bearing race onto rear of front internal gear.
- **Apply petroleum jelly to bearing race.**
- **Securely engage pawls of bearing race with holes in front internal gear.**

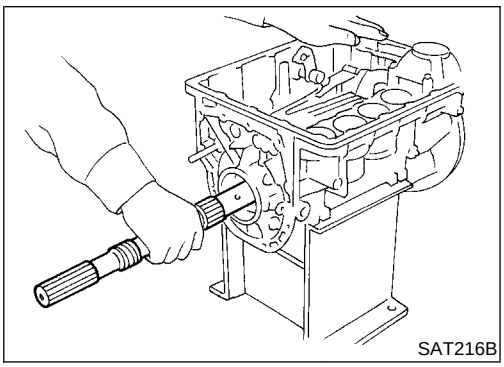

SAT954A

l. Install front internal gear on transmission case.



SAT546J

5. Install rear extension assembly on transmission case (2WD model only).
a. Install revolution sensor on rear extension.
b. Install rear extension gasket on transmission case.
c. Install parking rod on transmission case.
d. Install parking gear and needle bearing.
- **Insert rear extension assembly into place while holding parking gear and needle bearing by hand.**


SAT216B

6. Install output shaft and parking gear (4WD model only).
a. Insert output shaft from rear of transmission case while slightly lifting front internal gear.
- **Do not force output shaft against front of transmission case.**

Noise, Vibration and Harshness (NVH) Troubleshooting

NAAX0034

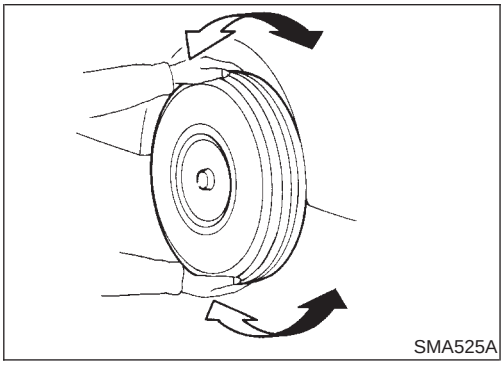
NVH TROUBLESHOOTING CHART

NAAX0034S01

Use the chart below to help you find the cause of the symptom. If necessary, repair or replace these parts.

			Excessive joint angle	Joint sliding resistance	Imbalance	Improper installation, looseness	Parts interference	Wheel bearing damage	PROPELLER SHAFT	DIFFERENTIAL	DRIVE SHAFT	AXLE	SUSPENSION	TIRES	ROAD WHEEL	BRAKES	STEERING
Reference page			—	AX-14	—	AX-6, 20	—	AX-4, 19	PD-4	PD-4	Refer to DRIVE SHAFT in this chart.	Refer to AXLE in this chart.	SU-3	SU-3	SU-3	BR-6	ST-5
Possible cause and SUSPECTED PARTS																	
Symptom	DRIVE SHAFT	Noise, Vibration	×	×					×	×		×	×	×	×	×	×
		Shake	×		×				×			×	×	×	×	×	×
	AXLE	Noise				×	×		×	×	×		×	×	×	×	×
		Shake				×	×		×		×		×	×	×	×	×
		Vibration				×	×		×		×		×	×			×
		Shimmy				×	×						×	×	×	×	×
		Judder				×							×	×	×	×	×
		Poor quality ride or handling				×	×	×					×	×	×		

×: Applicable


SMA525A

On-vehicle Service

FRONT AXLE PARTS

NAAX0004

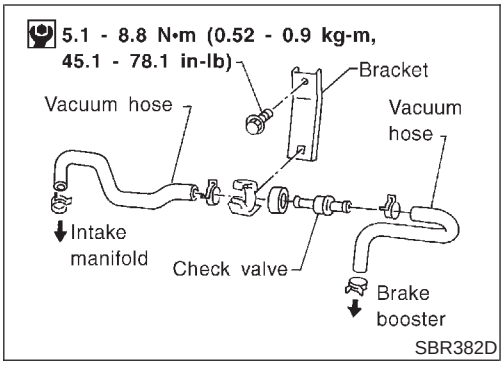
Check front axle parts for excessive play, cracks, wear and other damage.

1. Shake each front wheel to check for excessive play.
2. Retighten all nuts and bolts to the specified torque.

Tightening torque:

Refer to “Wheel Hub and Rotor Disc”, AX-6.

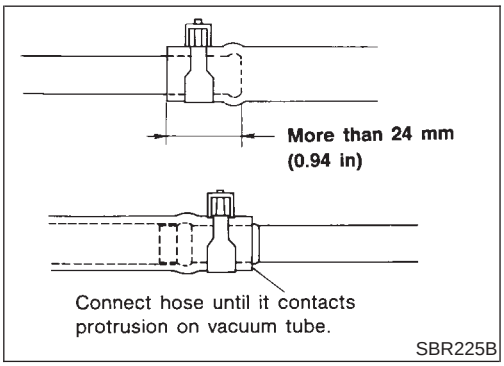
NOTES



SBR382D

Vacuum Hose

NABR0028



SBR225B

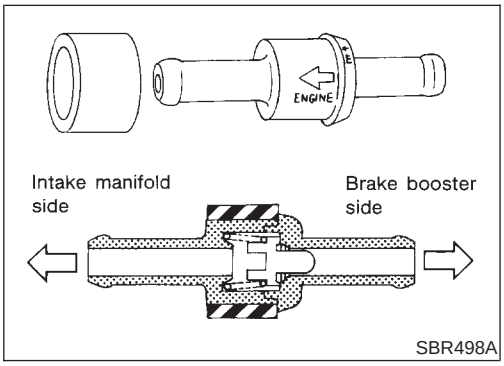
Removal and Installation

NABR0029

CAUTION:

When installing vacuum hoses, pay attention to the following points.

- **Do not apply any oil or lubricants to vacuum hose and check valve.**
- **Insert vacuum tube into vacuum hose as shown.**



SBR498A

- **Install check valve, paying attention to its direction.**

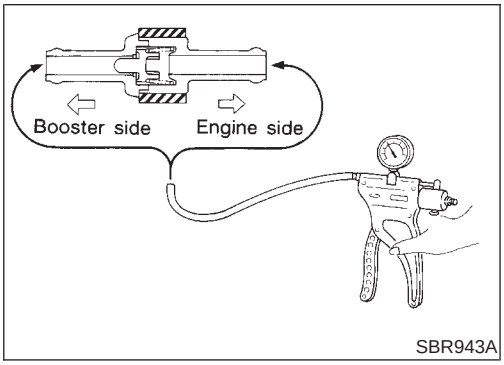
Inspection

NABR0030

HOSES AND CONNECTORS

NABR0030S01

Check vacuum lines, connections and check valve for airtightness, improper attachment chafing and deterioration.



SBR943A

CHECK VALVE

NABR0030S02

Check vacuum with a vacuum pump.

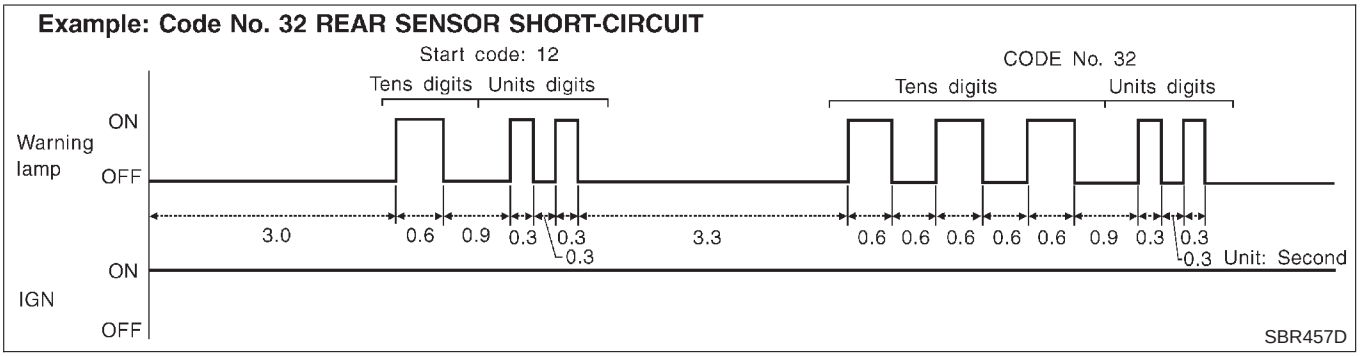
Connect to booster side	Vacuum should exist.
Connect to engine side	Vacuum should not exist.

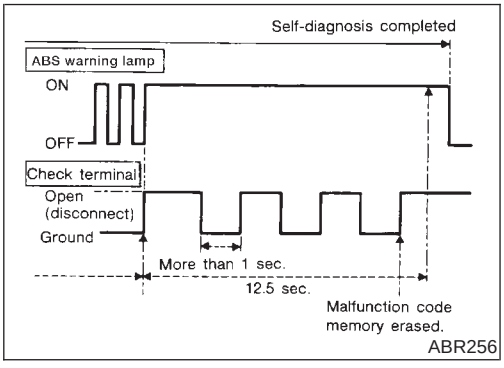
HOW TO READ SELF-DIAGNOSTIC RESULTS (MALFUNCTION CODES)

=NABR0097S03

1. Determine the code No. by counting the number of times the warning lamp flashes on and off.
2. When several malfunctions occur at one time, up to three code numbers can be stored; the latest malfunction will be indicated first.
3. The indication begins with the start code 12. After that a maximum of three code numbers appear in the order of the latest one first. The indication then returns to the start code 12 to repeat (the indication will stay on for five minutes at the most).
4. The malfunction code chart is given on page BR-54.

Example: Code No. 32 REAR SENSOR SHORT-CIRCUIT





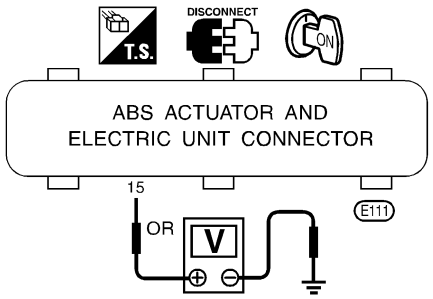
HOW TO ERASE SELF-DIAGNOSTIC RESULTS (MALFUNCTION CODES)

NABR0097S04

1. Disconnect the check terminal from ground (ABS warning lamp will stay lit).
2. Within 12.5 seconds, ground the check terminal three times. Each terminal ground must last more than 1 second. The ABS warning lamp goes out after the erase operation has been completed.
3. Perform self-diagnosis again. Refer to BR-41. Only the start-code should appear, no malfunction codes.

5	CHECK ABS ACTUATOR AND ELECTRIC UNIT POWER SUPPLY CIRCUIT

1. Disconnect ABS actuator and electric unit connector.
2. Check voltage between ABS actuator and electric unit connector E111 (body side) terminal 15 and ground.



SBR495E

Does battery voltage exist when ignition switch is turned ON?

Yes	▶	Replace ABS actuator and electric unit.
No	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector E111 ● Harness for open or short between ABS actuator and electric unit and fuse

6	REPLACE FUSE

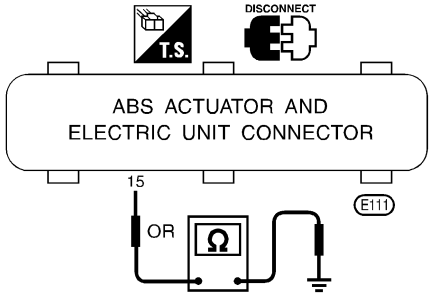
Replace fuse.

Does the fuse blow out when ignition switch is turned ON?

Yes	▶	GO TO 7.
No	▶	**INSPECTION END**

7	CHECK ABS ACTUATOR AND ELECTRIC UNIT POWER SUPPLY CIRCUIT FOR SHORT

1. Disconnect battery cable and ABS actuator and electric unit connector.
2. Check continuity between ABS actuator and electric unit connector E111 (body side) terminal 15 and ground.



SBR496E

Continuity should not exist.

Does continuity exist?

Yes	▶	**Check the following.** If NG, repair harness or connector. ● Harness connector E111 ● Harness for open or short between ABS actuator and electric unit and fuse
No	▶	Replace ABS actuator and electric unit.

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

NABT0023

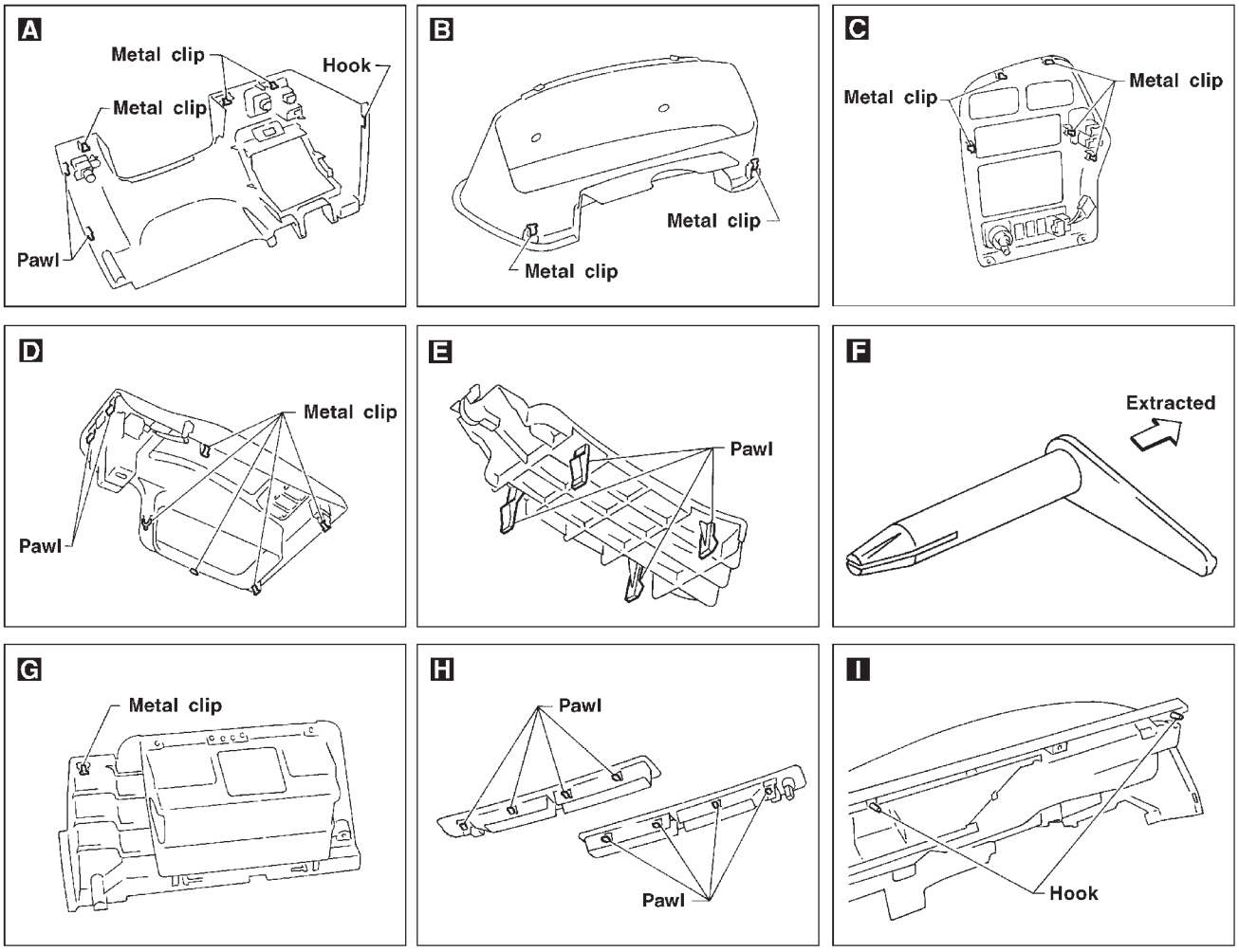
The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER” used along with a seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. The SRS system composition which is available to NISSAN MODEL R50 is as follows:

- For a frontal collision
  The Supplemental Restraint System consists of driver air bag module (located in the center of the steering wheel), front passenger air bag module (located on the instrument panel on passenger side), seat belt pre-tensioners, a diagnosis sensor unit, warning lamp, wiring harness and spiral cable.
- For a side collision
  The Supplemental Restraint System consists of side air bag module (located in the outer side of front seat), satellite sensor, diagnosis sensor unit (one of components of air bags for a frontal collision), wiring harness, warning lamp (one of components of air bags for a frontal collision).

Information necessary to service the system safely is included in the **RS section** of this Service Manual.

WARNING:

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


A
Metal clip
Hook
Metal clip
Pawl
B
Metal clip
Metal clip
C
Metal clip
Metal clip
D
Metal clip
Pawl
E
Pawl
F
Extracted
G
Metal clip
H
Pawl
Pawl
I
Hook

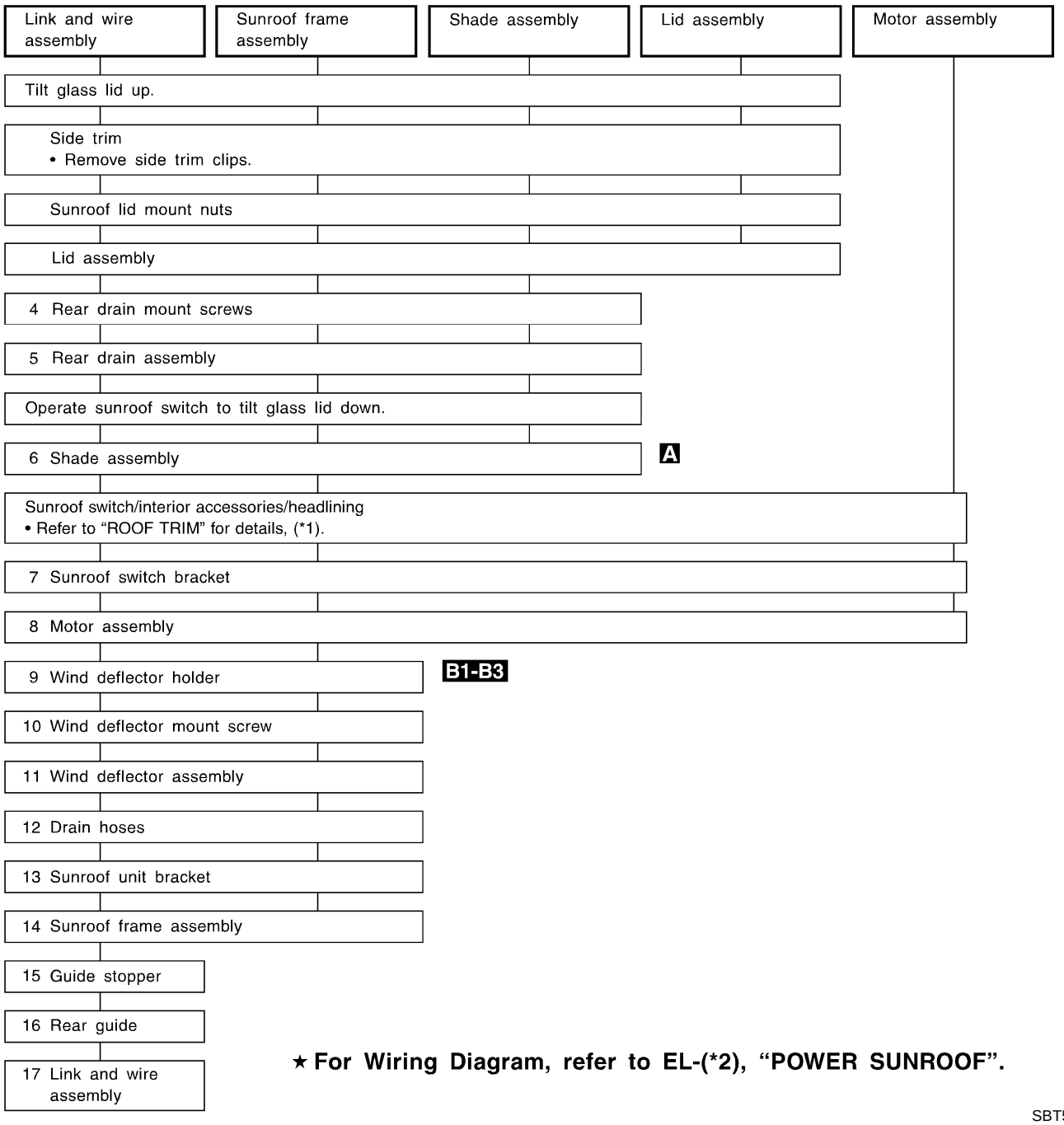
SBT205

Removal and Installation

=NABT0017

- After any adjustment, check sunroof operation and lid alignment.
- Handle finisher plate and glass lid with care so not to cause damage.
- It is desirable for easy installation to mark each point before removal.

CAUTION:
Always work with a helper.



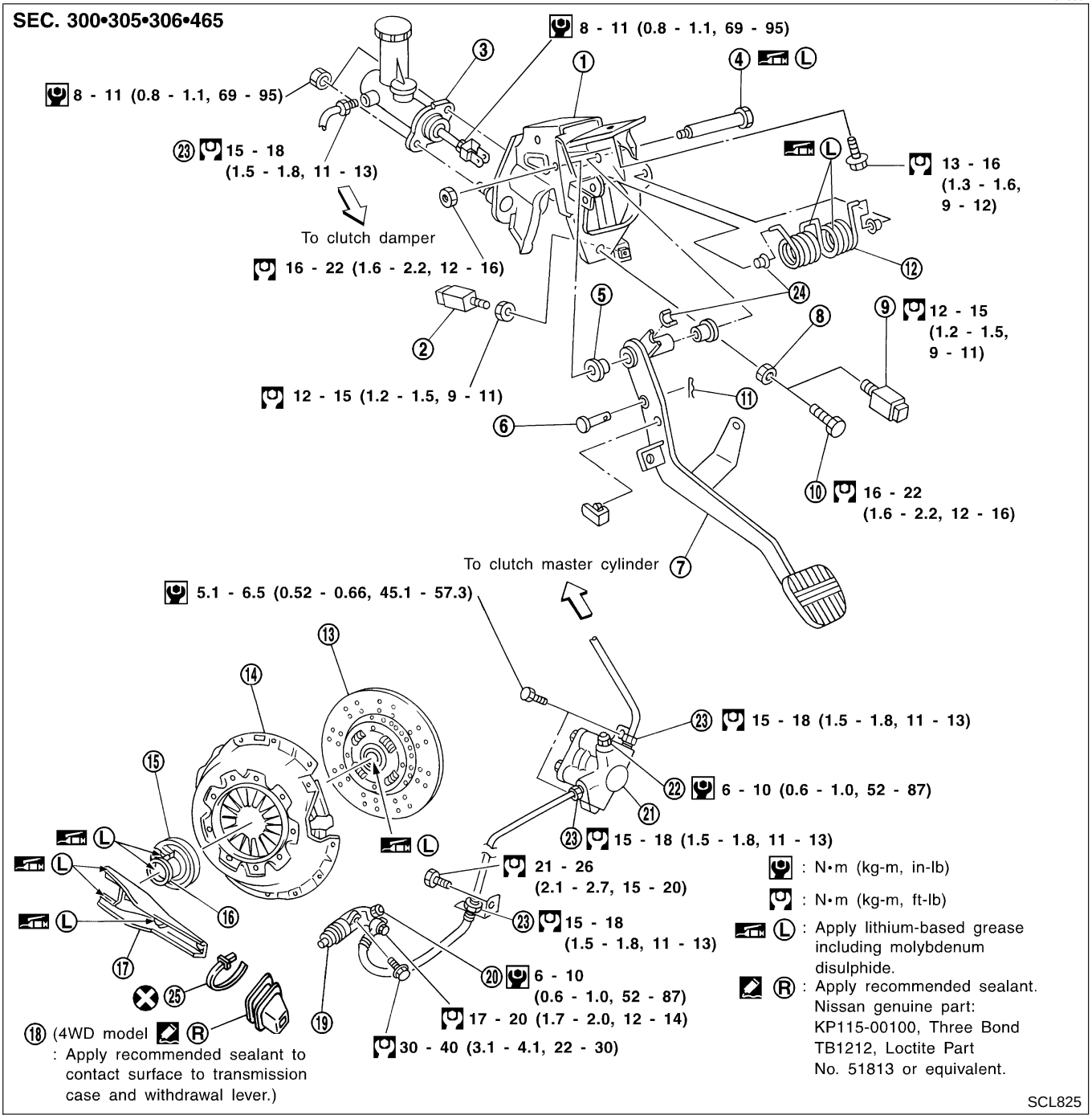
★ For Wiring Diagram, refer to EL-(*2), "POWER SUNROOF".

SBT515-D

*1 BT-29 *2 EL-163

Components

NACL0004



1. Clutch pedal bracket
2. Clutch interlock switch
3. Clutch master cylinder
4. Fulcrum pin
5. Bushing
6. Clevis pin
7. Clutch pedal
8. Lock nut
9. ASCD cancel switch
10. Pedal stopper
11. Snap pin
12. Assist spring
13. Clutch disc
14. Clutch cover
15. Release bearing
16. Release bearing sleeve
17. Withdrawal lever
18. Dust boot
19. Operating cylinder
20. Air bleeder
21. Clutch damper
22. Air bleeder
23. Flare nut
24. Bushing
25. Dust cover clip

Alphabetical & P No. Index for DTC (Cont'd)

Items (CONSULT screen terms)	DTC*6		Reference page
	ECM*1	CONSULT GST*2	
REAR O2 SENSOR-B1	0511	P0137	EC-251
REAR O2 SENSOR-B1	0510	P0138	EC-261
REAR O2 SENSOR-B1	0707	P0139	EC-271
REAR O2 SENSOR-B1	0512	P0140	EC-281
REAR O2 SENSOR-B2	0314	P0157	EC-251
REAR O2 SENSOR-B2	0313	P0158	EC-261
REAR O2 SENSOR-B2	0708	P0159	EC-271
REAR O2 SENSOR-B2	0315	P0160	EC-281
RR O2 SE HEATER-B1	0902	P0141	EC-290
RR O2 SE HEATER-B2	1002	P0161	EC-290
SFT SOL A/CIRC*3	1108	P0750	AT-169
SFT SOL B/CIRC*3	1201	P0755	AT-174
TCC SOLENOID/CIRC	1204	P0740	AT-148
TP SEN/CIRC A/T*3	1206	P1705	AT-179
TRTL POS SEN/CIRC*3	0403	P0120	EC-181
TW CATALYST SYS-B1	0702	P0420	EC-363
TW CATALYST SYS-B2	0703	P0430	EC-363
VC CUT/V BYPASS/V	0311	P1491	EC-532
VC/V BYPASS/V	0801	P1490	EC-525
VEH SPEED SEN/CIRC	0104	P0500	EC-411
VEH SPD SEN/CIRC*4	1102	P0720	AT-110
VENT CONTROL VALVE	0903	P0446	EC-384
VENT CONTROL VALVE	0215	P1446	EC-504
VENT CONTROL VALVE	0309	P1448	EC-518

*1: In Diagnostic Test Mode II (Self-diagnostic results). These numbers are controlled by NISSAN.

*2: These numbers are prescribed by SAE J2012.

*3: When the fail-safe operation occurs, the MIL illuminates.

*4: The MIL illuminates when both the "Revolution sensor signal" and the "Vehicle speed sensor signal" meet the fail-safe condition at the same time.

*5: While engine is running.

*6: 1st trip DTC No. is the same as DTC No.

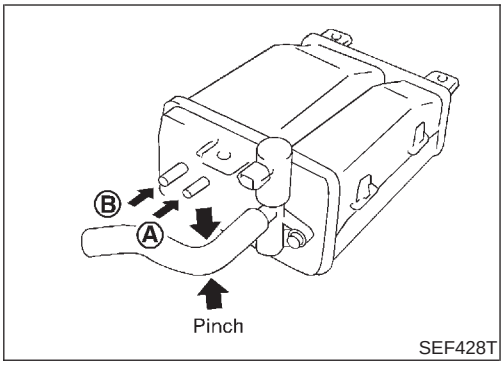
NOTE:

Regarding R50 models, "-B1" and "BK1" indicate right bank and "-B2" and "BK2" indicate left bank.

P NO. INDEX FOR DTC

NAEC0001S02

DTC*6		Items (CONSULT screen terms)	Reference page
CONSULT GST*2	ECM*1		
—	—	Unable to access ECM	EC-117
—	—	NATS MALFUNCTION	EC-74 or EL-282



SEF428T

INSPECTION

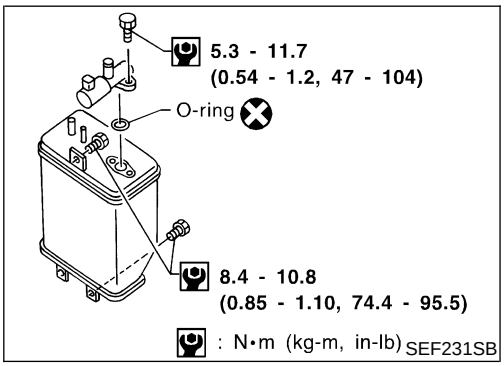
NAEC0019

EVAP Canister

NAEC0019S01

Check EVAP canister as follows:

1. Pinch the fresh air hose.
2. Blow air into port **A** and check that it flows freely out of port **B**.



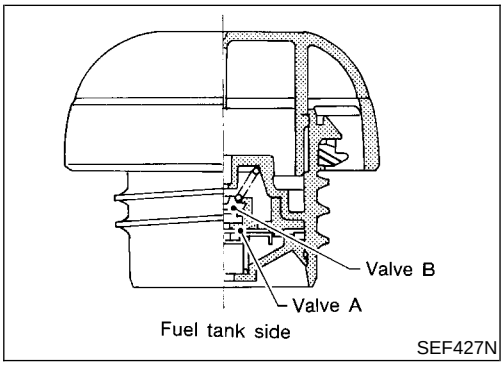
SEF231SB

Tightening Torque

NAEC0019S02

Tighten EVAP canister as shown in the figure.

Make sure new O-ring is installed properly between EVAP canister and EVAP canister vent control valve.



SEF427N

Fuel Tank Vacuum Relief Valve (Built into fuel filler cap)

NAEC0019S03

1. Wipe clean valve housing.
2. Check valve opening pressure and vacuum.

Pressure:

15.3 - 20.0 kPa (0.156 - 0.204 kg/cm^2, 2.22 - 2.90 psi)

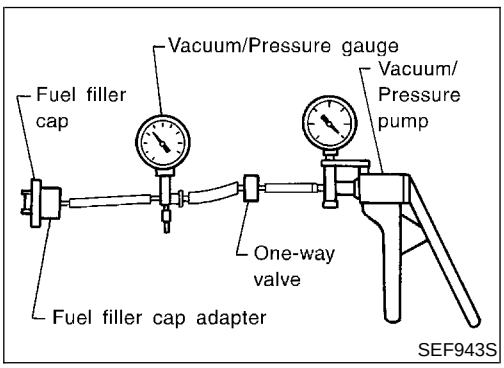
Vacuum:

−6.0 to −3.3 kPa (−0.061 to −0.034 kg/cm^2, −0.87 to −0.48 psi)

3. If out of specification, replace fuel filler cap as an assembly.

CAUTION:

Use only a genuine fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.



SEF943S

Vacuum Cut Valve and Vacuum Cut Valve Bypass Valve

NAEC0019S05

Refer to EC-525.

Evaporative Emission (EVAP) Canister Purge Volume Control Solenoid Valve

NAEC0019S06

Refer to EC-377.

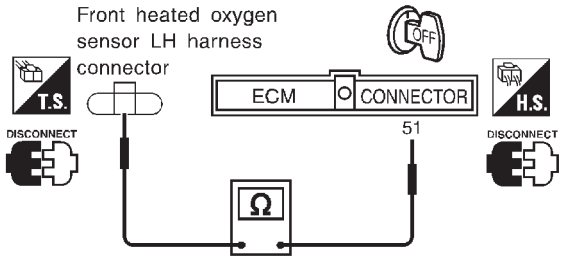
Tank Fuel Temperature Sensor

NAEC0019S08

Refer to EC-314.

17	CHECK FRONT HEATED OXYGEN SENSOR LH HARNESS

1. Turn off engine and disconnect battery ground cable.
2. Disconnect ECM harness connector.
3. Disconnect front heated oxygen sensor LH harness connector.
4. Check harness continuity between ECM terminal 51 and front heated oxygen sensor LH harness connector.



SEF981U

Continuity should exist.

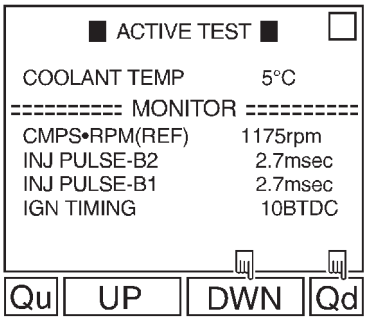
OK or NG

OK	▶	1. Connect ECM harness connector. 2. GO TO 18.
NG	▶	1. Repair or replace harness. 2. GO TO 8. (With CONSULT) GO TO 9. (Without CONSULT)

18	PREPARATION FOR "CO" % CHECK

With CONSULT

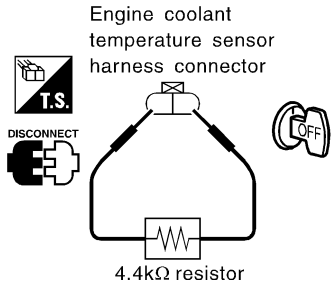
1. Select "COOLANT TEMP" in "ACTIVE TEST" mode.
2. Set "COOLANT TEMP" to 5°C (41°F) by touching "DWN" and "Qd".



SEF359V

Without CONSULT

1. Disconnect engine coolant temperature sensor harness connector.
2. Connect a resistor (4.4 kΩ) between terminals of engine coolant temperature sensor harness connector.



SEF982UA

	▶	GO TO 19.

Diagnostic Test Mode I — Bulb Check

NAEC0031S03

In this mode, the MIL on the instrument panel should stay ON. If it remains OFF, check the bulb. Refer to EL section ("WARNING LAMPS") or see EC-587.

Diagnostic Test Mode I — Malfunction Warning

NAEC0031S04

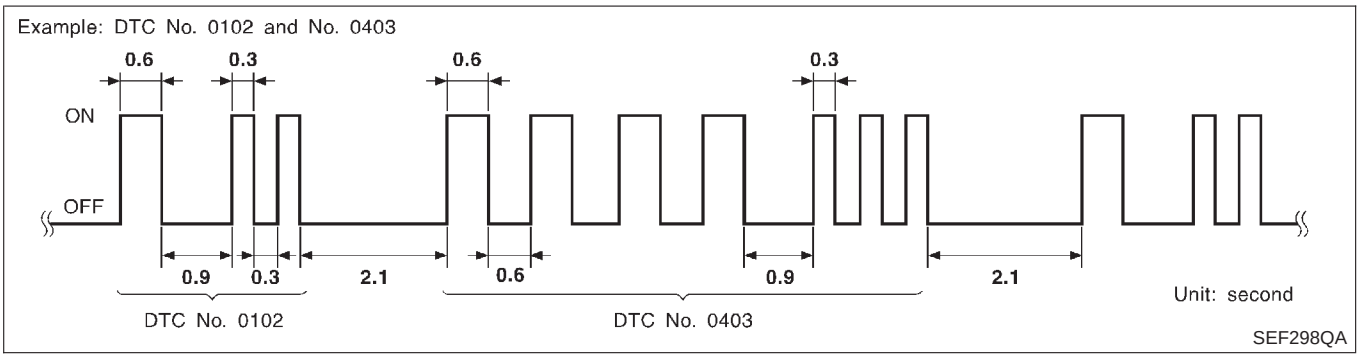
MIL	Condition
ON	When the malfunction is detected or the ECM's CPU is malfunctioning.
OFF	No malfunction.

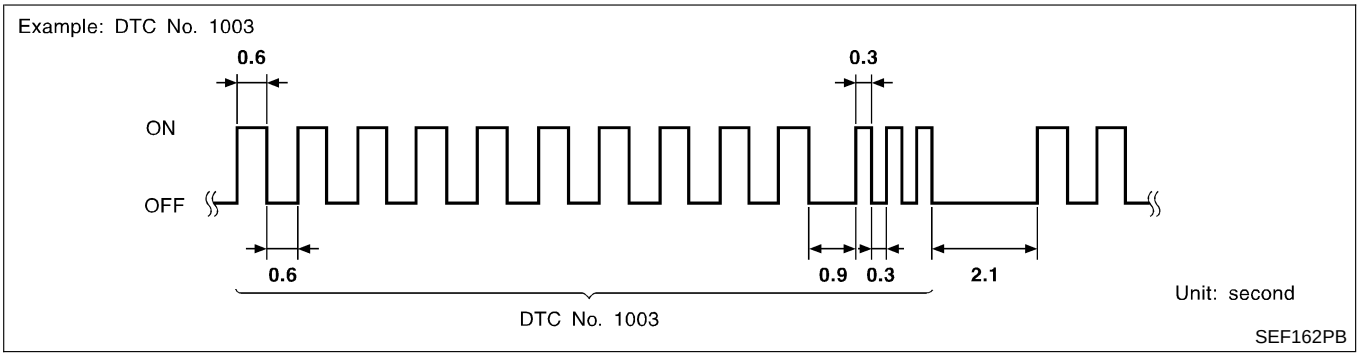
- These DTC Numbers are clarified in Diagnostic Test Mode II (SELF-DIAGNOSTIC RESULTS).

Diagnostic Test Mode II — Self-diagnostic Results

NAEC0031S05

In this mode, the DTC and 1st trip DTC are indicated by the number of blinks of the MIL.
The DTC and 1st trip DTC are displayed at the same time. If the MIL does not illuminate in diagnostic test mode I (Malfunction warning), all displayed items are 1st trip DTC's. If only one code is displayed when the MIL illuminates in diagnostic test mode II (SELF-DIAGNOSTIC RESULTS), it is a DTC; if two or more codes are displayed, they may be either DTC's or 1st trip DTC's. DTC No. is same as that of 1st trip DTC. These unidentified codes can be identified by using the CONSULT or GST. A DTC will be used as an example for how to read a code.





Long (0.6 second) blinking indicates the two LH digits of number and short (0.3 second) blinking indicates the two RH digits of number. For example, the MIL blinks 10 times for 6 seconds (0.6 sec x 10 times) and then it blinks three times for about 1 second (0.3 sec x 3 times). This indicates the DTC "1003" and refers to the malfunction of the park/neutral position switch.
In this way, all the detected malfunctions are classified by their DTC numbers. The DTC "0505" refers to no malfunction. (See TROUBLE DIAGNOSIS — INDEX, EC-8.)

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

NAEC0031S0501

The DTC can be erased from the backup memory in the ECM when the diagnostic test mode is changed from Diagnostic Test Mode II to Diagnostic Test Mode I. (Refer to "How to Switch Diagnostic Test Modes", EC-72.)

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

Generic Scan Tool (GST) (Cont'd)

FUNCTION

NAEC0034S03

Diagnostic test mode		Function
MODE 1	READINESS TESTS	This mode gains access to current emission-related data values, including analog inputs and outputs, digital inputs and outputs, and system status information.
MODE 2	(FREEZE DATA)	This mode gains access to emission-related data value which were stored by ECM during the freeze frame. [For details, refer to "Freeze Frame Data" (EC-83).]
MODE 3	DTCs	This mode gains access to emission-related power train trouble codes which were stored by ECM.
MODE 4	CLEAR DIAG INFO	This mode can clear all emission-related diagnostic information. This includes: ● Clear number of diagnostic trouble codes (MODE 1) ● Clear diagnostic trouble codes (MODE 3) ● Clear trouble code for freeze frame data (MODE 1) ● Clear freeze frame data (MODE 2) ● Reset status of system monitoring test (MODE 1) ● Clear on board monitoring test results (MODE 6 and 7)
MODE 6	(ON BOARD TESTS)	This mode accesses the results of on board diagnostic monitoring tests of specific components/systems that are not continuously monitored.
MODE 7	(ON BOARD TESTS)	This mode enables the off board test drive to obtain test results for emission-related powertrain components/systems that are continuously monitored during normal driving conditions.
MODE 8	—	This mode can close EVAP system in ignition switch "ON" position (Engine stopped). When this mode is performed, the following parts can be opened or closed. ● EVAP canister vent control valve open ● Vacuum cut valve bypass valve closed In the following conditions, this mode cannot function. ● Low ambient temperature ● Low battery voltage ● Engine running ● Ignition switch "OFF" ● Low fuel temperature ● Too much pressure is applied to EVAP system
MODE 9	CALIBRATION ID	This mode enables the off-board to request vehicle specific vehicle information such as Vehicle Identification Number (VIN) and calibration IDs.

26	REINSTALLATION
Without CONSULT 1. Release vacuum from the throttle opener. 2. Remove vacuum pump and vacuum hose from the throttle opener. 3. Reinstall the original vacuum hose to the throttle opener securely. 4. Reconnect throttle position sensor harness connector and closed throttle position switch harness connector. 5. Start engine and rev it (2,000 to 3,000 rpm) two or three times under no-load and then run engine at idle speed.	
▶	GO TO 27.

27	CHECK TARGET IDLE SPEED
Without CONSULT 1. Start engine and warm it up to normal operating temperature. 2. Check idle speed. **750±50 rpm (in "P" or "N" position)**	
OK or NG	
OK ▶	GO TO 28.
NG ▶	Adjust idle speed. Refer to "Idle Speed/Ignition Timing/Idle Mixture Ratio Adjustment", EC-41.

28	ERASE UNNECESSARY DTC
After this inspection, unnecessary DTC No. might be displayed. Erase the stored memory in ECM and TCM (Transmission control module). Refer to "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION", EC-68 and "HOW TO ERASE DTC" in AT section.	
▶	**INSPECTION END**

Description

NAEC0388

Intermittent incidents (I/I) may occur. In many cases, the problem resolves itself (the part or circuit function returns to normal without intervention). It is important to realize that the symptoms described in the customer's complaint often do not recur on (1st trip) DTC visits. Realize also that the most frequent cause of I/I occurrences is poor electrical connections. Because of this, the conditions under which the incident occurred may not be clear. Therefore, circuit checks made as part of the standard diagnostic procedure may not indicate the specific problem area.

COMMON I/I REPORT SITUATIONS

NAEC0388S01

STEP in Work Flow	Situation
II	The CONSULT is used. The SELF-DIAG RESULTS screen shows time data other than "0" or "[1t]".
III	The symptom described by the customer does not recur.
IV	(1st trip) DTC does not appear during the DTC Confirmation Procedure.
VI	The Diagnostic Procedure for PXXXX does not indicate the problem area.

Diagnostic Procedure

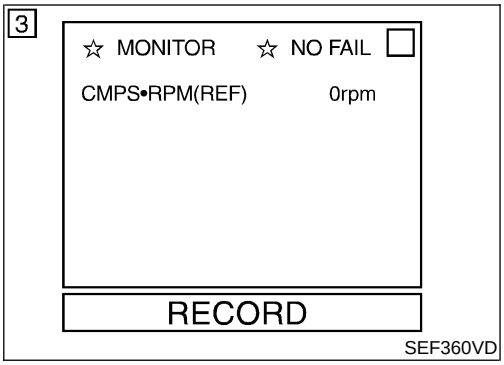
NAEC0389

1	**INSPECTION START**
Erase (1st trip) DTCs. Refer to "HOW TO ERASE EMISSION — RELATED INFORMATION", EC-68.	
▶	GO TO 2.

2	**CHECK GROUND TERMINALS**
Check ground terminals for corroding or loose connection. Refer to "Circuit Inspection", "GROUND INSPECTION" in GI section.	
OK or NG	
OK ▶	GO TO 3.
NG ▶	Repair or replace.

3	**SEARCH FOR ELECTRICAL INCIDENT**
Perform "Incident Simulation Tests" in GI section.	
OK or NG	
OK ▶	GO TO 4.
NG ▶	Repair or replace.

4	**CHECK CONNECTOR TERMINALS**
Refer to "How to Check Enlarged Contact Spring of Terminal" in GI section.	
OK or NG	
OK ▶	**INSPECTION END**
NG ▶	Repair or replace connector.



PROCEDURE FOR MALFUNCTION A

NAEC0057S01

With CONSULT

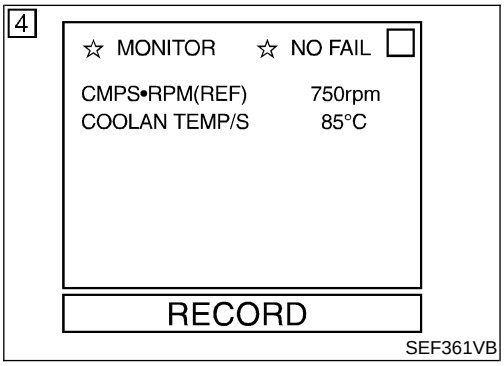
1) Turn ignition switch "ON".
2) Select "DATA MONITOR" mode with CONSULT.
3) Wait at least 6 seconds.
4) If 1st trip DTC is detected, go to "Diagnostic Procedure", EC-160.

With GST

1) Turn ignition switch "ON" and wait at least 6 seconds.
2) Select "MODE 7" with GST.
3) If 1st trip DTC is detected, go to "Diagnostic Procedure", EC-160.

No Tools

1) Turn ignition switch "ON" and wait at least 6 seconds.
2) Turn ignition switch "OFF", wait at least 5 seconds and then turn "ON".
3) Perform "Diagnostic Test Mode II (Self-diagnostic results)" with ECM.
4) If 1st trip DTC is detected, go to "Diagnostic Procedure", EC-160.



PROCEDURE FOR MALFUNCTION B

NAEC0057S02

With CONSULT

1) Start engine and warm it up to normal operating temperature.
2) Turn ignition switch "OFF" and wait at least 5 seconds.
3) Turn ignition switch "ON" and select "DATA MONITOR" mode with CONSULT.
4) Start engine and let it idle.
5) Wait at least 15 seconds.
6) If 1st trip DTC is detected, go to "Diagnostic Procedure", EC-160.

With GST

1) Start engine and warm it up to normal operating temperature.
2) Turn ignition switch "OFF" and wait at least 5 seconds.
3) Start engine.
4) Let engine idle and wait at least 15 seconds.
5) Select "MODE 7" with GST.
6) If 1st trip DTC is detected, go to "Diagnostic Procedure", EC-160.

No Tools

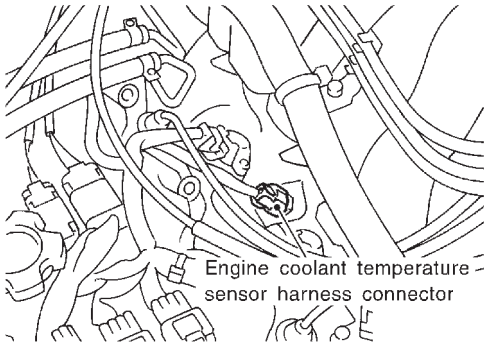
1) Start engine and warm it up to normal operating temperature.
2) Turn ignition switch "OFF" and wait at least 5 seconds.
3) Start engine.
4) Let engine idle and wait at least 15 seconds.
5) Turn ignition switch "OFF", wait at least 5 seconds and then turn "ON".
6) Perform "Diagnostic Test Mode II (Self-diagnostic results)" with ECM.
7) If 1st trip DTC is detected, go to "Diagnostic Procedure", EC-160.

Diagnostic Procedure

NAEC0071

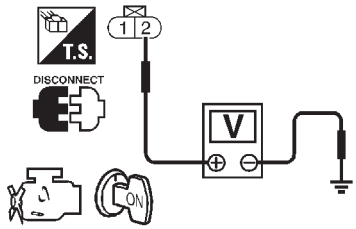
1	CHECK POWER SUPPLY

1. Turn ignition switch “OFF”.
2. Disconnect engine coolant temperature sensor harness connector.



SEF750U

3. Turn ignition switch “ON”.
4. Check voltage between terminal 2 and ground with CONSULT or tester.



SEF690U

Voltage: Approximately 5V

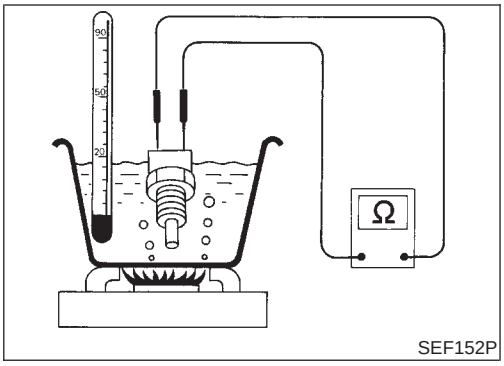
OK or NG

OK	▶	GO TO 3.
NG	▶	GO TO 2.

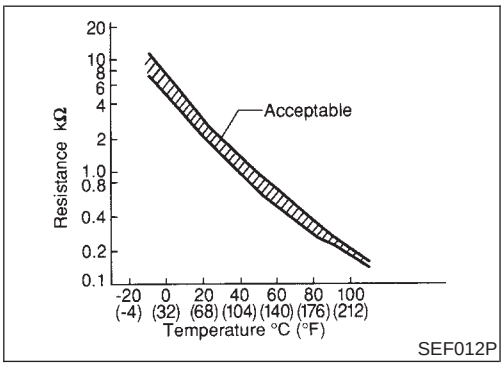
2	DETECT MALFUNCTIONING PART

Check the following.
- Harness connectors F28, F113
- Harness for open or short between ECM and engine coolant temperature sensor

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



SEF152P



SEF012P

Component Inspection

NAEC0086

ENGINE COOLANT TEMPERATURE SENSOR

NAEC0086S01

Check resistance as shown in the figure.

<Reference data>

Temperature °C (°F)	Resistance kΩ
20 (68)	2.1 - 2.9
50 (122)	0.68 - 1.0
90 (194)	0.236 - 0.260

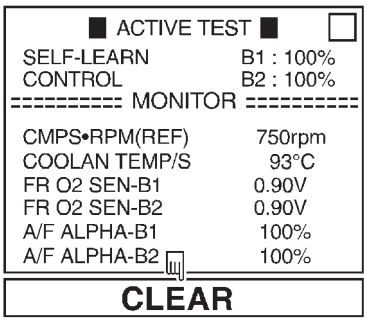
If NG, replace engine coolant temperature sensor.

Diagnostic Procedure (Cont'd)

3	CLEAR THE SELF-LEARNING DATA

With CONSULT

1. Start engine and warm it up to normal operating temperature.
2. Select "SELF-LEARNING CONT" in "ACTIVE TEST" mode with CONSULT.
3. Clear the self-learning control coefficient by touching "CLEAR".



SEF921U

4. Run engine for at least 10 minutes at idle speed.
   Is the 1st trip DTC P0172 or P0175 detected?
   Is it difficult to start engine?

Without CONSULT

1. Start engine and warm it up to normal operating temperature.
2. Turn ignition switch "OFF".
3. Disconnect mass air flow sensor harness connector, and restart and run engine for at least 5 seconds at idle speed.
4. Stop engine and reconnect mass air flow sensor harness connector.
5. Make sure DTC No. 0102 is displayed in Diagnostic Test Mode II.
6. Erase the diagnostic test mode II (Self-diagnostic results) memory. Refer to "HOW TO ERASE EMISSION-RELATED DIAGNOSTIC INFORMATION", EC-68.
7. Make sure DTC No. 0505 is displayed in Diagnostic Test Mode II.
8. Run engine for at least 10 minutes at idle speed.
   Is the 1st trip DTC 0114 or 0209 detected?
   Is it difficult to start engine?

Yes or No

Yes	▶	Go to Trouble Diagnosis for "DTC P0172, P0175", EC-306.
No	▶	GO TO 4.

4	CHECK CONNECTOR FOR WATER

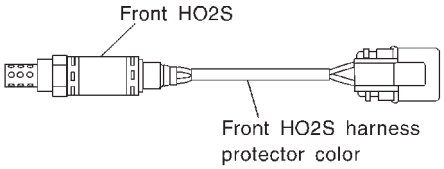
1. Turn ignition switch "OFF".
2. Disconnect front heated oxygen sensor harness connector.
3. Check connectors for water.
   Water should not exist.

OK or NG

OK	▶	GO TO 5.
NG	▶	Repair or replace harness or connectors.

3	CHECK INPUT SIGNAL CIRCUIT

1. Disconnect ECM harness connector.
2. Check harness continuity between ECM terminal and sensor terminal as follows.

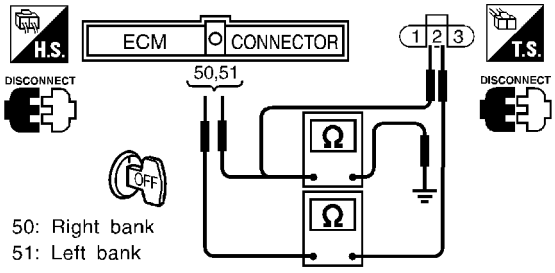


P0134 (-B1) Right bank: Black
P0154 (-B2) Left bank: Blue

SEF194WB

DTC	Terminals		Bank (Harness protector color)
	ECM	Sensor	
P0134	50	2	Right (Black)
P0154	51	2	Left (Blue)

SEF876W



SEF695U

Continuity should exist.

3. Check harness continuity between ECM terminal or sensor terminal and ground as follows.

DTC	Terminals		Bank (Harness protector color)
	ECM or sensor	Ground	
P0134	50 or 2	Ground	Right (Black)
P0154	51 or 2	Ground	Left (Blue)

SEF877W

Continuity should not exist.

4. Also check harness for short to power.

OK or NG

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

4	CHECK CONNECTOR FOR WATER

1. Disconnect front heated oxygen sensor harness connector.
2. Check connectors for water.

Water should not exist.

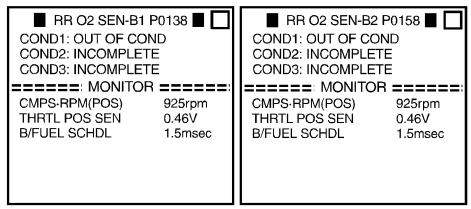
OK or NG

OK	▶	GO TO 5.
NG	▶	Repair or replace harness or connectors.

On Board Diagnosis Logic (Cont'd)

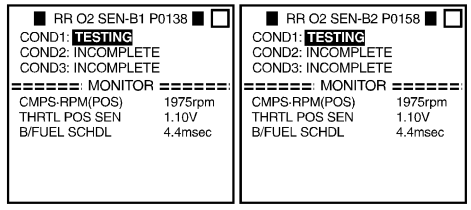
DTC No.	Malfunction is detected when ...	Check Items (Possible Cause)
P0138 0510 (Right bank)	• The maximum voltage from the sensor is not reached to the specified voltage.	• Harness or connectors (The sensor circuit is open or shorted.) • Rear heated oxygen sensor • Fuel pressure • Injectors • Intake air leaks
P0158 0313 (Left bank)		

6



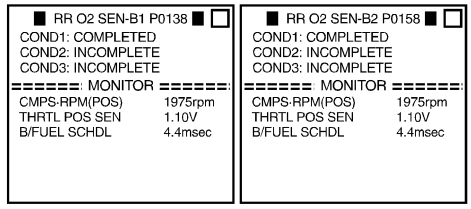
SEF708W

8



SEF709W

8



SEF710W

DTC Confirmation Procedure

NAEC0441

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

- **"COMPLETED" will appear on CONSULT screen when all tests "COND1", "COND2" and "COND3" are completed.**
- If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 5 seconds before conducting the next test.

TESTING CONDITION:

Never stop engine during this test. If the engine is stopped, reperform this test from step 2 in "Procedure for COND 1".

With CONSULT

Procedure for COND1

1) Start engine and warm it up to normal operating temperature.
2) Turn ignition switch "OFF" and wait at least 5 seconds.
3) Turn ignition switch "ON" and select "RR O2 SEN-B1 (-B2) P0138 (P0158)" of "RR O2 SENSOR" in "DTC WORK SUPPORT" mode with CONSULT.
4) Touch "START".
5) Start engine and let it idle for at least 30 seconds.
6) Rev engine up to 2,000 rpm 2 or 3 times quickly under no load.
   If "COMPLETED" appears on CONSULT screen, go to step 2 in "Procedure for COND3".
   If "COMPLETED" does not appear on CONSULT screen, go to the following step.
7) Drive vehicle at a speed of more than 70 km/h (43 MPH) for 2 consecutive minutes.
8) When the following conditions are met, "TESTING" will be displayed at "COND1" on the CONSULT screen. Maintain the conditions continuously until "TESTING" changes to "COMPLETED". (It will take approximately 60 seconds.)

CMPS·RPM (POS)	1,300 - 3,100 rpm (A/T) 1,500 - 3,600 rpm (M/T)
Vehicle speed	64 - 130 km/h (40 - 81 MPH)
B/FUEL SCHDL	0.5 - 6.4 msec (A/T) 0.5 - 5.9 msec (M/T)
Selector lever	Suitable position

NOTE:

- **If "TESTING" is not displayed after 5 minutes, retry from step 2 in "Procedure for COND1".**
- **If "COMPLETED" already appears at "COND2" on CONSULT screen before "Procedure for COND2" is conducted,**

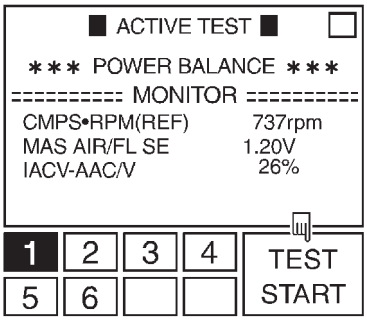
4) Check the voltage when racing up to 4,000 rpm under no load at least 10 times.
(depress and release accelerator pedal as soon as possible)
The voltage should be below 2V during this procedure.
5) If NG, go to "Diagnostic Procedure".

Diagnostic Procedure (Cont'd)

8	CHECK FUNCTION OF INJECTORS

With CONSULT

1. Start engine.
2. Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT.

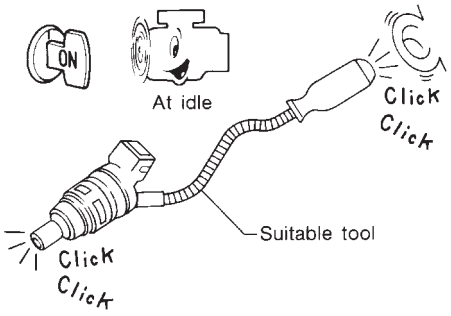


SEF389V

3. Make sure that each circuit produces a momentary engine speed drop.

Without CONSULT

1. Start engine.
2. Listen to each injector operating sound.



MEC703B

Clicking noise should be heard.

OK or NG

OK	▶	GO TO 9.
NG	▶	Perform trouble diagnosis for "INJECTORS", EC-555.

13	CHECK FRONT HEATED OXYGEN SENSOR LH/RH	
Refer to "Component Inspection", EC-207.		
OK or NG		
OK	▶	GO TO 14.
NG	▶	Replace front heated oxygen sensor.

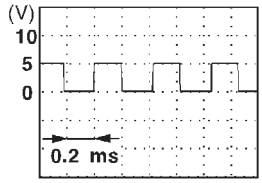
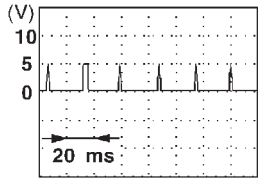
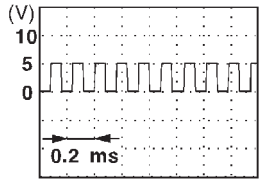
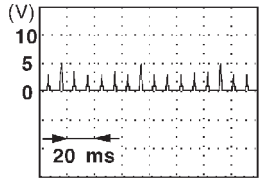
14	CHECK MASS AIR FLOW SENSOR	
With CONSULT Check "MASS AIR FLOW" in "DATA MONITOR" mode with CONSULT. **3.3 - 4.8 g·m/sec: at idling** **12.0 - 14.9 g·m/sec: at 2,500 rpm**		
With GST Check "MASS AIR FLOW" in MODE 1 with GST. **3.3 - 4.8 g·m/sec: at idling** **12.0 - 14.9 g·m/sec: at 2,500 rpm**		
No Tools Check voltage between ECM terminal 54 and ground. **1.0 - 1.7V: at idling** **1.7 - 2.3V: at 2,500 rpm**		
OK or NG		
OK	▶	GO TO 15.
NG	▶	Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or engine grounds. Refer to EC-146.

15	CHECK SYMPTOM MATRIX CHART	
Check items on the rough idle symptom in "Symptom Matrix Chart", EC-118.		
OK or NG		
OK	▶	GO TO 16.
NG	▶	Repair or replace.

16	ERASE THE 1ST TRIP DTC	
Some tests may cause a 1st trip Diagnostic Trouble Code to be set. Erase the 1st trip DTC from the ECM memory after performing the tests. Refer to EC-68.		
	▶	GO TO 17.

17	CHECK INTERMITTENT INCIDENT	
Refer to "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT", EC-136.		
	▶	**INSPECTION END**

Component Inspection (Cont'd)

Condition	ECM terminal	Voltage
Engine running at idle	44 and ground	Approximately 2.5V  SEF999U
	49, 53 and ground	0.3 - 0.5V  SEF997U
Engine speed is 2,000 rpm	44 and ground	Approximately 2.5V  SEF001V
	49, 53 and ground	0.3 - 0.5V  SEF998U

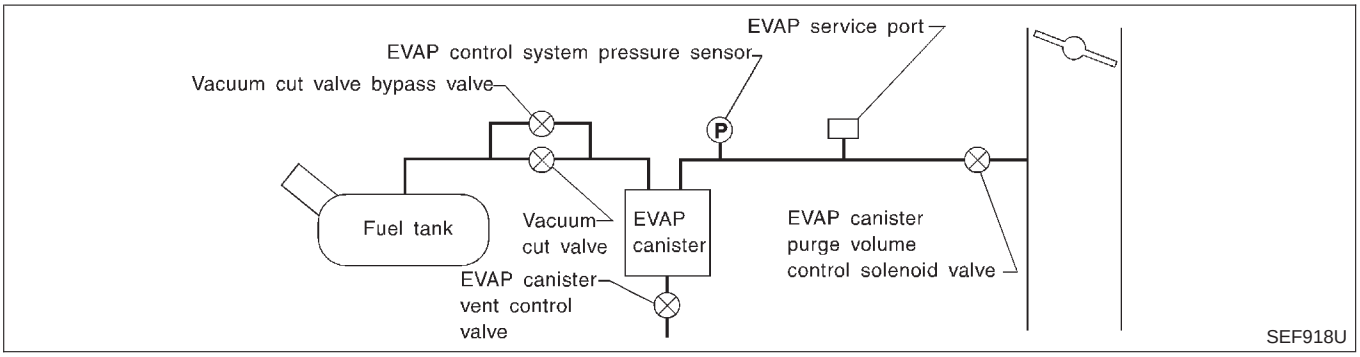
If NG, replace distributor assembly with camshaft position sensor.

On Board Diagnosis Logic

NAEC0210

NOTE:
If DTC P0440 is displayed with P1448, perform trouble diagnosis for "DTC P1448" first. (See EC-518.)

This diagnosis detects leaks in the EVAP purge line using engine intake manifold vacuum.
If pressure does not increase, the ECM will check for leaks in the line between the fuel tank and EVAP canister purge volume control solenoid valve, under the following "Vacuum test" conditions.
The vacuum cut valve bypass valve is opened to clear the line between the fuel tank and the EVAP canister purge volume control solenoid valve. The EVAP canister vent control valve will then be closed to shut the EVAP purge line off. The EVAP canister purge volume control solenoid valve is opened to depressurize the EVAP purge line using intake manifold vacuum. After this occurs, the EVAP canister purge volume control solenoid valve will be closed.



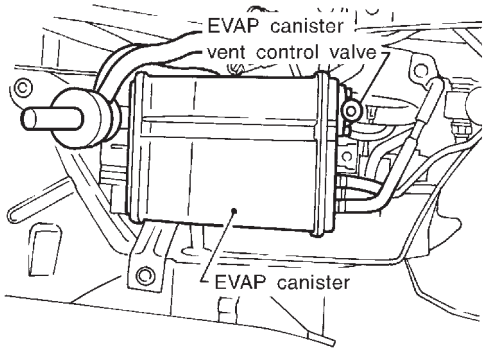
DTC No.	Malfunction is detected when ...	Check Items (Possible Cause)
P0440 0705	• EVAP control system has a leak. • EVAP control system does not operate properly.	• Incorrect fuel tank vacuum relief valve • Incorrect fuel filler cap used • Fuel filler cap remains open or fails to close. • Foreign matter 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 • EVAP purge line rubber tube bent. • Blocked or bent rubber tube to EVAP control system pressure sensor • Loose or disconnected rubber tube • EVAP canister vent control valve and the circuit • EVAP canister purge volume control solenoid valve and the circuit • Absolute pressure sensor • Fuel tank temperature sensor • MAP/BARO switch solenoid valve and the circuit • Blocked or bent rubber tube to MAP/BARO switch solenoid valve • O-ring of EVAP canister vent control valve is missing or damaged. • Water separator • EVAP canister is saturated with water. • EVAP control system pressure sensor

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.**

Diagnostic Procedure (Cont'd)

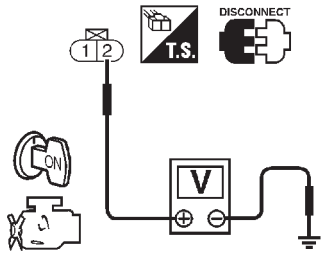
3	CHECK POWER SUPPLY

1. Turn ignition switch "OFF".
2. Disconnect EVAP canister vent control valve harness connector.



SEF872T

3. Turn ignition switch "ON".
4. Check voltage between terminal 2 and ground with CONSULT or tester.



SEF884U

Voltage: Battery voltage

OK or NG

OK	▶	GO TO 5.
NG	▶	GO TO 4.

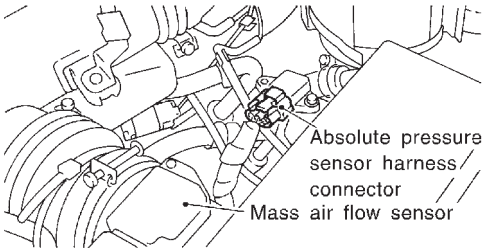
4	DETECT MALFUNCTIONING PART

Check the following.
- Harness connectors M2, B1
- Harness connectors B43, B101
- 10A fuse
- Harness for open or short between EVAP canister vent control valve and fuse

	▶	Repair harness or connectors.

15	CHECK ABSOLUTE PRESSURE SENSOR

Refer to "Component Inspection", EC-166.



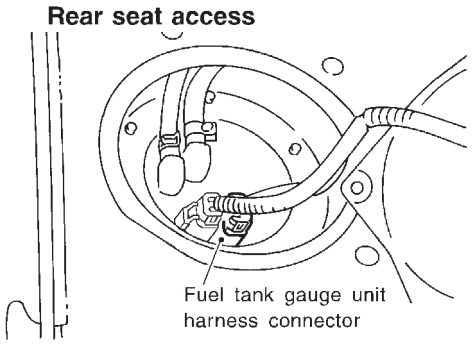
SEF748U

OK or NG

OK	▶	GO TO 16.
NG	▶	Replace absolute pressure sensor.

16	CHECK FUEL TANK TEMPERATURE SENSOR

Refer to "Component Inspection", EC-319.



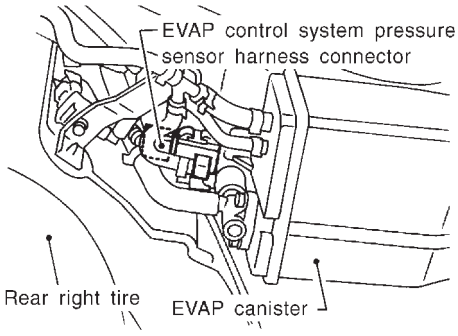
SEF751U

OK or NG

OK	▶	GO TO 17.
NG	▶	Replace tank fuel temperature sensor.

17	CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to "Component Inspection", EC-399.



SEF495R

OK or NG

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

Component Inspection (Cont'd)

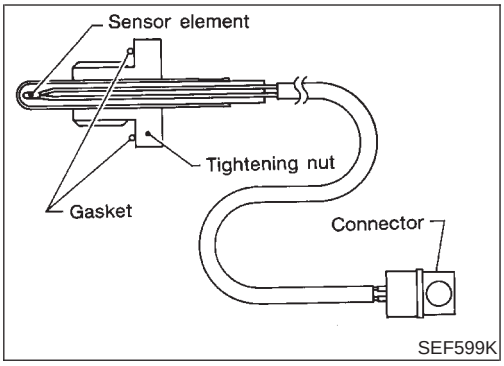
7) Check continuity between closed throttle position switch terminals 4 and 5.
Resistance measurement must be made with closed throttle position switch installed in vehicle.

Throttle valve conditions	Continuity
Completely closed	Yes
Partially open or completely open	No

If NG, adjust closed throttle position switch. Refer to "Basic Inspection", EC-99.

8) If it is impossible to adjust closed throttle position switch in "Basic Inspection", replace closed throttle position switch.

3) If NG or operation takes more than 1 second, replace solenoid valve.

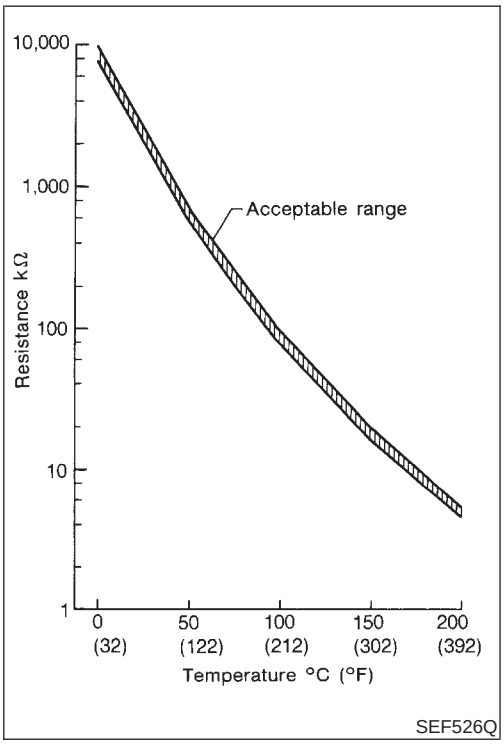


Component Description

NAEC0310

The EGR temperature sensor detects temperature changes in the EGR passage way. When the EGR valve opens, hot exhaust gases flow, and the temperature in the passage way changes. The EGR temperature sensor is a thermistor that modifies a voltage signal sent from the ECM. This modified signal then returns to the ECM as an input signal. As the temperature increases, EGR temperature sensor resistance decreases.

This sensor is not used to control the engine system. It is used only for the on board diagnosis.



<Reference data>

EGR temperature °C (°F)	Voltage* V	Resistance MΩ
0 (32)	4.81	7.9 - 9.7
50 (122)	2.82	0.57 - 0.70
100 (212)	0.8	0.08 - 0.10

*: These data are reference values and are measured between ECM terminal 63 (EGR temperature sensor) and ground.

When EGR system is operating.

Voltage: 0 - 1.5V

CAUTION:

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

On Board Diagnosis Logic

NAEC0311

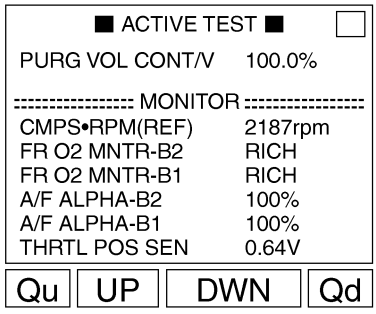
DTC No.	Malfunction is detected when ...		Check Items (Possible Cause)
P1401 0305	A)	An excessively low voltage from the EGR temperature sensor is sent to ECM even when engine coolant temperature is low.	• Harness or connectors (The EGR temperature sensor circuit is shorted.) • EGR temperature sensor • Malfunction of EGR function, EGRC-BPT valve or EGRC-solenoid valve
	B)	An excessively high voltage from the EGR temperature sensor is sent to ECM even when engine coolant temperature is high.	• Harness or connectors (The EGR temperature sensor circuit is open.) • EGR temperature sensor • Malfunction of EGR function, EGRC-BPT valve or EGRC-solenoid valve

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) ▶	GO TO 13.
OK (Without CONSULT) ▶	GO TO 14.
NG ▶	GO TO 12.

12	DETECT MALFUNCTIONING PART
Check the following. • 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

With CONSULT
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 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.



AEC912A

Vacuum should exist.

OK or NG

OK ▶	GO TO 17.
NG ▶	GO TO 15.

14	CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

Without CONSULT
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.

CLICK HERE TO DOWNLOAD THE COMPLETE MANUAL

- Thank you very much for reading the preview of the manual.
- You can download the complete manual from: www.heydownloads.com by clicking the link below



- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

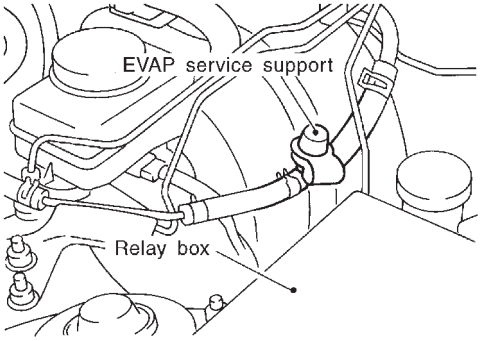
CLICK HERE TO DOWNLOAD THE COMPLETE MANUAL

Diagnostic Procedure (Cont'd)

3	CHECK PURGE FLOW

Without CONSULT

1. Start engine and warm it up to normal operating temperature.
2. Stop engine.
3. Disconnect vacuum hose connected to EVAP canister purge volume control solenoid valve at EVAP service port and install vacuum gauge.



SEF907U

4. Start engine and let it idle for at least 80 seconds.
5. Check vacuum gauge indication when revving engine up to 2,000 rpm.
   Vacuum should exist.
6. Release the accelerator pedal fully and let idle.
   Vacuum should not exist.

OK or NG

OK	▶	GO TO 7.
NG	▶	GO TO 4.

4	CHECK EVAP PURGE LINE

Check EVAP purge line for improper connection or disconnection.
Refer to "EVAPORATIVE EMISSION LINE DRAWING", EC-34.

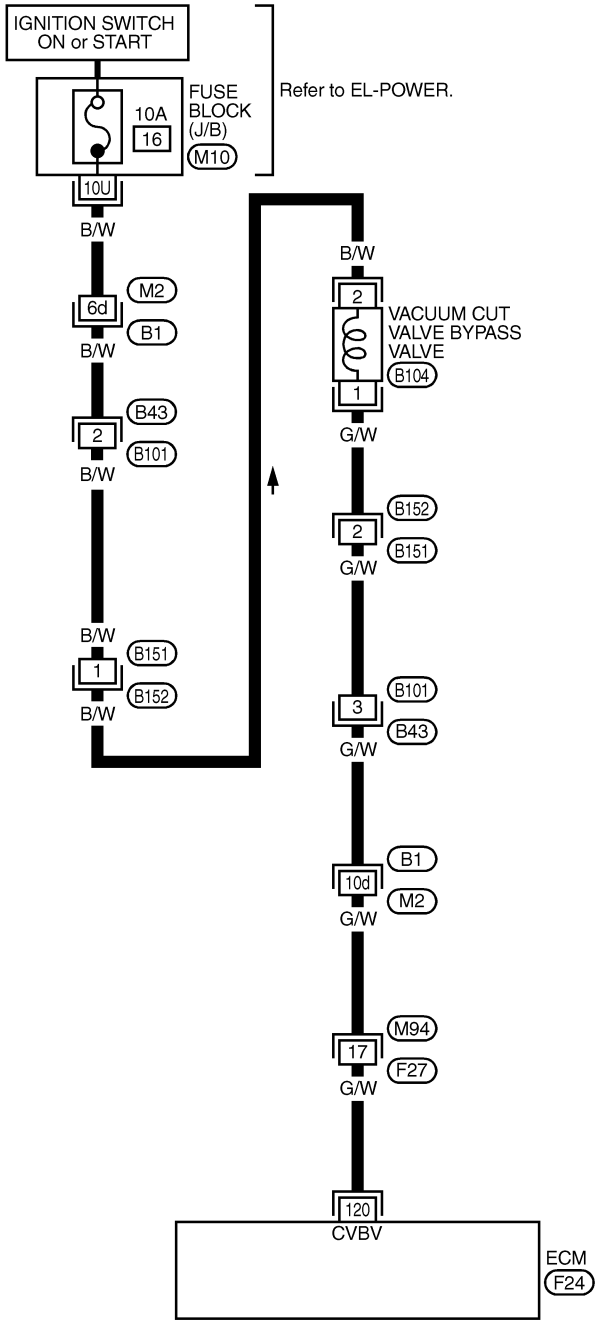
OK or NG

OK	▶	GO TO 5.
NG	▶	Repair it.

Wiring Diagram

NAEC0516

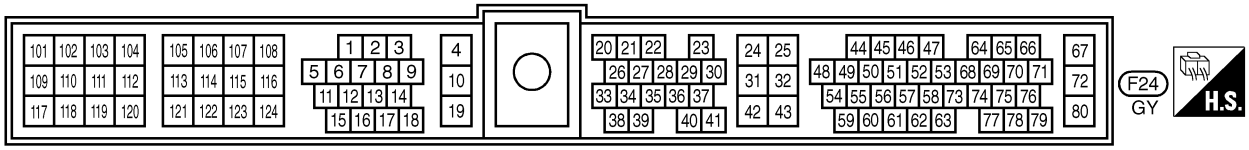
EC-BYPS/V-01



: Detectable line for DTC
: Non-detectable line for DTC



Refer to last page (Foldout page).
M2 , B1
M10



MEC676C

Diagnostic Procedure

=NAEC0347

1	INSPECTION START

Turn ignition switch to “START”.
Is any cylinder ignited?

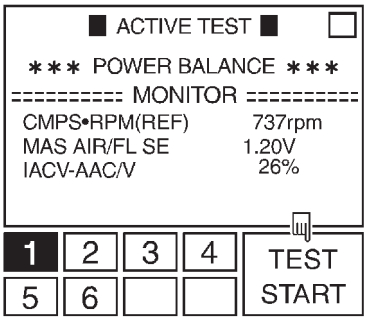
Yes or No

Yes	▶	GO TO 2.
No	▶	GO TO 9.

2	CHECK OVERALL FUNCTION

With CONSULT

1. Start engine.
2. Perform “POWER BALANCE” in “ACTIVE TEST” mode with CONSULT.

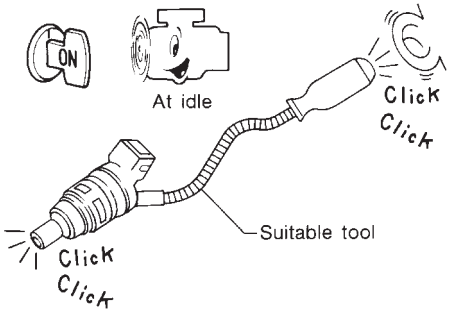


SEF389V

3. Make sure that each circuit produces a momentary engine speed drop.

Without CONSULT

1. Start engine.
2. Listen to each injector operating sound.



MEC703B

Clicking noise should be heard.

OK or NG

OK	▶	**INSPECTION END**
NG	▶	GO TO 3.

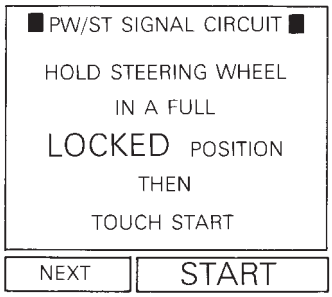
Diagnostic Procedure

=NAEC0363

1	INSPECTION START
Do you have CONSULT?	
Yes or No	
Yes ▶	GO TO 2.
No ▶	GO TO 3.

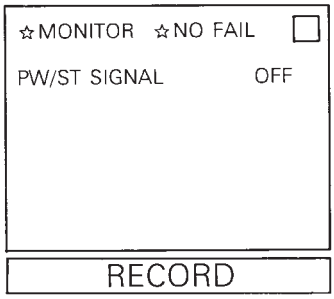
2	CHECK OVERALL FUNCTION

With CONSULT
1. Turn ignition switch “ON”.
2. Perform “PW/ST SIGNAL CIRCUIT” in “FUNCTION TEST” mode with CONSULT.



MEF023E

With CONSULT
1. Start engine.
2. Check “PW/ST SIGNAL” in “DATA MONITOR” mode with CONSULT.



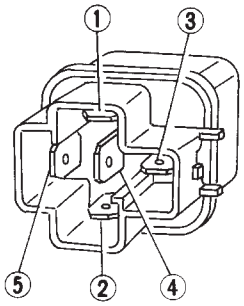
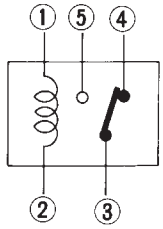
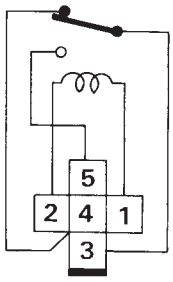
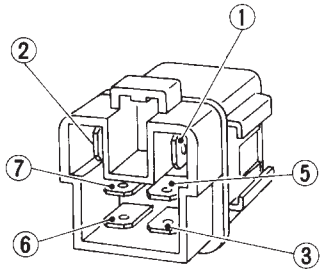
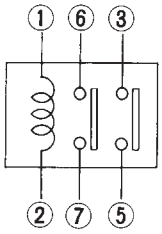
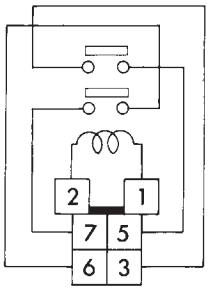
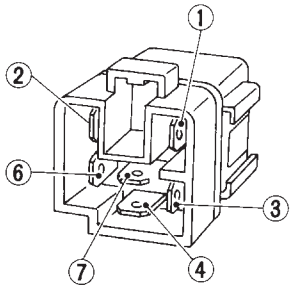
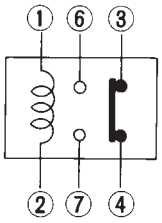
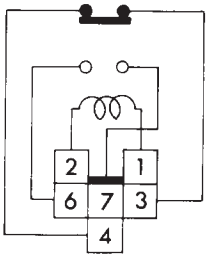
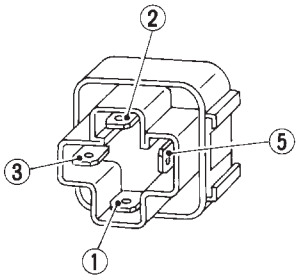
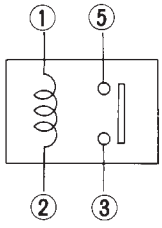
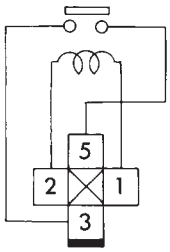
SEF591I

Condition	“PW/ST SIGNAL”
Steering is neutral position	OFF
Steering is turned to full position	ON

MTBL0144

OK or NG

OK ▶	**INSPECTION END**
NG ▶	GO TO 4.

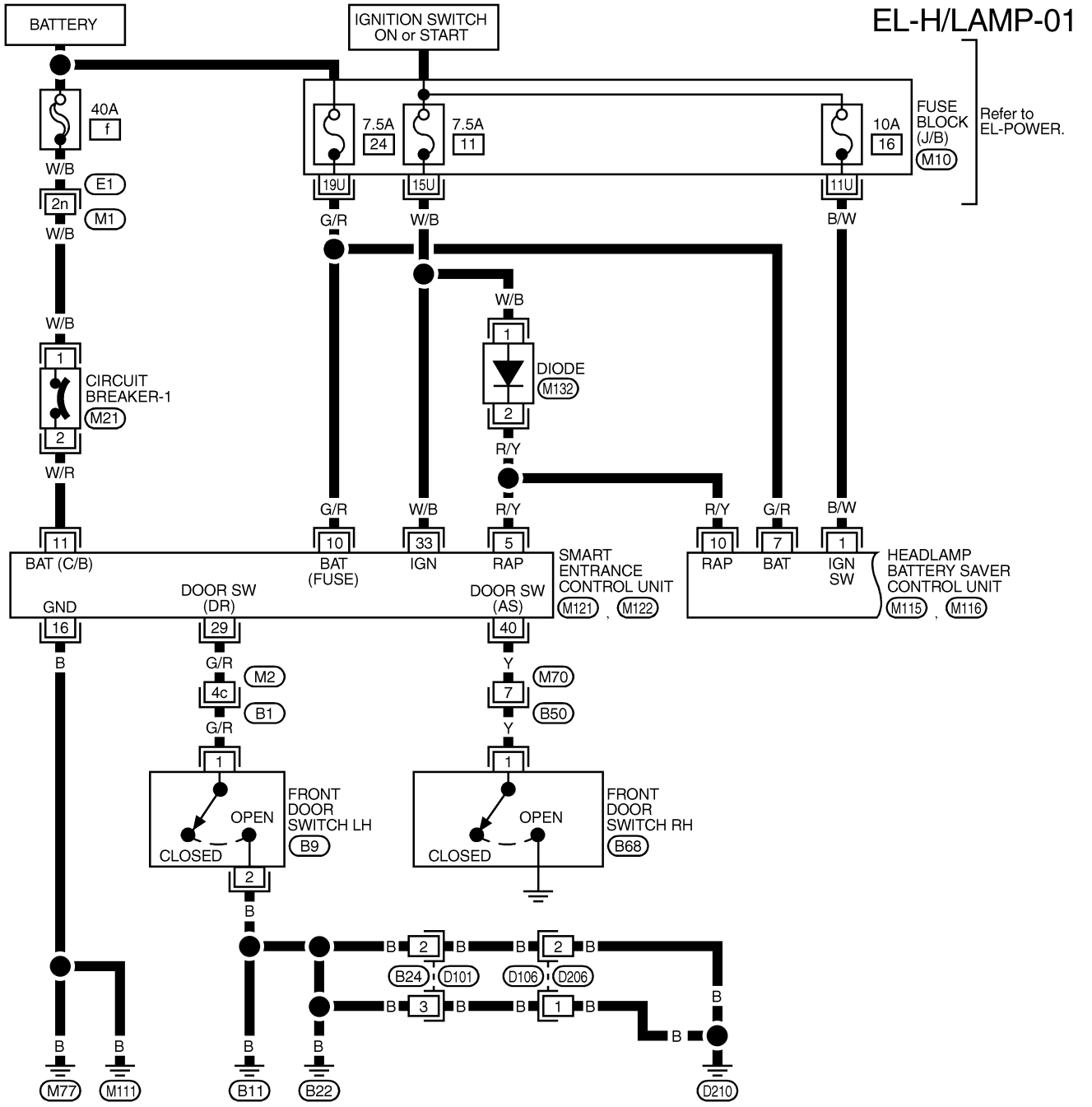
Type	Outer view	Circuit	Connector symbol and connection	Case color
1T				BLACK
2M				BROWN
1M•1B				GRAY
1M				BLUE

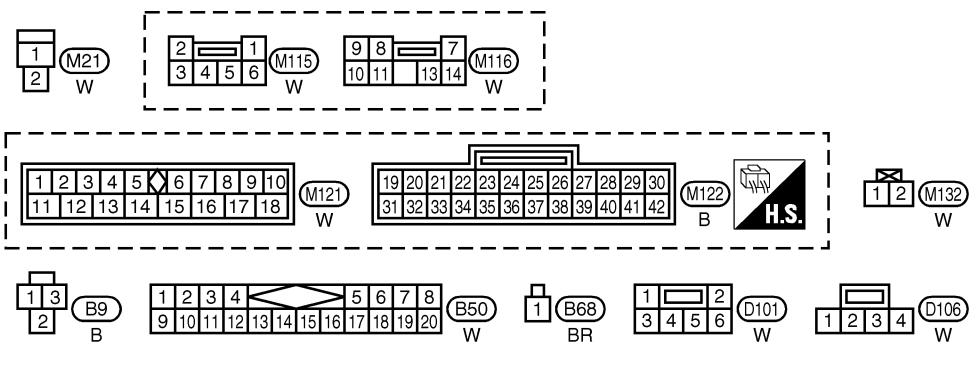
The arrangement of terminal numbers on the actual relays may differ from those shown above.

SEL661TA

Wiring Diagram — H/LAMP —

NAEL0013





Refer to last page (Foldout page).

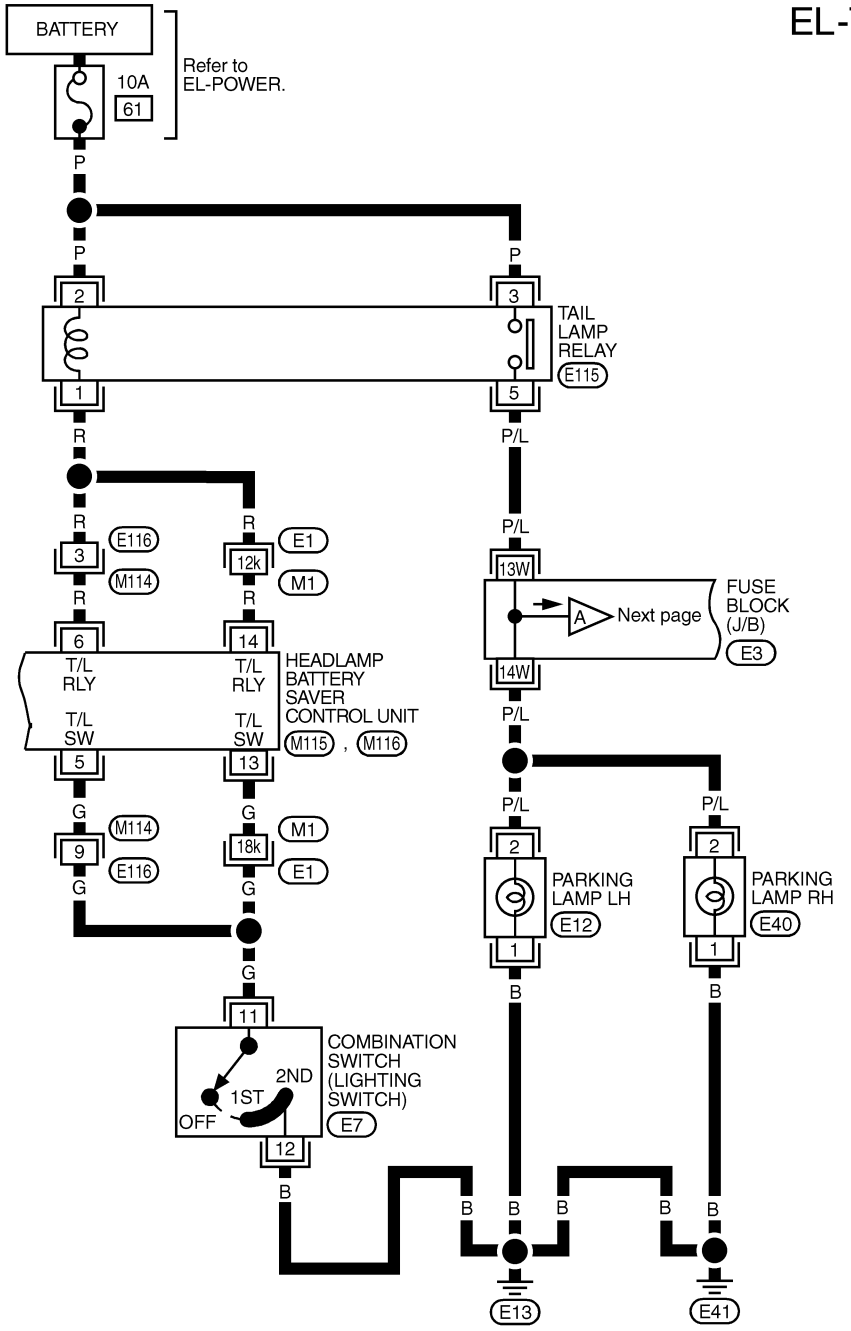
M1 , E1

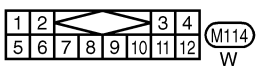
M2 , B1

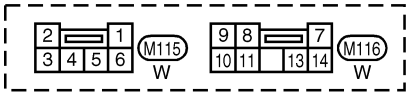
M10

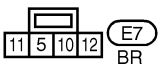
MEL199M

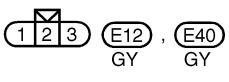
EL-TAIL/L-02

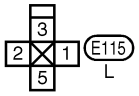










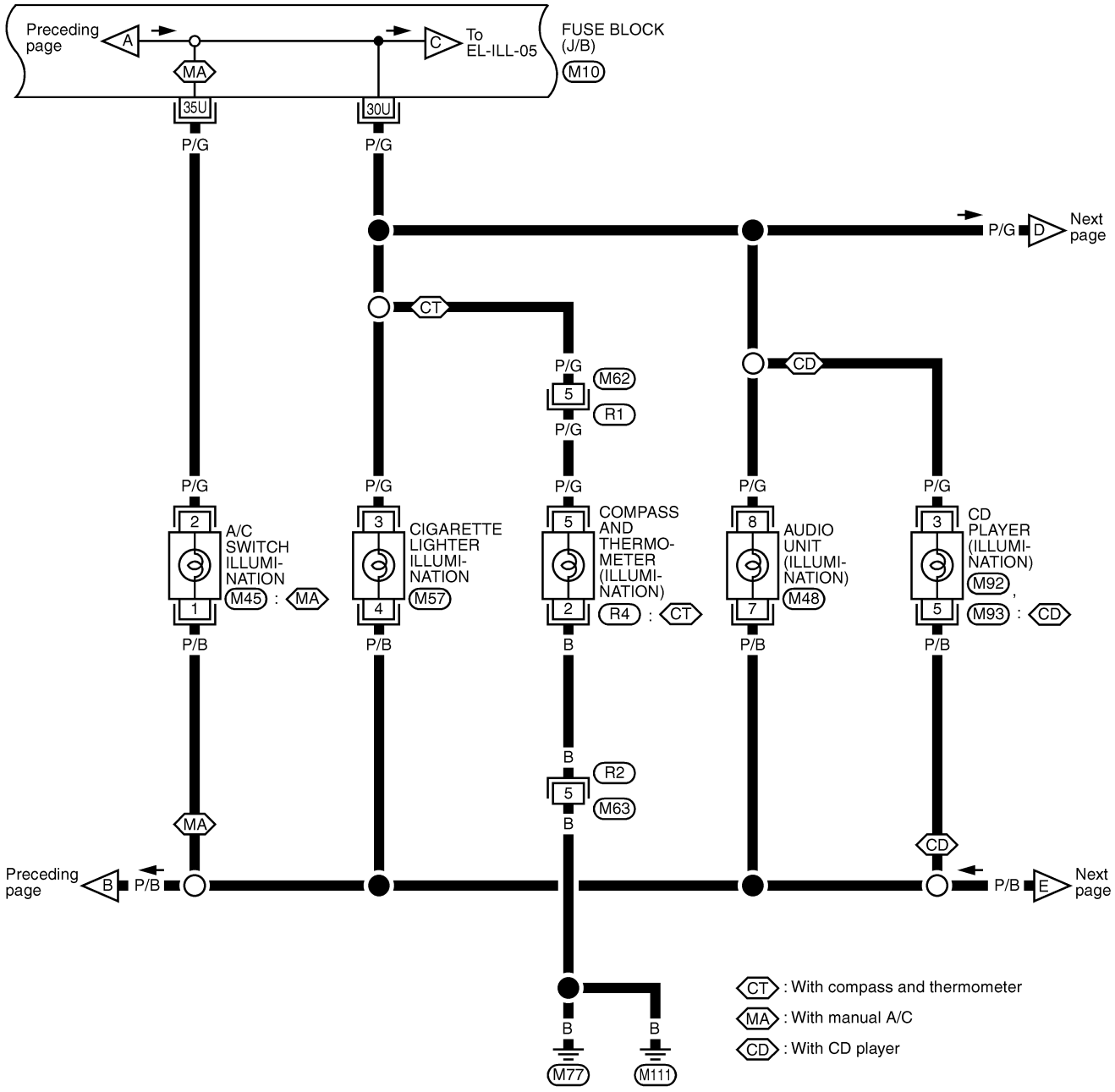


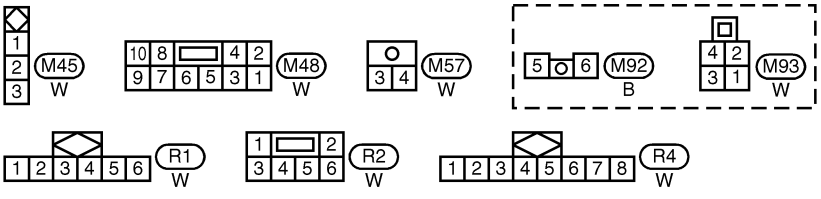
Refer to last page (Foldout page).

M1 , E1
E3

MEL922J

EL-ILL-03





Refer to last page (Foldout page).

M10

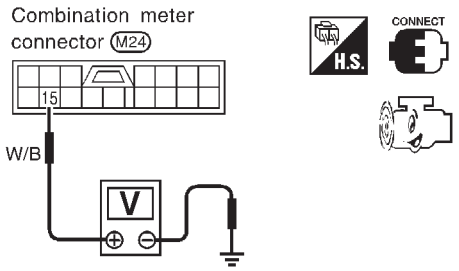
MEL205M

INSPECTION/ENGINE REVOLUTION SIGNAL

NAEL0046S02

1	CHECK ECM OUTPUT

1. Start engine.
2. Check voltage between combination meter terminals 15 and ground at idle and 2,000 rpm.



SEL294V

Higher rpm = Higher voltage
Lower rpm = Lower voltage
Voltage should change with rpm.

OK or NG

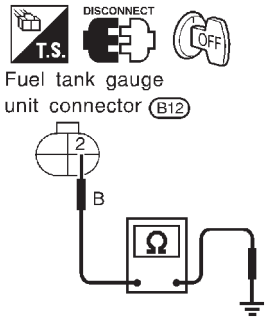
OK	▶	Engine revolution signal is OK.
NG	▶	Harness for open or short between ECM and combination meter

INSPECTION/FUEL TANK GAUGE UNIT

NAEL0046S08

1	CHECK GROUND CIRCUIT FOR FUEL TANK GAUGE UNIT

Check harness continuity between fuel tank gauge unit terminal 2 and ground.



MEL839G

Does continuity exist?

Yes	▶	GO TO 2.
No	▶	Repair harness or connector.

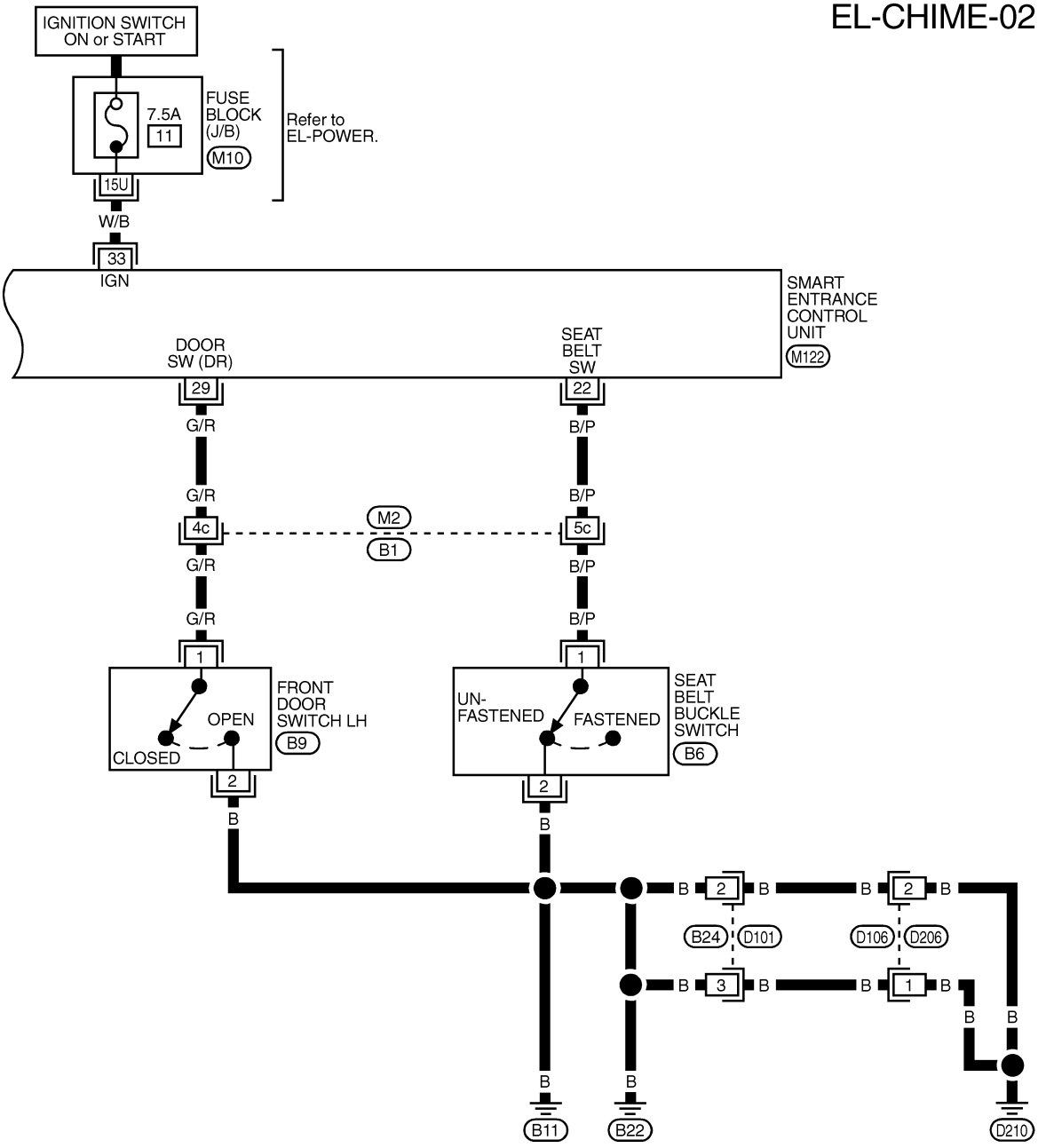
2	CHECK GAUGE UNITS

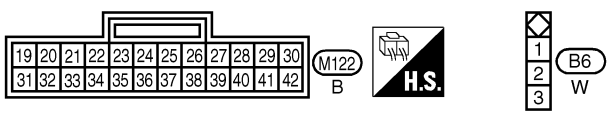
Refer to "FUEL TANK GAUGE UNIT CHECK" (EL-94).

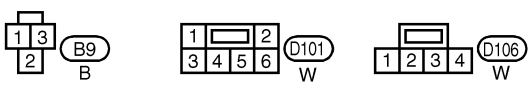
OK or NG

OK	▶	GO TO 3.
NG	▶	Replace fuel tank gauge unit.

EL-CHIME-02







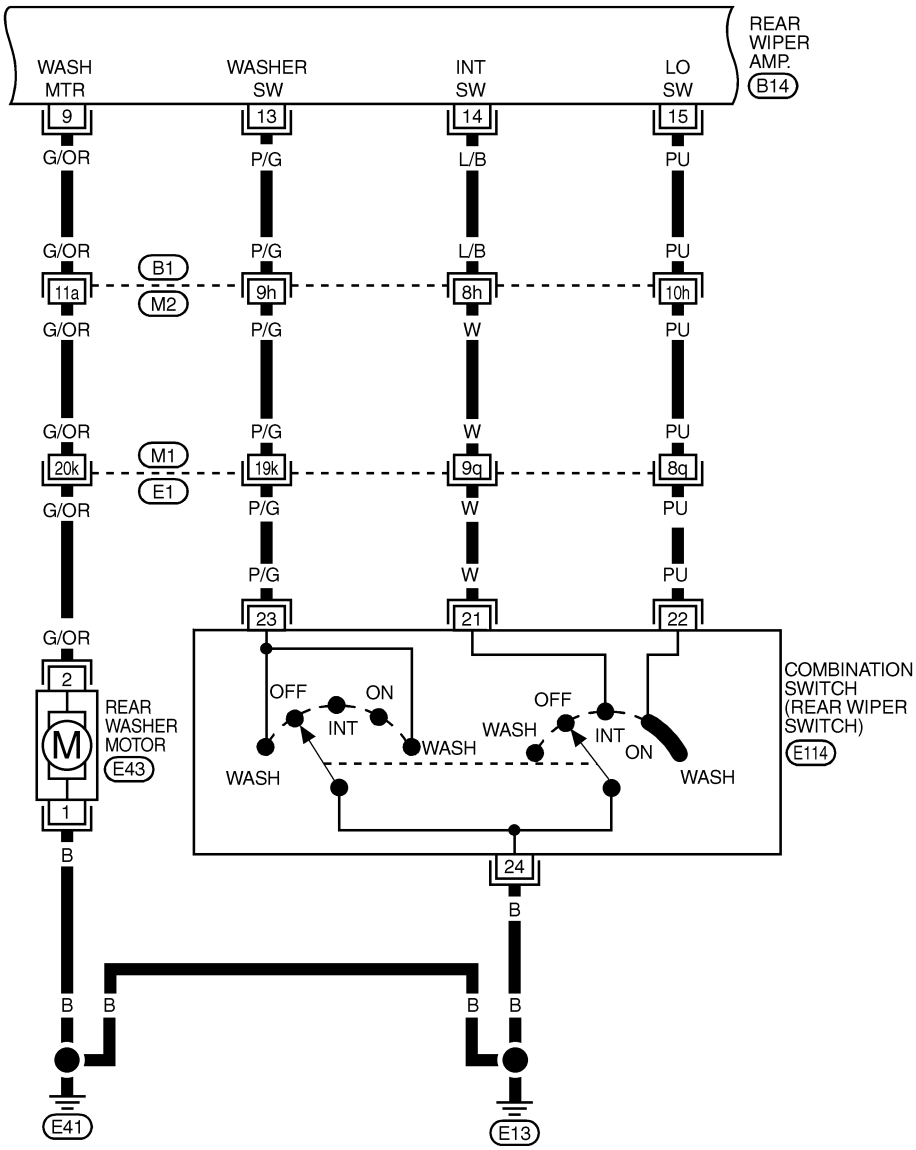
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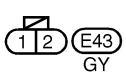
M2 , B1

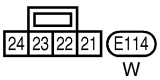
M10

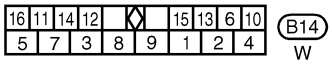
MEL950J

EL-WIP/R-02





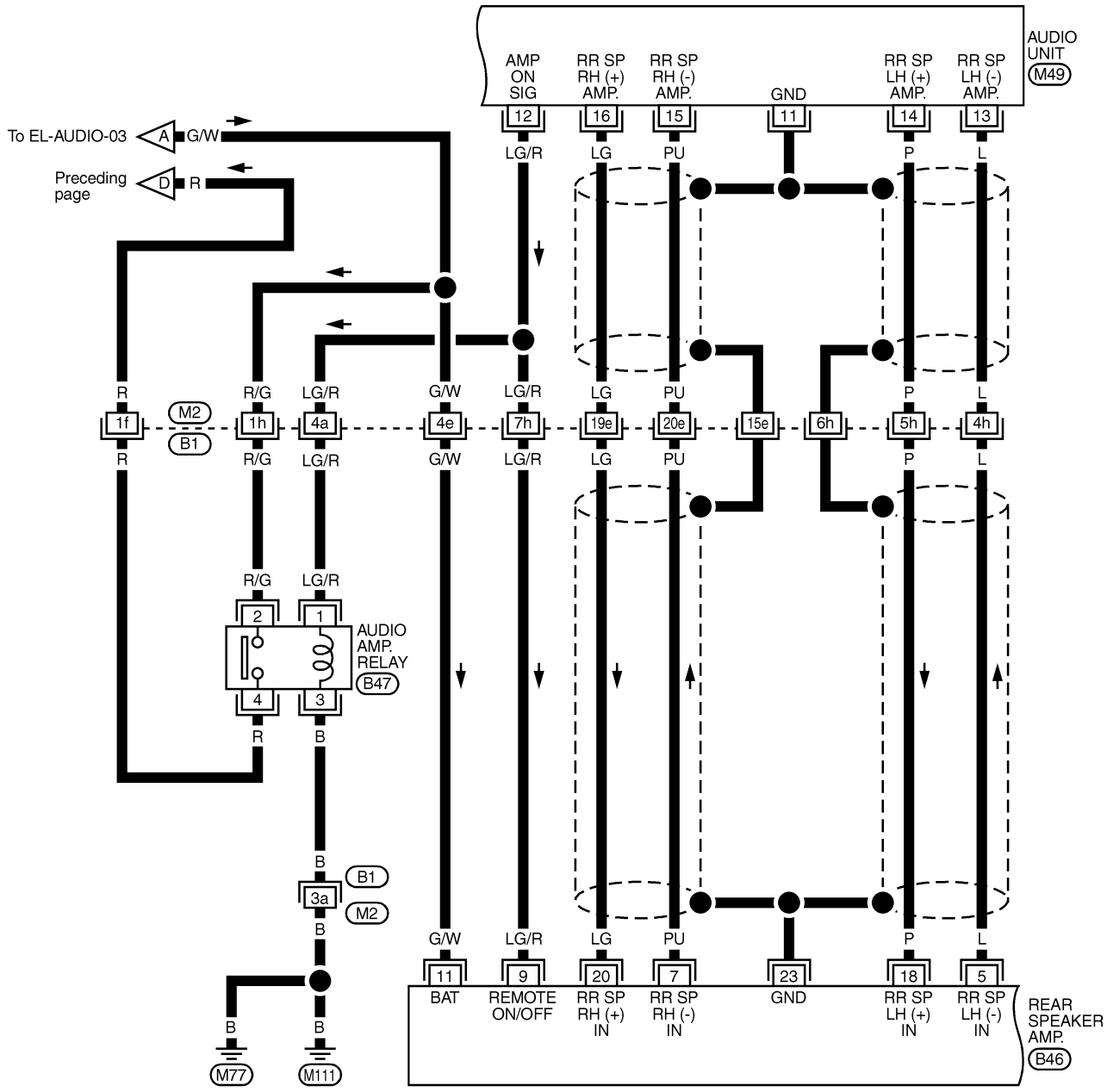


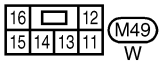


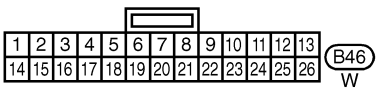
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M1 , E1
M2 , B1

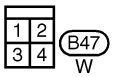
MEL955J

EL-AUDIO-05









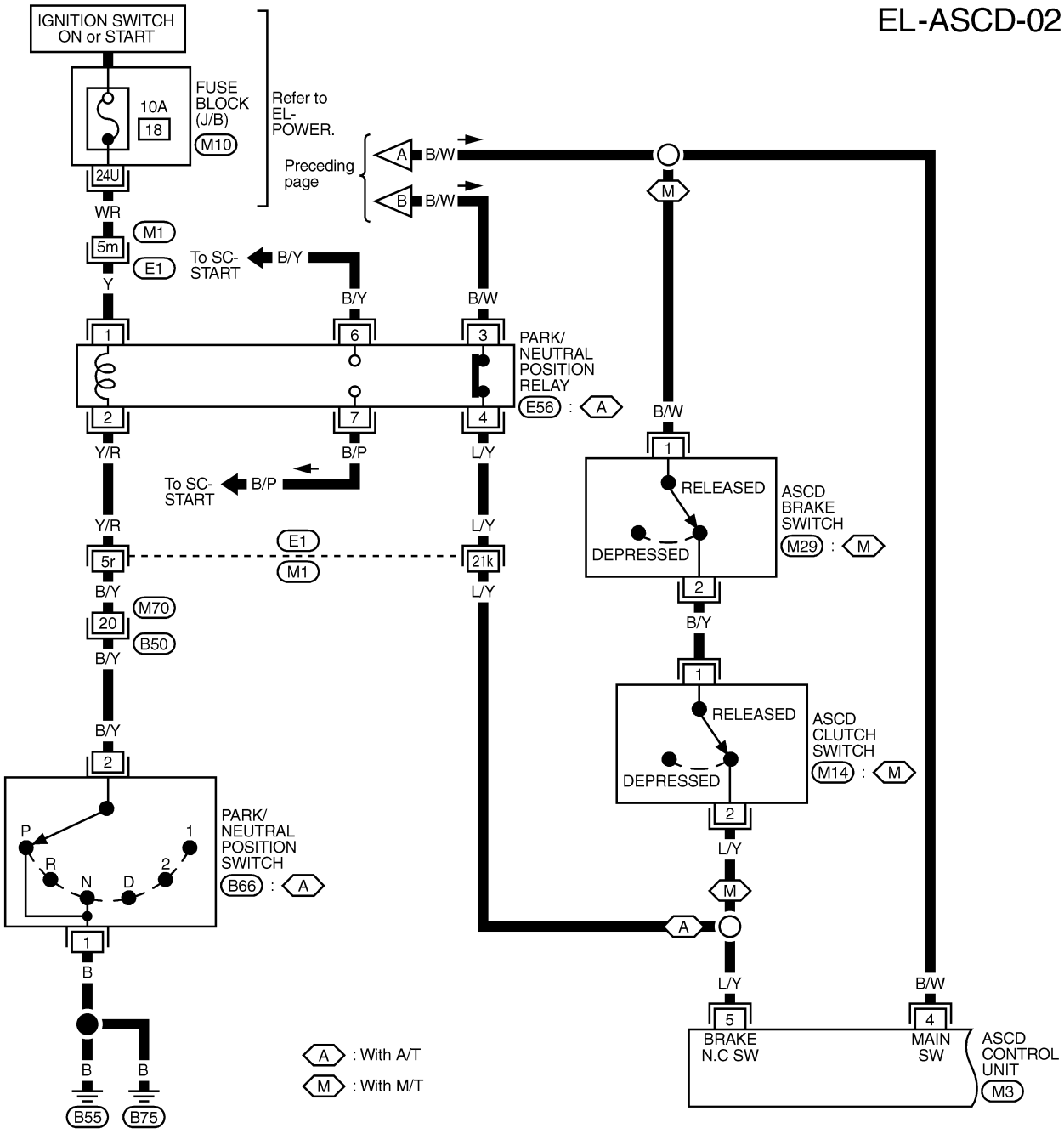
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M2 , B1

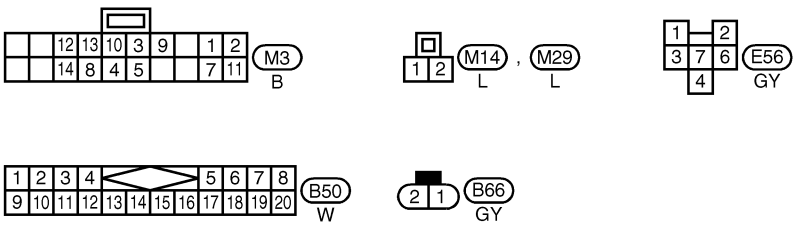
MEL965J

FIG. 2

NAEL0097S02

EL-ASCD-02





Refer to last page (Foldout page).

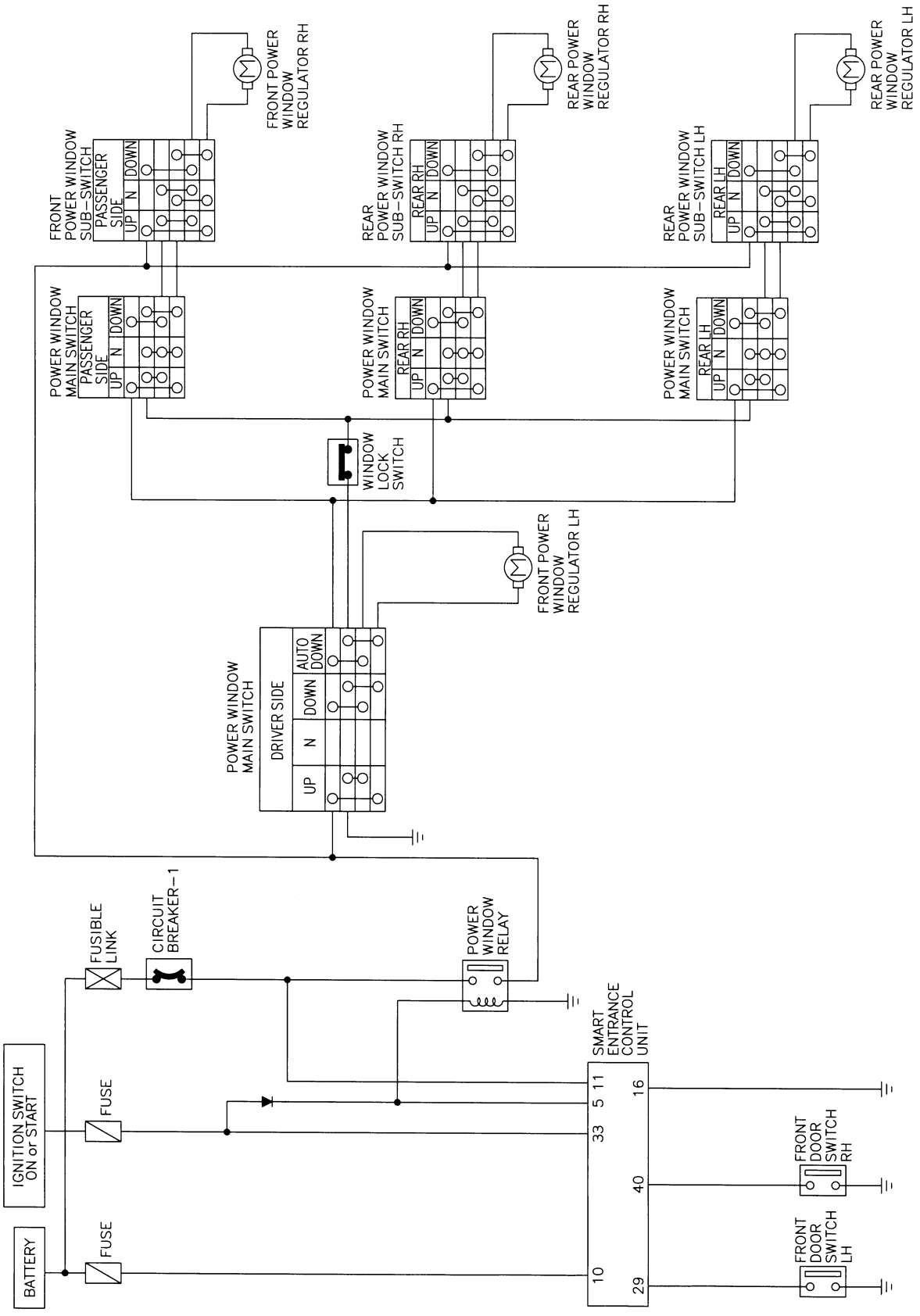
M1 , E1

M10

MEL973J

Schematic

NAEL0103



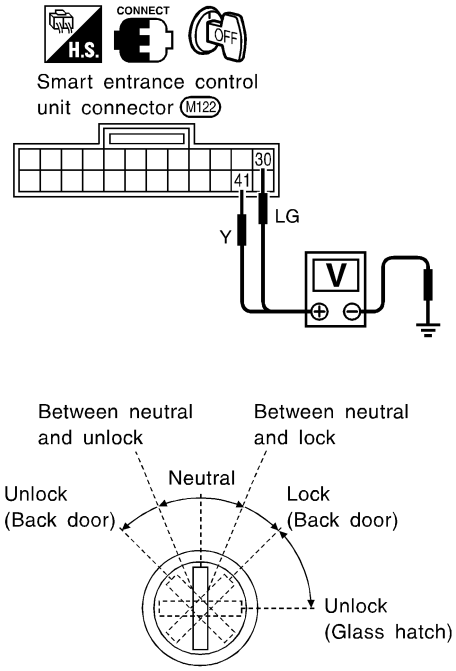
MEL977J

BACK DOOR KEY CYLINDER SWITCH CHECK

=NAEL0110S08

1	CHECK BACK DOOR KEY CYLINDER SWITCH INPUT SIGNAL (LOCK/UNLOCK SIGNAL)

Check voltage between control unit terminals 30 or 41 and ground.



SEL071W

	Terminals		Key position	Voltage [V]
	(+)	(–)		
Back door	41	Ground	Between neutral and lock	0
			Other positions	Approx. 5
	30	Ground	Between neutral and unlock	0
			Other positions	Approx. 5

MTBL0270

Refer to wiring diagram in EL-207.

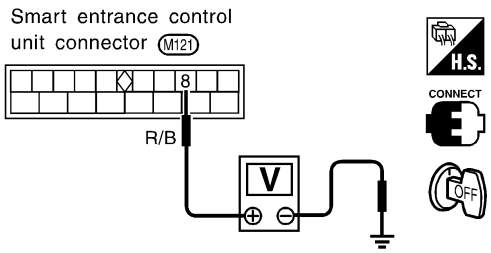
OK or NG

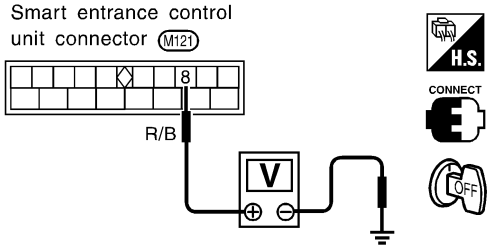
OK	▶	Back door key cylinder switch is OK.
NG	▶	GO TO 2.

INTERIOR ROOM LAMP OPERATION CHECK

NAEL0115S09

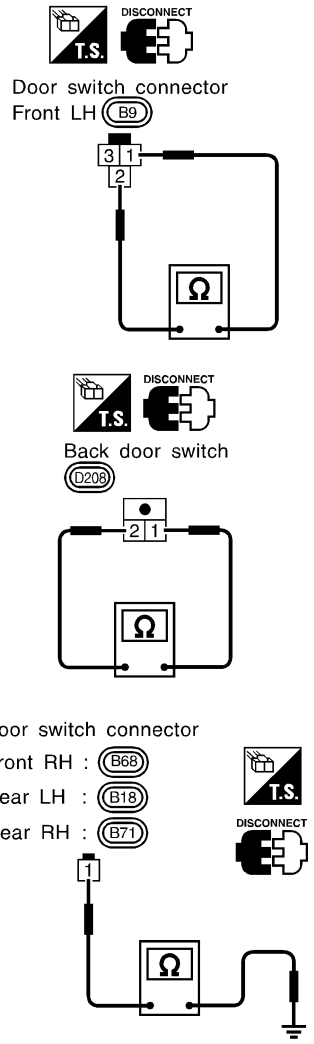
1	CHECK INTERIOR ROOM LAMP	
Check if the interior room lamp switch is in the "ON" position and the lamp illuminates. **Does interior room lamp illuminate?**		
Yes	▶	GO TO 2.
No	▶	**Check the following.** ● Harness for open or short between control unit and interior room lamp ● Interior room lamp

2	CHECK INTERIOR ROOM LAMP CIRCUIT	
When interior room lamp switch is "DOOR" position, check voltage across control unit terminal 8 and ground.  SEL891VA Refer to wiring diagram in EL-226. **Does battery voltage exist?**		
Yes	▶	GO TO 3.
No	▶	Repair harness between control unit and interior room lamp.

3	CHECK CONTROL UNIT OUTPUT	
Push unlock button of remote controller with all doors closed, and check voltage across control unit terminal 8 and ground.  SEL891VA **Voltage (V):** **Unlock button is pushed.** **0 (For approx. 30 seconds.)** **Unlock button is not pushed.** **Battery voltage** **OK or NG**		
OK	▶	Check system again.
NG	▶	Replace smart entrance control unit.

2	CHECK DOOR SWITCH

1. Disconnect door switch connector.
2. Check continuity between door switch terminals.



SEL066W

	Terminals	Condition	Continuity
Front LH door switch	1 - 2	Closed	No
		Open	Yes
Back door switch	2 - 1	Closed	No
		Open	Yes
Front RH and rear door switches	1 - ground	Closed	No
		Open	Yes

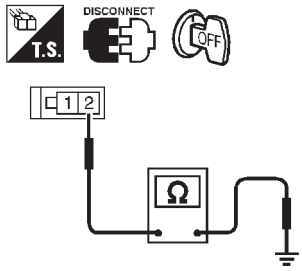
MTBL0274

OK or NG

OK	▶	**Check the following.** ● Door switch ground circuit (Front LH, back door) or door switch ground condition ● Harness for open or short between control unit and door switch
NG	▶	Replace door switch.

4	CHECK GROUND CIRCUIT

Check continuity between terminal 2 and ground.



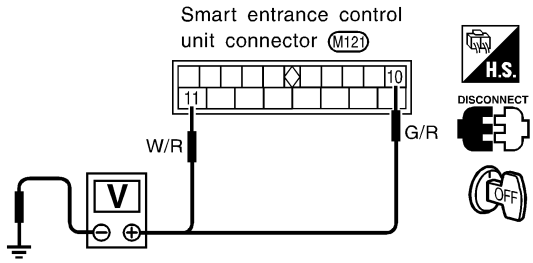
SEL636U

Does continuity exist?

Yes	▶	Replace transmitter with sun visor assembly.
No	▶	Repair harness.

5	CHECK MAIN POWER SUPPLY FOR SMART ENTRANCE CONTROL UNIT

1. Disconnect smart entrance control unit.
2. Check voltage between control unit terminals 10 or 11 and ground.



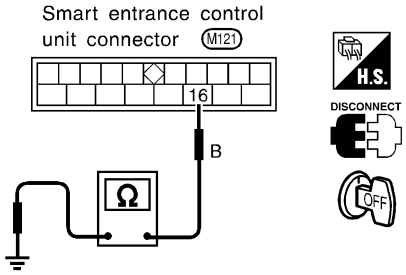
SEL156W

Does battery voltage exist?

Yes	▶	GO TO 6.
No	▶	**Check the following.** ● 7.5A fuse No. 24, located in fuse block (J/B) ● 40A fusible link (letter **f**, located in fuse and fusible link box)

6	CHECK GROUND CIRCUIT FOR SMART ENTRANCE CONTROL UNIT

Check continuity between terminal 16 and ground.



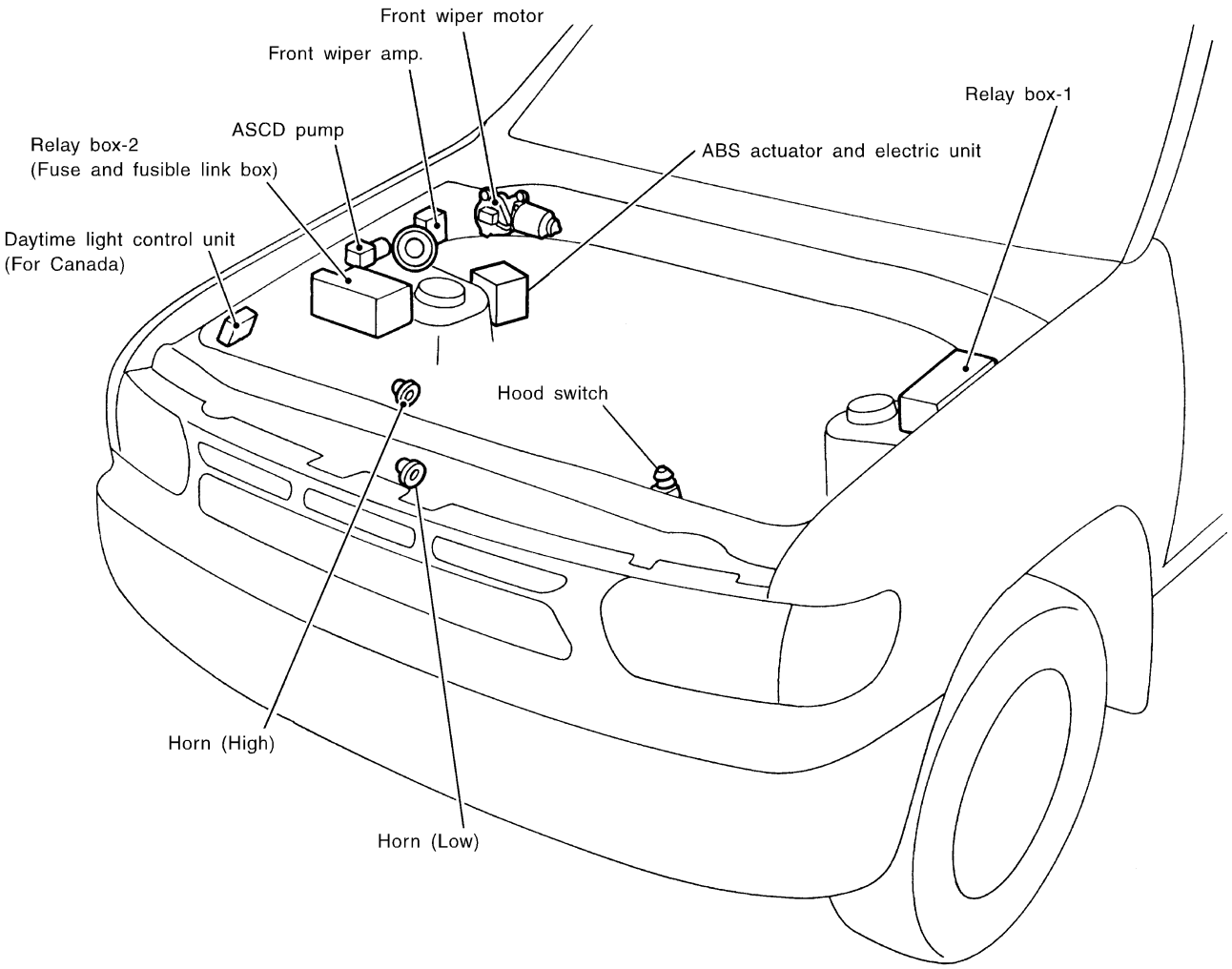
SEL791VA

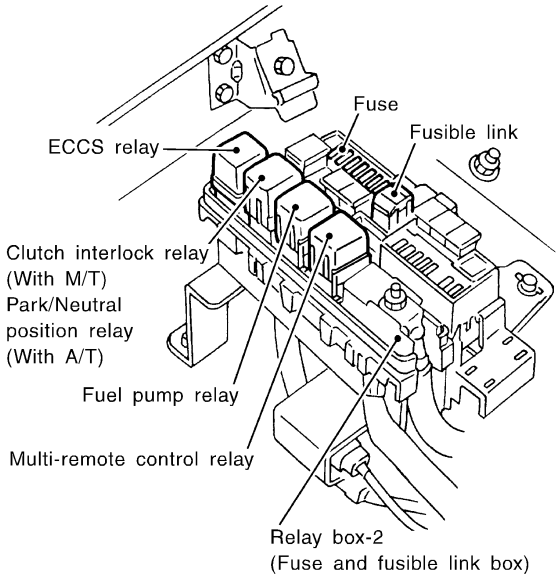
Does continuity exist?

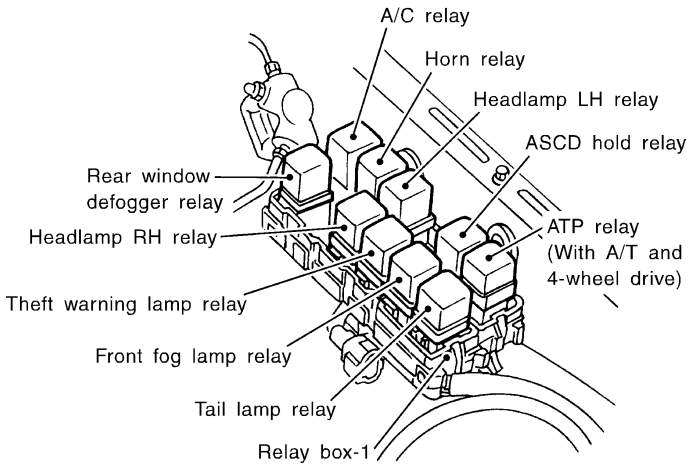
Yes	▶	Power supply and ground circuits are OK.
No	▶	Check ground harness.

Engine Compartment

NAEL0129







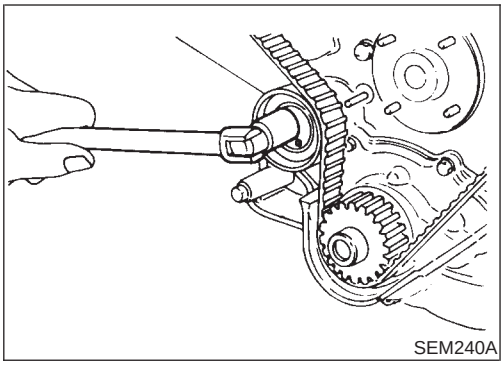
MEL958K

WIRING DIAGRAM CODES (CELL CODES)

Use the chart below to find out what each wiring diagram code stands for.
Refer to the wiring diagram code in the alphabetical index to find the location (page number) of each wiring diagram.

Code	Section	Wiring Diagram Name
1STSIG	AT	A/T 1ST Signal
2NDSIG	AT	A/T 2ND Signal
3RDSIG	AT	A/T 3RD Signal
4THSIG	AT	A/T 4TH Signal
A/C, A	HA	Auto Air Conditioner
A/C, M	HA	Manual Air Conditioner
AAC/V	EC	IACV-AAC Valve
ABS	BR	Anti-lock Brake System
AP/SEN	EC	Absolute Pressure Sensor
ASCD	EL	Automatic Speed Control Device
AT/C	EC	A/T Control
ATDIAG	EC	A/T Diagnosis Communication Line
AUDIO	EL	Audio
BA/FTS	AT	A/T Fluid Temperature Sensor and TCM Power Supply
BACK/L	EL	Back-up Lamp
BYPS/V	EC	Vacuum Cut Valve Bypass Valve
CHARGE	SC	Charging System
CHIME	EL	Warning Chime
CIGAR	EL	Cigarette Lighter
CKPS	EC	Crankshaft Position Sensor (OBD)
CMPS	EC	Camshaft Position Sensor
COMPAS	EL	Compass and Thermometer
D/LOCK	EL	Power Door Lock
DEF	EL	Rear Window Defogger
DTRL	EL	Headlamp — With Daytime Light System —
ECTS	EC	Engine Coolant Temperature Sensor
EGR/TS	EC	EGR Temperature Sensor
EGRC/V	EC	EGRC-solenoid Valve
EGRC1	EC	EGR Function
ENGSS	AT	Engine Speed Signal
F/FOG	EL	Front Fog Lamp
F/PUMP	EC	Fuel Pump Control
FICD	EC	IACV-FICD Solenoid Valve
FO2H-L	EC	Front Heated Oxygen Sensor Heater (Left Bank)
FO2H-R	EC	Front Heated Oxygen Sensor Heater (Right Bank)
FRO2LH	EC	Front Heated Oxygen Sensor (Front HO2S) (Left Bank)
FRO2RH	EC	Front Heated Oxygen Sensor (Front HO2S) (Right Bank)
FTS	AT	A/T Fluid Temperature Sensor
FUELLH	EC	Fuel Injection System Function (Left Bank)
FUELRH	EC	Fuel Injection System Function (Right Bank)
HEATER	HA	Heater System
H/LAMP	EL	Headlamp
HORN	EL	Horn
HSEAT	EL	Heated Seat
IATS	EC	Intake Air Temperature Sensor
IGN/SG	EC	Ignition Signal
ILL	EL	Illumination
INJECT	EC	Injector
INT/L	EL	Interior, Spot, Vanity Mirror, and Luggage Room Lamps
KS	EC	Knock Sensor
LPSV	AT	Line Pressure Solenoid Valve
MAFS	EC	Mass Air Flow Sensor
MAIN	AT	Main Power Supply and Ground Circuit
MAIN	EC	Main Power Supply and Ground Circuit
METER	EL	Speedometer, Tachometer, Temp., Oil, and Fuel Gauges
MIL/DL	EC	MIL and Data Link Connectors
MIRROR	EL	Door Mirror
MULTI	EL	Multi-remote Control System
NATS	EL	NVIS (Nissan Vehicle Immobiliser System)
NONDTC	AT	Non-detectable Items
OVRCSV	AT	Overrun Clutch Solenoid Valve
P/ANT	EL	Power Antenna
PGC/V	EC	EVAP Canister Purge Volume Control Solenoid Valve

Removal (Cont'd)

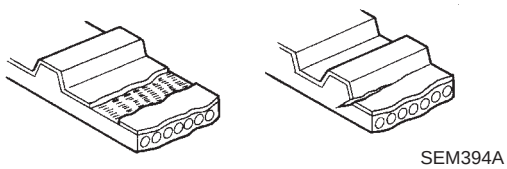
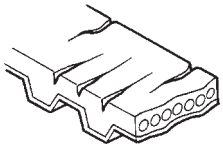
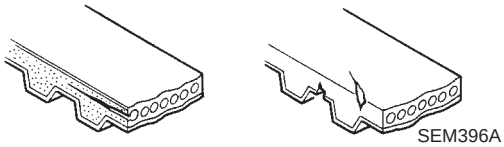
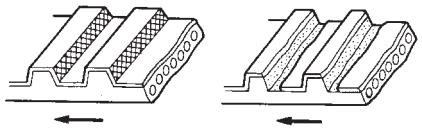

SEM240A

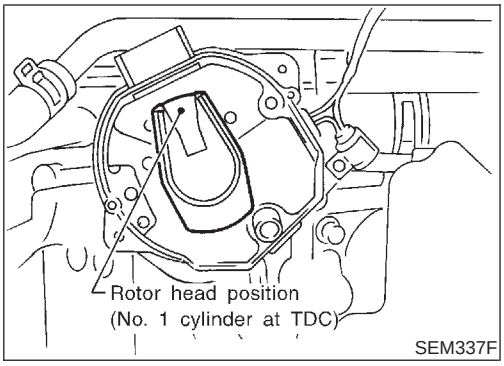
15. Loosen timing belt tensioner nut, turn tensioner, then remove timing belt.

Inspection

NAEM0011

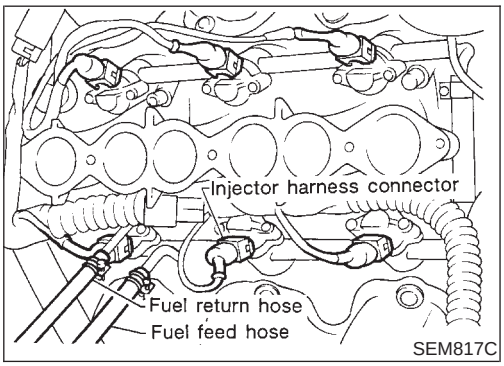
Visually check the condition of timing belt.
Replace if any abnormality is found.

Item to check	Problem	Cause
Tooth is broken/tooth root is cracked.	 SEM394A	• Camshaft jamming • Distributor jamming • Damaged camshaft/crankshaft oil seal
Back surface is cracked/worn.	 SEM395A	• Tensioner jamming • Overheated engine • Interference with belt cover
Side surface is worn.	 SEM396A • Belt corners are worn and round. • Wicks are frayed and coming out.	• Improper installation of belt • Malfunctioning crankshaft pulley plate/timing belt plate
Teeth are worn.	 Rotating direction SEM397A • Canvas on tooth face is worn down. • Canvas on tooth is fluffy, rubber layer is worn down and faded white, or weft is worn down and invisible.	• Poor belt cover sealing • Coolant leakage at water pump • Camshaft not functioning properly • Distributor not functioning properly • Excessive belt tension
Oil/Coolant or water is stuck to belt.	—	• Poor oil sealing of each oil seal • Coolant leakage at water pump • Poor belt cover sealing



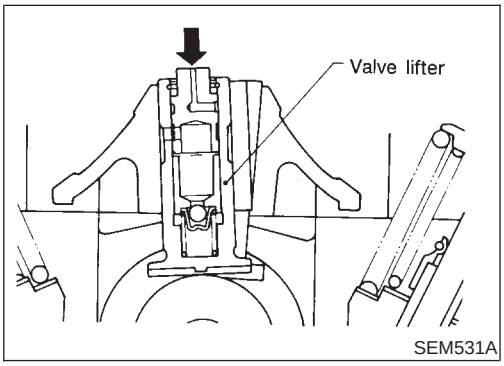
SEM337F

2) After installing, confirm that distributor rotor head is set as shown in figure.



SEM817C

14. Install injector fuel tube assembly.
15. Connect all injector harness connectors.
16. Install fuel feed and fuel return hoses to injector fuel tube assembly.
17. Install intake manifold collector. Install all parts which were removed in step 5 under "CYLINDER HEAD — Removal" (EM-28).
18. Install ASCD and accelerator control wire.



SEM531A

19. Check hydraulic valve lifter.

a. Push plunger forcefully with your finger.

- **Be sure to check it with rocker arm in its free position (not on the lobe).**

b. If valve lifter moves more than 1 mm (0.04 in), air may be inside it.

c. Bleed air off by running engine at 1,000 rpm under no load for about 10 minutes.

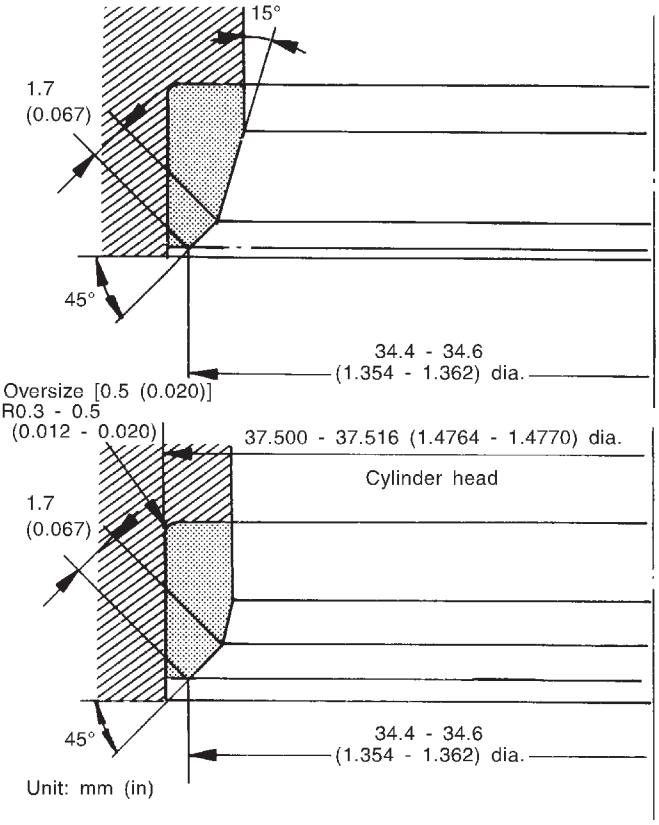
d. If hydraulic valve lifters are still noisy, replace them and bleed air off again in the same manner as in step 19 (c).

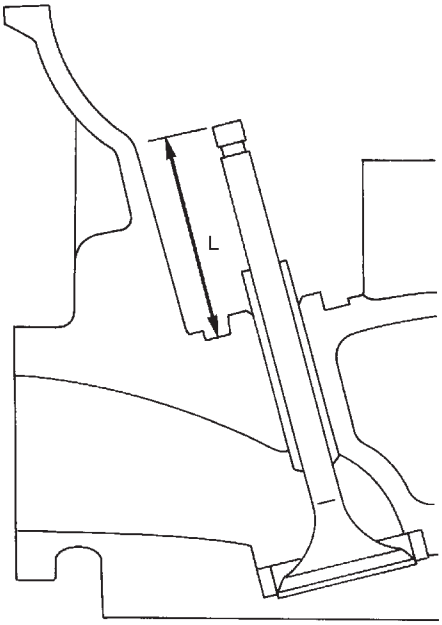
Valve Seat (Cont'd)

EXHAUST VALVE SEAT

NAEM0029S02

Standard



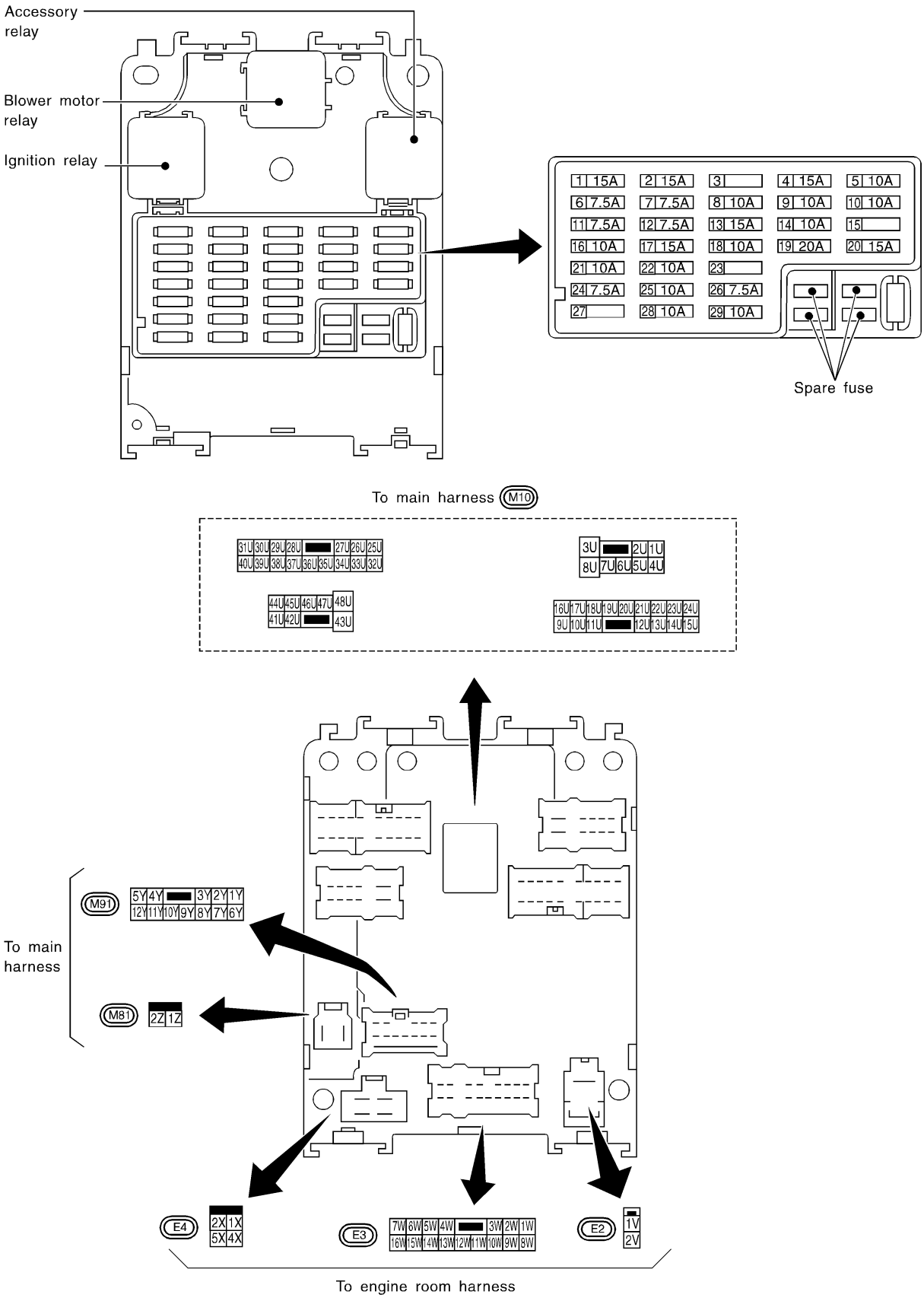


L= 45.5±0.1 (1.791±0.004)

SEM640F

Terminal Arrangement

NAEL0148



MEL876J

MULTIPLE SWITCH

=NAGI0003S0204

The continuity of multiple switch is described in two ways as shown below.

- The switch chart is used in schematic diagrams.
- The switch diagram is used in wiring diagrams.

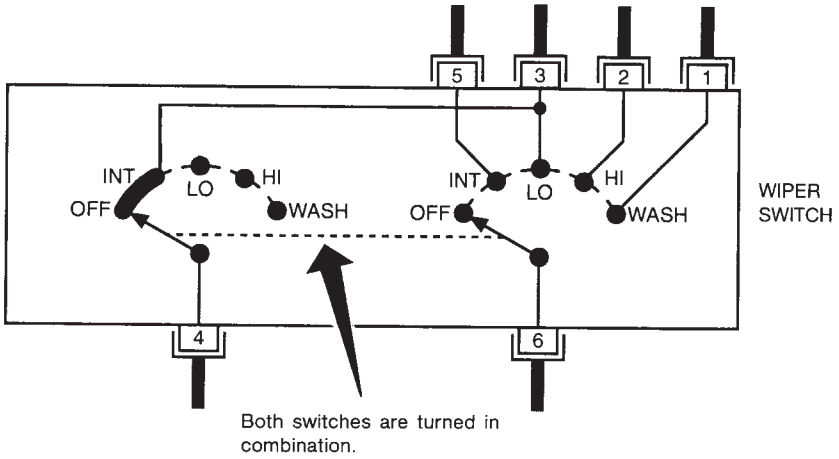
Example

(SWITCH CHART)

WIPER SWITCH

	OFF	INT	LO	HI	WASH
1					○
2				○	
3	○	○	○		
4	○	○			
5		○			
6		○	○	○	○

(SWITCH DIAGRAM)



Continuity circuit of wiper switch

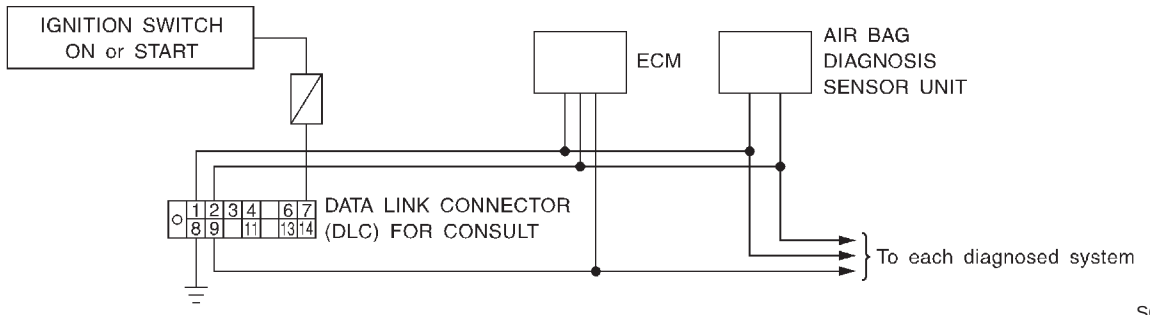
SWITCH POSITION	CONTINUITY CIRCUIT
OFF	3 - 4
INT	3 - 4, 5 - 6
LO	3 - 6
HI	2 - 6
WASH	1 - 6

SGI875

CONSULT Data Link Connector (DLC) Circuit

NAGI0006S05

Example



INSPECTION PROCEDURE

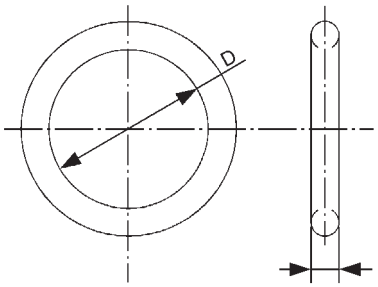
NAGI0006S0501

If the CONSULT cannot diagnose the system properly, check the following items.

Symptom	Check item
CONSULT cannot access any system.	• CONSULT DLC power supply circuit (Terminal 7) and ground circuit (Terminal 8) (For detailed circuit, refer to “MIL & Data Link Connectors Wiring Diagram” in EC section.) • CONSULT DDL cable
CONSULT cannot access individual system. (Other systems can be accessed.)	• CONSULT program card (Check the appropriate CONSULT program card for the system.) Refer to GI-37. • Power supply and ground circuit for the control unit of the system (For detailed circuit, refer to wiring diagram for each system.) • Open or short circuit between the system and CONSULT DLC (For detailed circuit, refer to wiring diagram for each system.)

O-Ring Part Numbers and Specifications

NAHA0156S0201



SHA814E

Connection type	O-ring size	Part number	D mm (in)	W mm (in)
New	8	92471 N8210	6.8 (0.268)	1.85 (0.0728)
Former		92470 N8200	6.07 (0.2390)	1.78 (0.0701)
New	12	92472 N8210	10.9 (0.429)	2.43 (0.0957)
Former		92475 71L00	11.0 (0.433)	2.4 (0.094)
New	16	92473 N8210	13.6 (0.535)	2.43 (0.0957)
Former		92475 72L00	14.3 (0.563)	2.3 (0.0906)
New	19	92474 N8210	16.5 (0.650)	2.43 (0.0957)
Former		92477 N8200	17.12 (0.6740)	1.78 (0.0701)

WARNING:

Make sure all refrigerant is discharged into the recycling equipment and the pressure in the system is less than atmospheric pressure. Then gradually loosen the discharge side hose fitting and remove it.

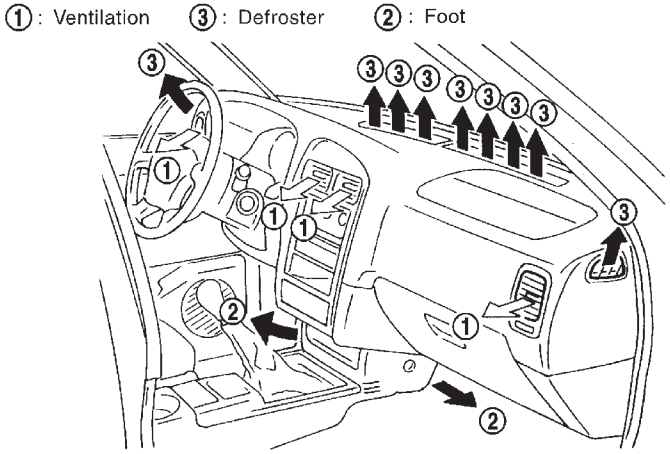
CAUTION:

When replacing or cleaning refrigerant cycle components, observe the following.

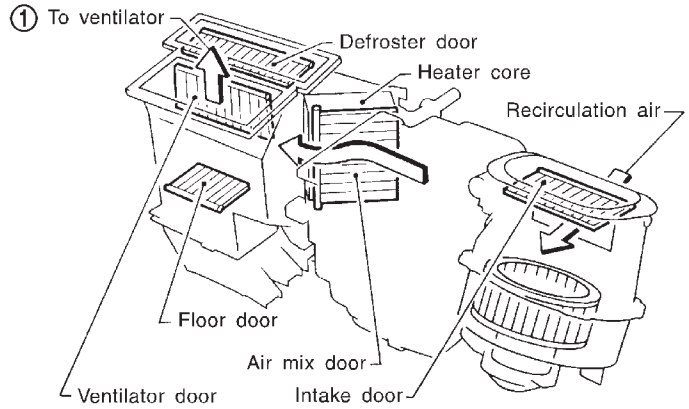
- **When the compressor is removed, store it in the same position as it is when mounted on the car. Failure to do so will cause lubricant to enter the low pressure chamber.**
- **When connecting tubes, always use a torque wrench and a back-up wrench.**
- **After disconnecting tubes, immediately plug all openings to prevent entry of dirt and moisture.**
- **When installing an air conditioner in the vehicle, connect the pipes as the final stage of the operation. Do not remove the seal caps of pipes and other components until just before required for connection.**
- **Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.**
- **Thoroughly remove moisture from the refrigeration system before charging the refrigerant.**
- **Always replace used O-rings.**
- **When connecting tube, apply lubricant to circle of the O-rings shown in illustration. Be careful not to apply lubricant to threaded portion.**
  Lubricant name: Nissan A/C System Oil Type S
  Part number: KLH00-PAGS0
- **O-ring must be closely attached to dented portion of tube.**
- **When replacing the O-ring, be careful not to damage O-ring and tube.**
- **Connect tube until you hear it click, then tighten the nut or bolt by hand until snug. Make sure that the O-ring is installed to tube correctly.**
- **After connecting line, conduct leak test and make sure that there is no leakage from connections. When the gas leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.**

Discharge Air Flow

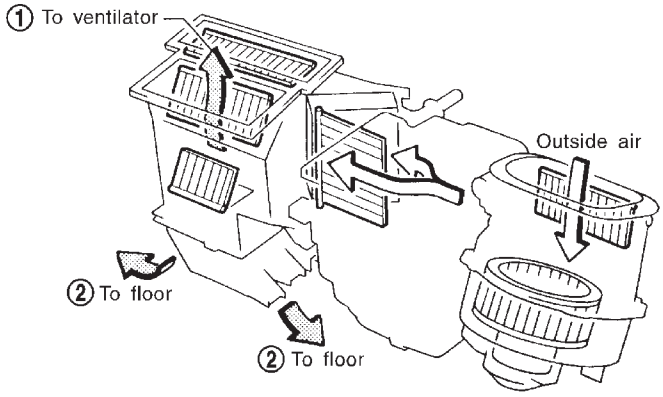
NAHA0171



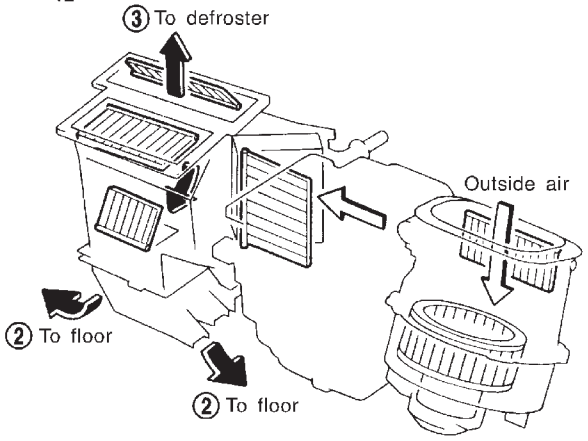
Ventilation
(A/C switch "ON")



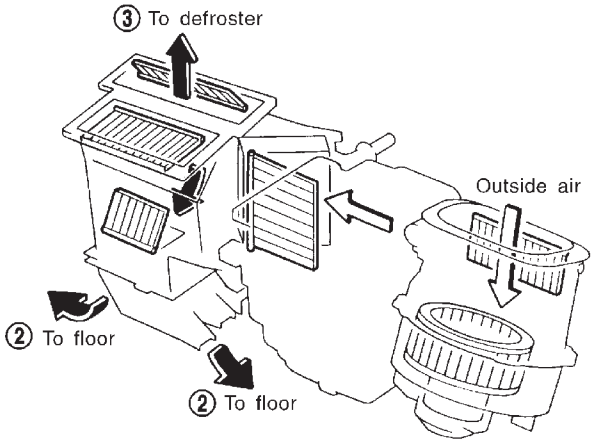
Bi-level
(A/C switch "OFF")



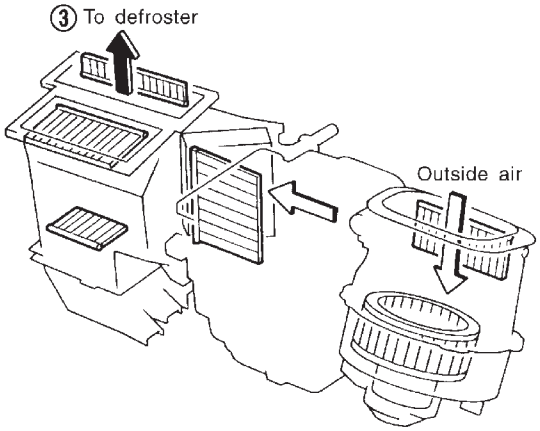
Floor



Floor and defroster



Defroster



: Air passed through heater core

: Mixed air (+)

: Air not passed through heater core

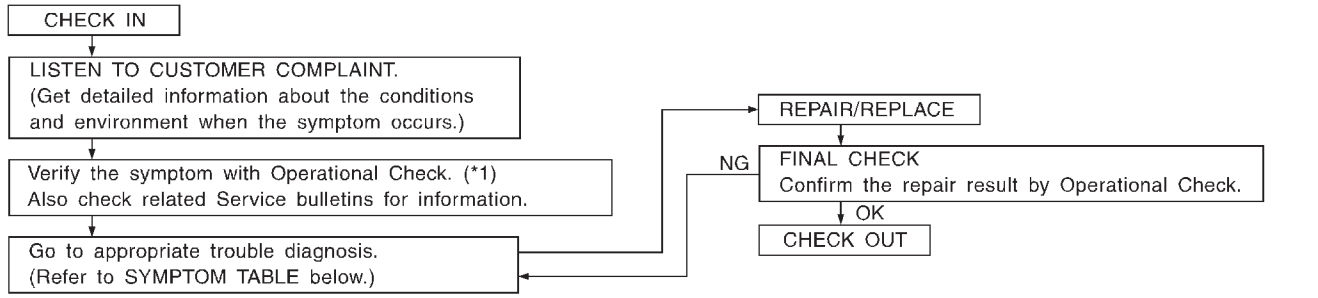
RHA043G

How to Perform Trouble Diagnoses for Quick and Accurate Repair

=NAHA0177

WORK FLOW

NAHA0177S01



SHA900E

*1: Operational Check (HA-49)

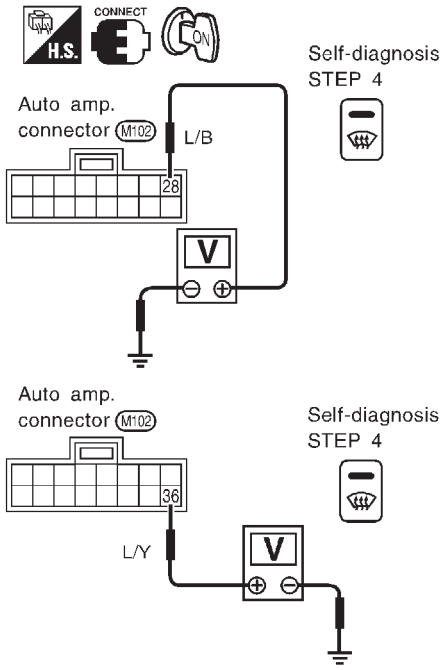
SYMPTOM TABLE

NAHA0177S02

Symptom	Reference Page	
• A/C system does not come on.	• Go to Trouble Diagnosis Procedure for A/C system.	HA-52
• Air outlet does not change. • Mode door motor does not operate normally.	• Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	HA-54
• Discharge air temperature does not change. • Air mix door motor does not operate normally.	• Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LAN)	HA-60
• Intake door does not change. • Intake door motor does not operate normally.	• Go to Trouble Diagnosis Procedure for Intake Door Motor.	HA-64
• Blower motor operation is malfunctioning. • Blower motor operation is malfunctioning under out of starting fan speed control.	• Go to Trouble Diagnosis Procedure for Blower Motor.	HA-71
• Magnet clutch does not engage.	• Go to Trouble Diagnosis Procedure for Magnet Clutch.	HA-79
• Insufficient cooling.	• Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HA-85
• Insufficient heating.	• Go to Trouble Diagnosis Procedure for Insufficient Heating.	HA-93
• Noise.	• Go to Trouble Diagnosis Procedure for Noise.	HA-94
• Self-diagnosis can not be performed.	• Go to Trouble Diagnosis Procedure for Self-diagnosis.	HA-95
• Memory function does not operate.	• Go to Trouble Diagnosis Procedure for Memory Function.	HA-96
• ECON mode does not operate.	• Go to Trouble Diagnosis Procedure for ECON (ECONOMY) — mode.	HA-97

4	CHECK FOR AUTO AMP. OUTPUT

Set up Self-diagnosis STEP 4.
Measure voltage across auto amp. harness terminals and body ground.



RHA506G

Code No.	Terminals No. (+)	Terminals No. (–)	Condition	Voltage V
41 42	28	Body ground	REC	12
	36			0
44 45 46	28		FRE	0
	36			12

0V: Approx. 0V
12V: Approx. 12V

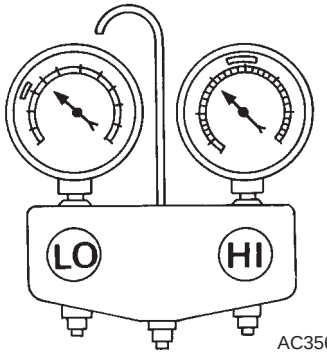
MTBL0078

OK or NG

OK	▶	Replace intake door motor.
NG	▶	Replace auto amp.

High-pressure Side is Too Low and Low-pressure Side is Too High.

NAHA0208S03

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
High-pressure side is too low and low-pressure side is too high. C  AC356A	High and low-pressure sides become equal soon after compressor operation stops.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings	Replace compressor.
	No temperature difference between high and low-pressure sides	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.

HFC-134a (R-134a) Service Procedure

NAHA0228

SETTING OF SERVICE TOOLS AND EQUIPMENT

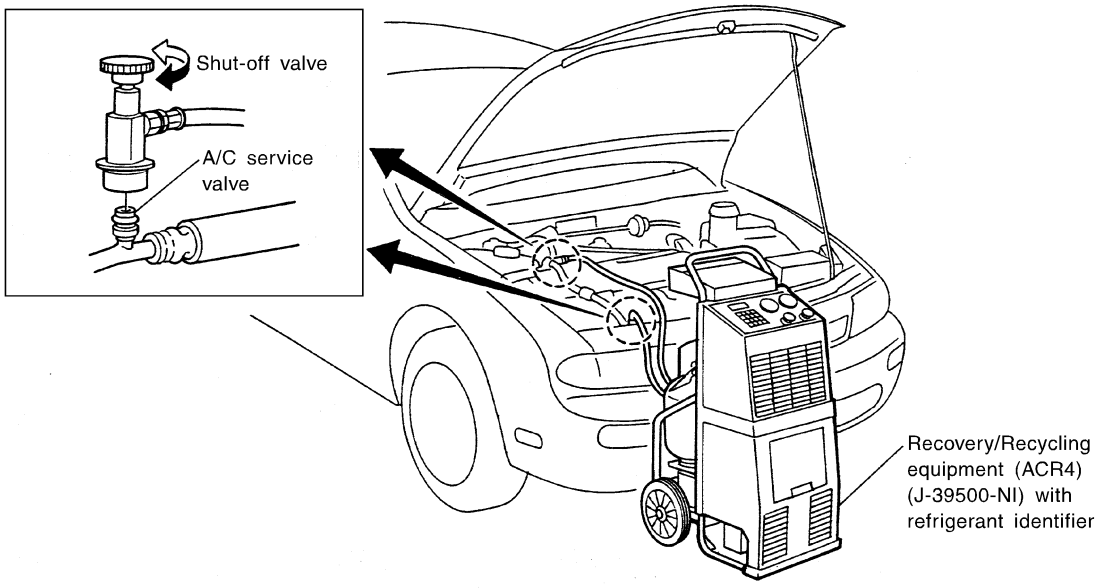
NAHA0228S01

Discharging Refrigerant

NAHA0228S0101

WARNING:

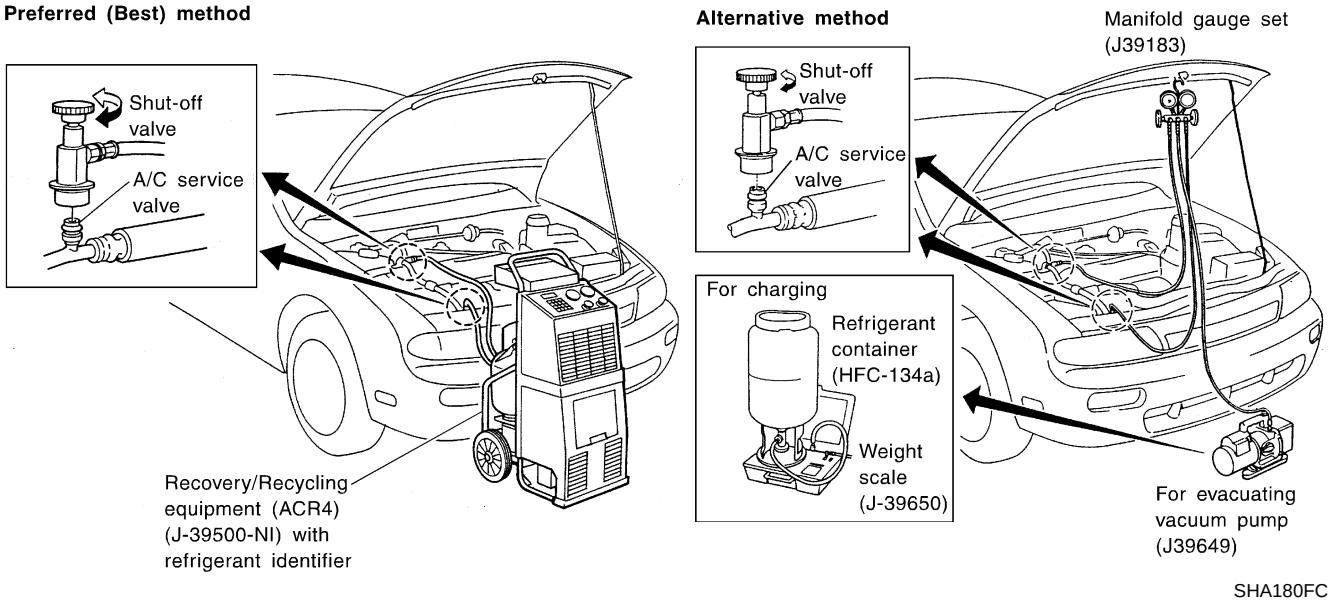
Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) from A/C system using certified service equipment meeting requirements of SAE J2210 (R-134a recycling equipment) or J2209 (R-134a recovery equipment). If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.



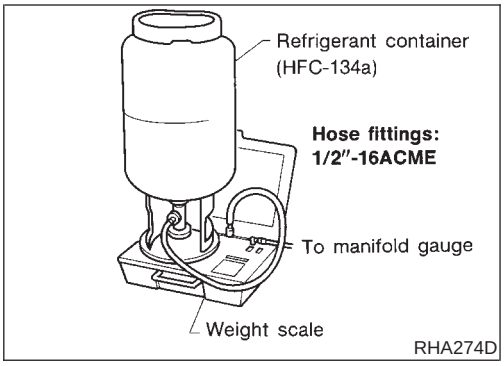
SHA179FC

Evacuating System and Charging Refrigerant

NAHA0228S0102



SHA180FC



REFRIGERANT WEIGHT SCALE

NAHA0065S07

Verify that no refrigerant other than HFC-134a (R-134a) and specified lubricants have been used with the scale. If the scale controls refrigerant flow electronically, the hose fitting must be 1/2″-16 ACME.

CALIBRATING ACR4 WEIGHT SCALE

NAHA0065S09

Calibrate the scale every three months.
To calibrate the weight scale on the ACR4 (J-39500-NI):

1. Press **Shift/Reset** and **Enter** at the same time.
2. Press **8787**. "**A1**" will be displayed.
3. Remove all weight from the scale.
4. Press **0**, then press **Enter**. "**0.00**" will be displayed and change to "**A2**".
5. Place a known weight (dumbbell or similar weight), between 4.5 and 8.6 kg (10 and 19 lb) on the center of the weight scale.
6. Enter the known weight using four digits. (Example 10 lb = 10.00, 10.5 lb = 10.50)
7. Press **Enter** — the display returns to the vacuum mode.
8. Press **Shift/Reset** and **Enter** at the same time.
9. Press **6** — the known weight on the scale is displayed.
10. Remove the known weight from the scale. "**0.00**" will be displayed.
11. Press **Shift/Reset** to return the ACR4 to the program mode.

CHARGING CYLINDER

NAHA0065S08

Using a charging cylinder is not recommended. Refrigerant may be vented into air from cylinder's top valve when filling the cylinder with refrigerant. Also, the accuracy of the cylinder is generally less than that of an electronic scale or of quality recycle/recharge equipment.

Wiring Diagrams and Trouble Diagnoses

NAHA0066

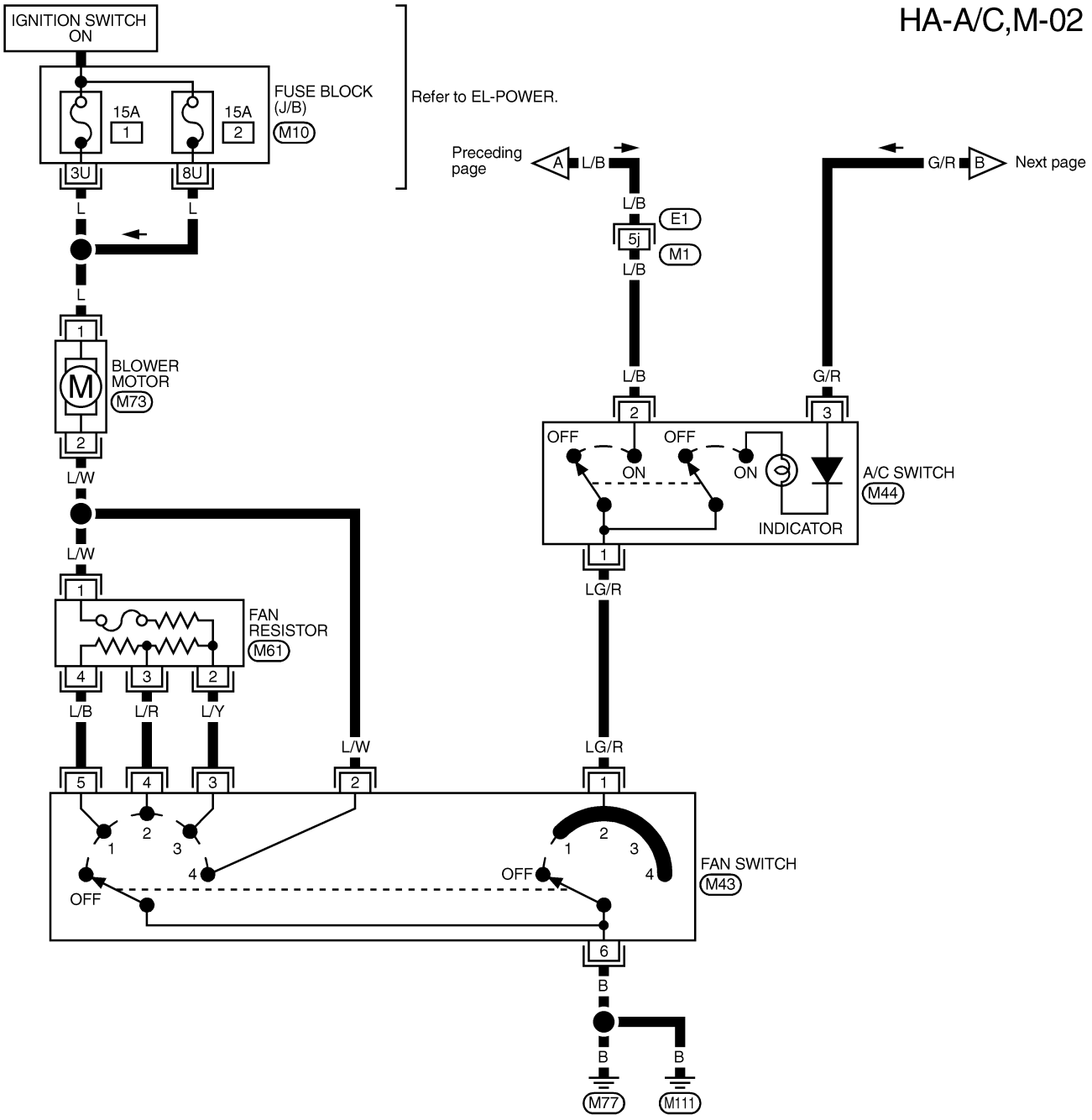
When you read wiring diagrams, refer to the following:

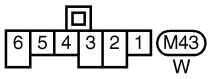
- GI-11, "HOW TO READ WIRING DIAGRAMS"
- EL-10, "Wiring Diagram — POWER —"

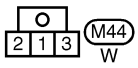
When you perform trouble diagnoses, refer to the following:

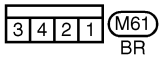
- GI-33, "HOW TO FOLLOW TROUBLE DIAGNOSES"
- GI-23, "HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT"

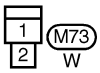
HA-A/C,M-02





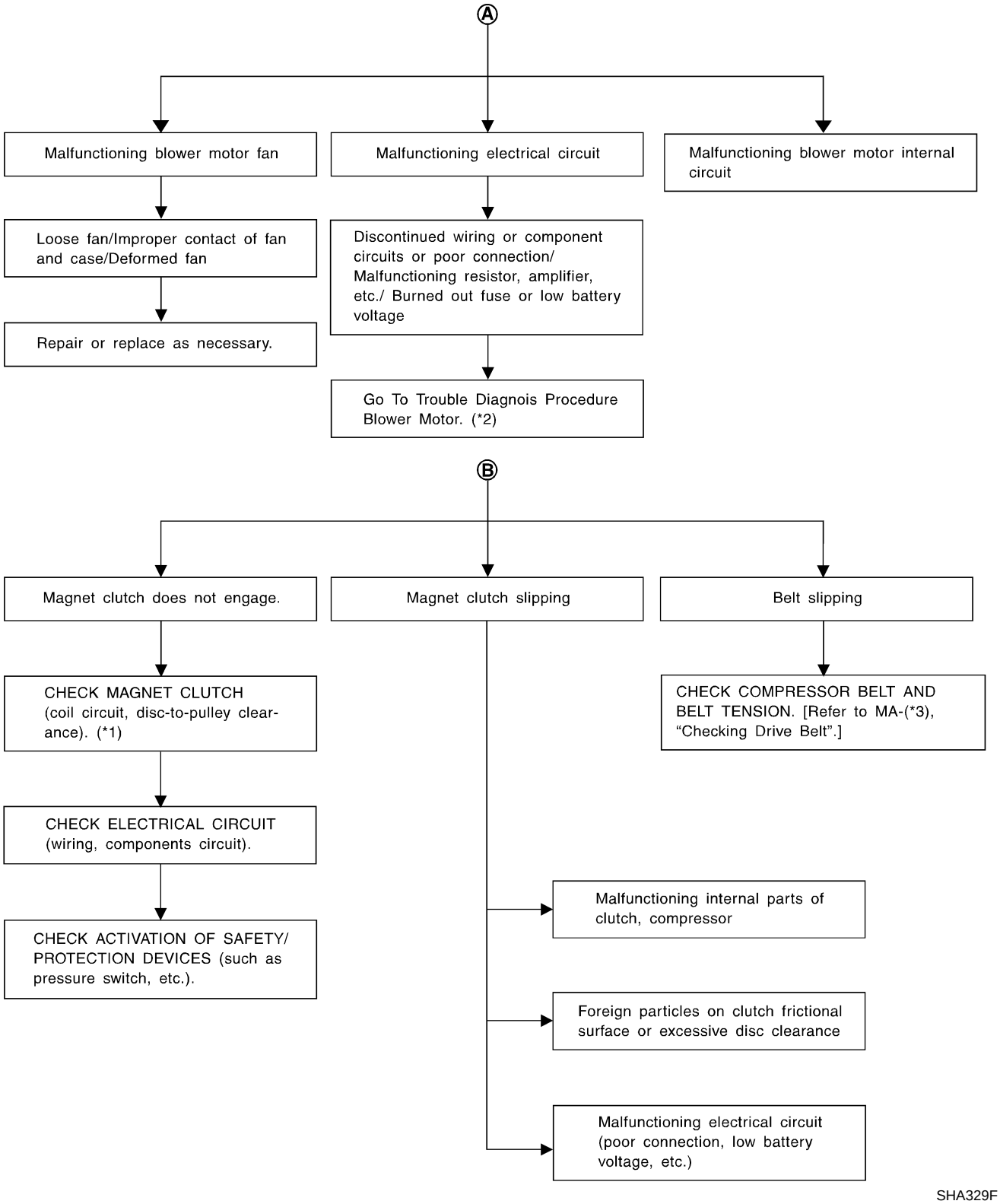






Refer to last page (Foldout page).
M1 , E1
M10

MHA889A



SHA329F

*1: HA-199 *2: HA-165 *3: MA-15

4	CHECK ANY PART	
Is there any part to be replaced? (Evaporator, condenser, liquid tank or in case there is evidence of a large amount of lubricant leakage.)		
	Yes or No	
Yes	▶	GO TO HA-195.
No	▶	Carry out the A/C performance test.

Lubricant Adjusting Procedure for Components Replacement Except Compressor

NAHA0095S0201

After replacing any of the following major components, add the correct amount of lubricant to the system.

Amount of lubricant to be added

Part replaced	Lubricant to be added to system	Remarks
	Amount of lubricant mℓ (US fl oz, Imp fl oz)	
Evaporator	75 (2.5, 2.6)	—
Condenser	75 (2.5, 2.6)	—
Liquid tank	5 (0.2, 0.2)	Add if compressor is not replaced. *1
In case of refrigerant leak	30 (1.0, 1.1)	Large leak
	—	Small leak *2

*1: If compressor is replaced, addition of lubricant is included in the table.
*2: If refrigerant leak is small, no addition of lubricant is needed.

Lubricant Adjustment Procedure for Compressor Replacement

NAHA0095S0202

1. Before connecting ACR4 to vehicle, check ACR4 gauges. No refrigerant pressure should be displayed. If OK, recover refrigerant from equipment lines.
2. Confirm refrigerant purity in supply tank using ACR4 and refrigerant identifier. If NG, refer to "CONTAMINATED REFRIGERANT", HA-126.
3. Connect ACR4 to vehicle. Confirm refrigerant purity in vehicle A/C system using ACR4 and refrigerant identifier. If NG, refer to "CONTAMINATED REFRIGERANT", HA-126.
4. Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure lubricant discharged into the recovery/recycling equipment.
5. Remove the drain plug of the "old" (removed) compressor. Drain the lubricant into a graduated container and record the amount of drained lubricant.
6. Remove the drain plug and drain the lubricant from the "new" compressor into a separate, clean container.
7. Measure an amount of new lubricant installed equal to amount drained from "old" compressor. Add this lubricant to "new" compressor through the suction port opening.
8. Measure an amount of new lubricant equal to the amount recovered during discharging. Add this lubricant to "new" compressor through the suction port opening.
9. Torque the drain plug.

   V-6 compressor:

   18 - 19 N·m (1.8 - 1.9 kg-m, 13 - 14 ft-lb)

NOTES

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

NAMA0001

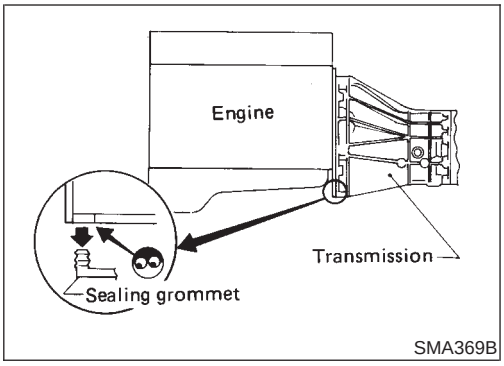
The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER” used along with a seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. The SRS system composition which is available to NISSAN MODEL R50 is as follows:

- For a frontal collision
  The Supplemental Restraint System consists of driver air bag module (located in the center of the steering wheel), front passenger air bag module (located on the instrument panel on passenger side), seat belt pre-tensioners, a diagnosis sensor unit, warning lamp, wiring harness and spiral cable.
- For a side collision
  The Supplemental Restraint System consists of side air bag module (located in the outer side of front seat), satellite sensor, diagnosis sensor unit (one of components of air bags for a frontal collision), wiring harness, warning lamp (one of components of air bags for a frontal collision).

Information necessary to service the system safely is included in the **RS section** of this Service Manual.

WARNING:

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

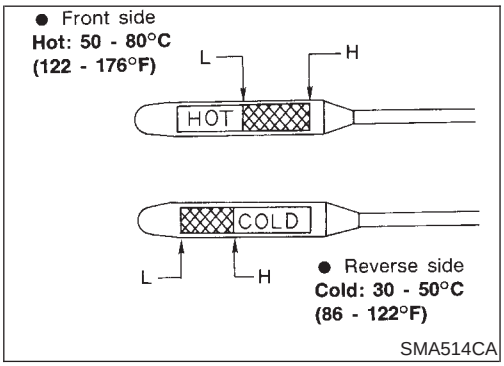


SMA369B

Checking Water Entry — For 4WD models with M/T

NAMA0023

Check water entry in the clutch housing by removing the sealing grommet, whenever driving in deep water or mud.



SMA514CA

Checking A/T Fluid

NAMA0024

1. Warm up engine.
2. Check for fluid leakage.
3. Before driving, fluid level can be checked at fluid temperatures of 30 to 50°C (86 to 122°F) using “COLD” range on dipstick.

a. Park vehicle on level surface and set parking brake.
b. Start engine and move selector lever through each gear position. Leave selector lever in “P” position.
c. Check fluid level with engine idling.
d. Remove dipstick and note reading. If level is at low side of either range, and fluid to the charging pipe.
e. Re-insert dipstick into charging pipe as far as it will go.
f. Remove dipstick and note reading. If reading is at low side of range, add fluid to the charging pipe.

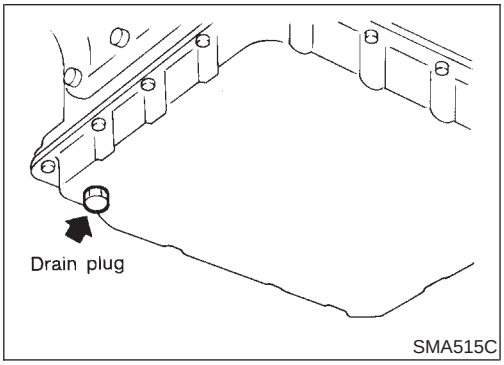
Do not overfill.

4. Drive vehicle for approximately 5 minutes in urban areas.
5. Re-check fluid level at fluid temperatures of 50 to 80°C (122 to 176°F) using “HOT” range on dipstick.


Check fluid for contamination.
SMA853B

6. Check fluid condition.

- If fluid is very dark or smells burned, refer to AT section for checking operation of A/T. Flush cooling system after repair of A/T.
- If A/T fluid contains frictional material (clutches, bands, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of A/T. Refer to LC-12, “Radiator”.



SMA515C

Changing A/T Fluid

NAMA0025

1. Warm up A/T fluid.
2. Stop engine.
3. Drain A/T fluid from drain plug and refill with new A/T fluid. Always refill same volume with drained fluid.

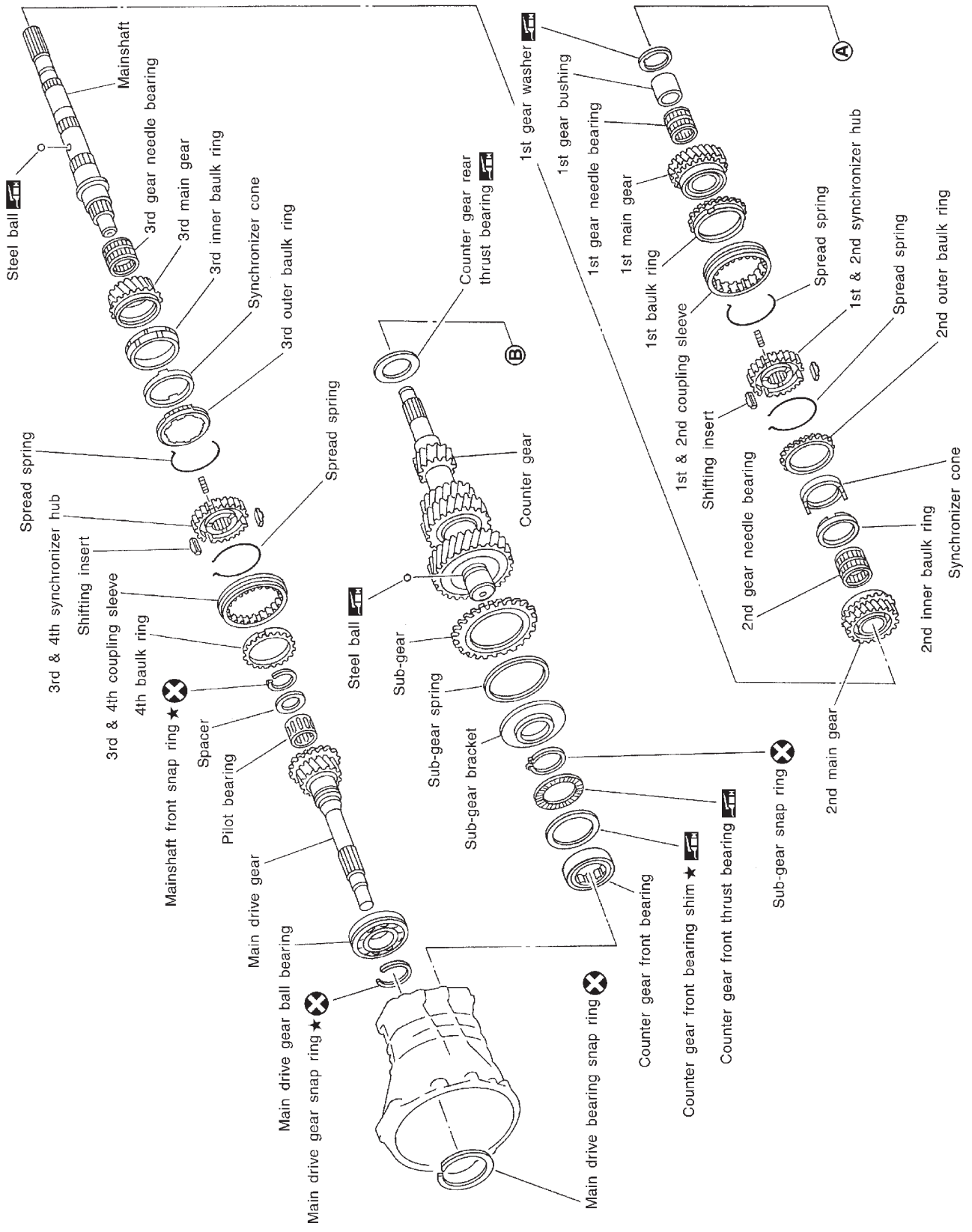
Fluid grade:

Nissan Matic “D” (Continental U.S. and Alaska) or Canada Nissan Automatic Transmission Fluid. Refer to “RECOMMENDED FLUIDS AND LUBRICANTS”, MA-13.

Fluid capacity (With torque converter):

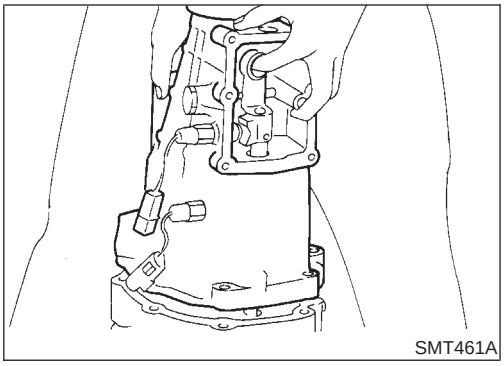
Gear Components

NAMT0007S02

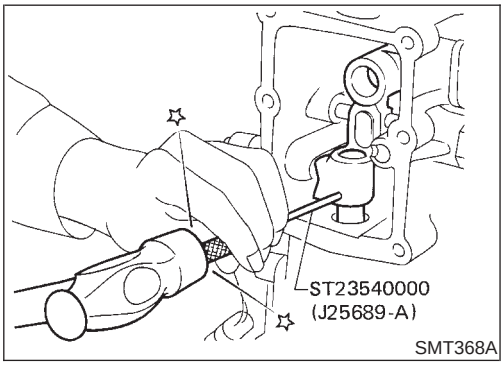


SEC. 322

SMT638D

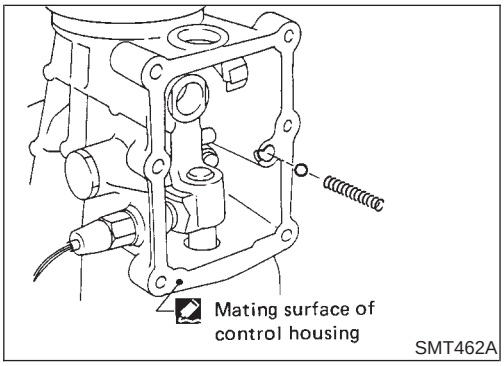

SMT461A

10. Install rear extension (or OD gear case) together with striking arm.



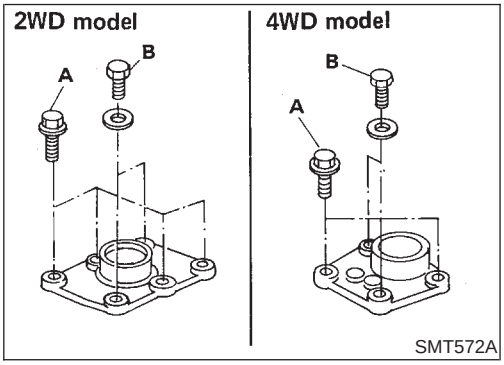
SMT368A

11. Install retaining pin into striking arm.



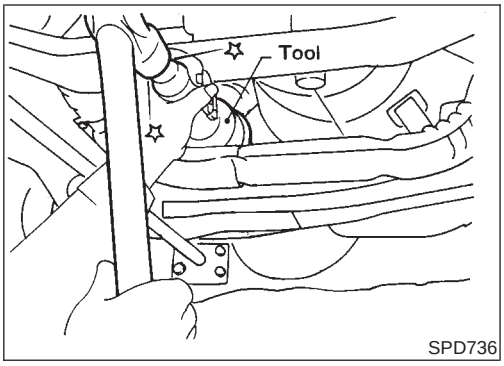
SMT462A

12. Install return spring and check ball and then install control housing.
- **Apply sealant to mating surface of rear extension (or OD gear case).**
  Refer to Case Components, MT-12.



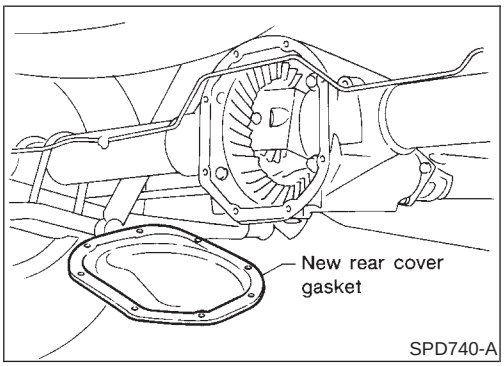
SMT572A

13. Tighten control housing bolts.
    Bolt head size:
    A bolts 12 mm (0.47 in)
    B bolts 13 mm (0.51 in)



5. Apply multi-purpose grease to cavity at sealing lips of oil seal. Press front oil seal into carrier.
6. Install companion flange and drive pinion nut.
7. Install propeller shaft.

Tool number:
KV38100500 (J25273)



REAR COVER GASKET REPLACEMENT

NAPD0015

1. Drain gear oil.
2. Remove rear cover and rear cover gasket.
3. Install new rear cover gasket and rear cover.
4. Fill final drive with recommended gear oil.

Service Data and Specifications (SDS) (Cont'd)

Side Bearing Adjustment

NAPD0022S04

Differential carrier assembly turning resistance N (kg, lb)		34.3 - 39.2 (3.5 - 4.0, 7.7 - 8.8)
	Thickness mm (in)	Part number*
Available side bearing adjusting washers	2.00 (0.0787)	38453-N3100
	2.05 (0.0807)	38453-N3101
	2.10 (0.0827)	38453-N3102
	2.15 (0.0846)	38453-N3103
	2.20 (0.0866)	38453-N3104
	2.25 (0.0886)	38453-N3105
	2.30 (0.0906)	38453-N3106
	2.35 (0.0925)	38453-N3107
	2.40 (0.0945)	38453-N3108
	2.45 (0.0965)	38453-N3109
	2.50 (0.0984)	38453-N3110
	2.55 (0.1004)	38453-N3111
	2.60 (0.1024)	38453-N3112

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

Total Preload Adjustment

NAPD0022S05

Total preload N·m (kg-cm, in-lb)	1.4 - 1.7 (14 - 17, 12 - 15)
Ring gear backlash mm (in)	0.10 - 0.15 (0.0039 - 0.0059)

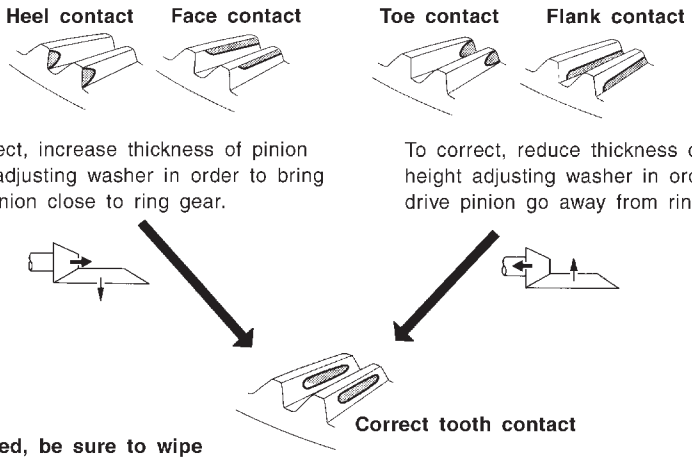
Drive Pinion Height Adjustment

NAPD0022S06

	Thickness mm (in)	Part number*
Available pinion height adjusting washers	3.09 (0.1217)	38154-P6017
	3.12 (0.1228)	38154-P6018
	3.15 (0.1240)	38154-P6019
	3.18 (0.1252)	38154-P6020
	3.21 (0.1264)	38154-P6021
	3.24 (0.1276)	38154-P6022
	3.27 (0.1287)	38154-P6023
	3.30 (0.1299)	38154-P6024
	3.33 (0.1311)	38154-P6025
	3.36 (0.1323)	38154-P6026
	3.39 (0.1335)	38154-P6027
	3.42 (0.1346)	38154-P6028
	3.45 (0.1358)	38154-P6029
	3.48 (0.1370)	38154-P6030
	3.51 (0.1382)	38154-P6031
	3.54 (0.1394)	38154-P6032
	3.57 (0.1406)	38154-P6033
	3.60 (0.1417)	38154-P6034
	3.63 (0.1429)	38154-P6035
	3.66 (0.1441)	38154-P6036

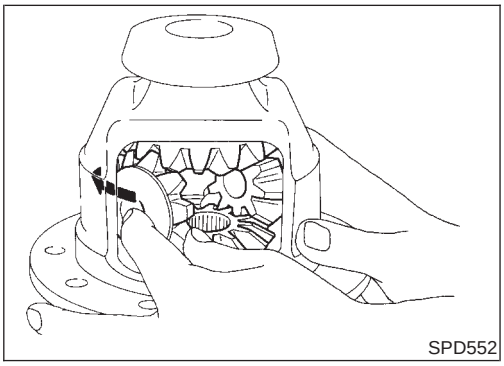
*: Always check with the Parts Department for the latest parts information.

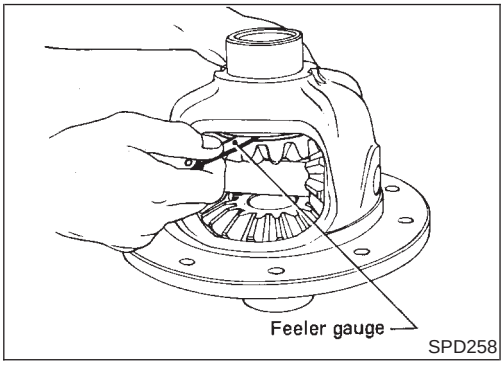
Usually the pattern will be correct if shims are correctly calculated and the backlash is correct. However, in rare cases, trial and error processes may be employed to obtain a correct pattern. The tooth pattern is the best indication of how well a differential has been set up.



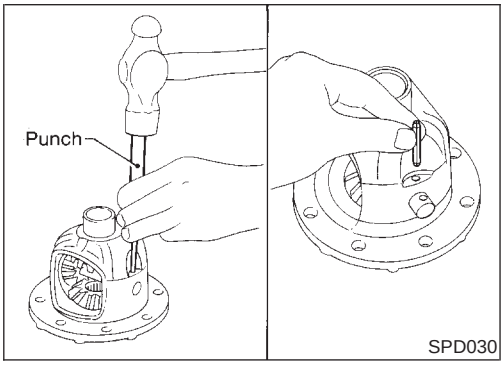
When adjustment is completed, be sure to wipe off completely the ferric oxide and oil or their equivalent.

SPD007-B


SPD552



SPD258



SPD030

Assembly

NAPD0041

DIFFERENTIAL CASE

NAPD0041S01

1. Install side gears, pinion mate gears and thrust washers into differential case.
2. Fit pinion mate shaft to differential case so that it meets lock pin holes.
3. Adjust backlash between side gear and pinion mate gear by selecting side gear thrust washer.
   Refer to SDS, PD-64.

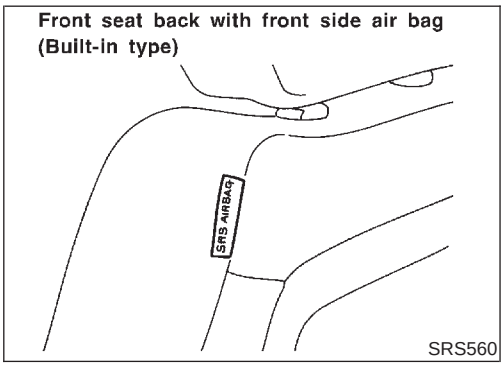
   Backlash between side gear and pinion mate gear (Clearance between side gear thrust washer and differential case):

   0.10 - 0.20 mm (0.0039 - 0.0079 in)

4. Install pinion mate shaft lock pin with a punch.

Make sure lock pin is flush with case.

load limiter permits the specified extension of the seat belt by the twisting of the ELR shaft, and a relaxation of the chest-area seat belt web tension while maintaining force.



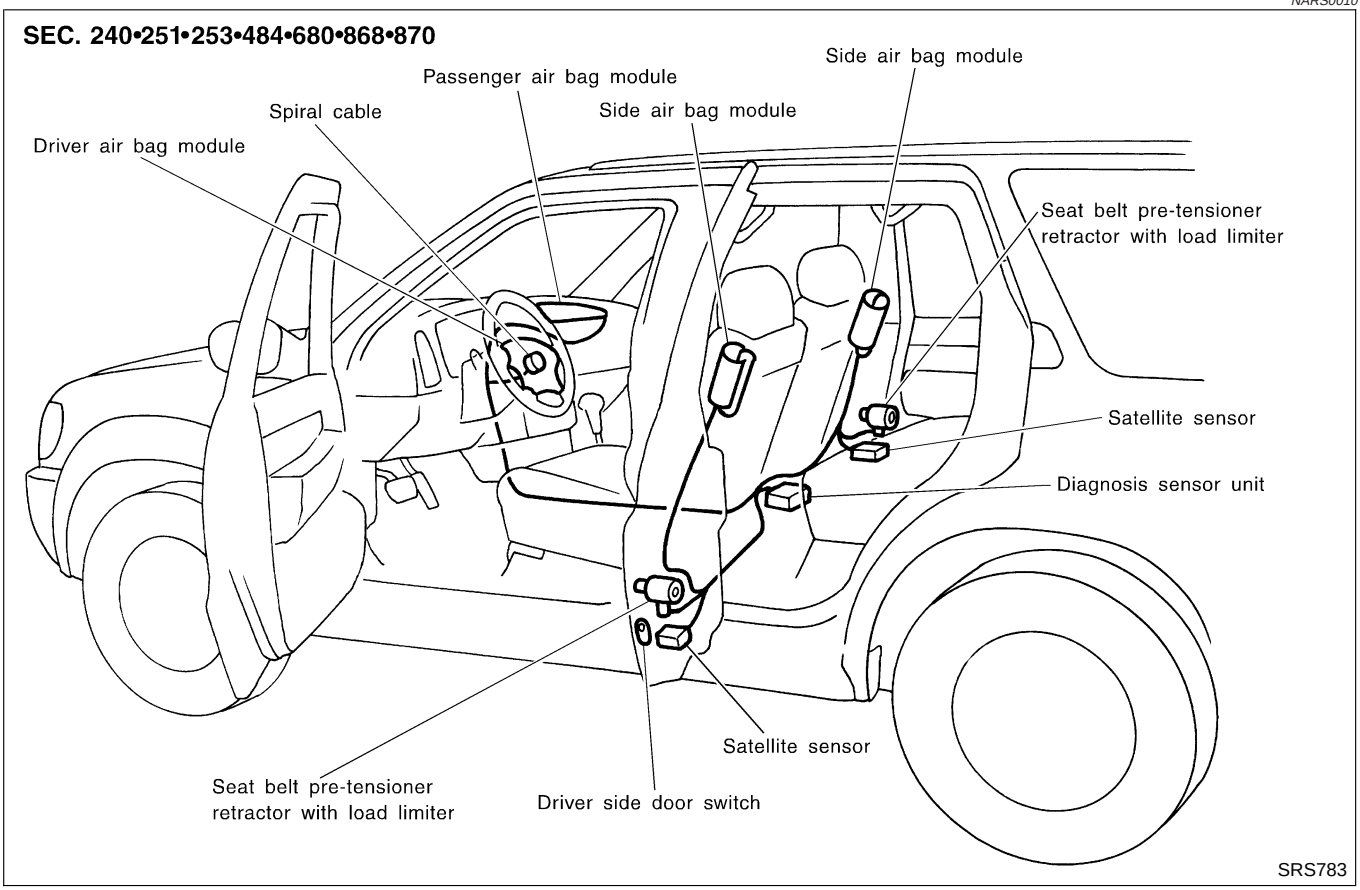
Built-in Type Side Air Bag

NARS0033

Front side air bag is built-in type.
The front seat backs with built-in type side air bag have the labels shown in figures at left.

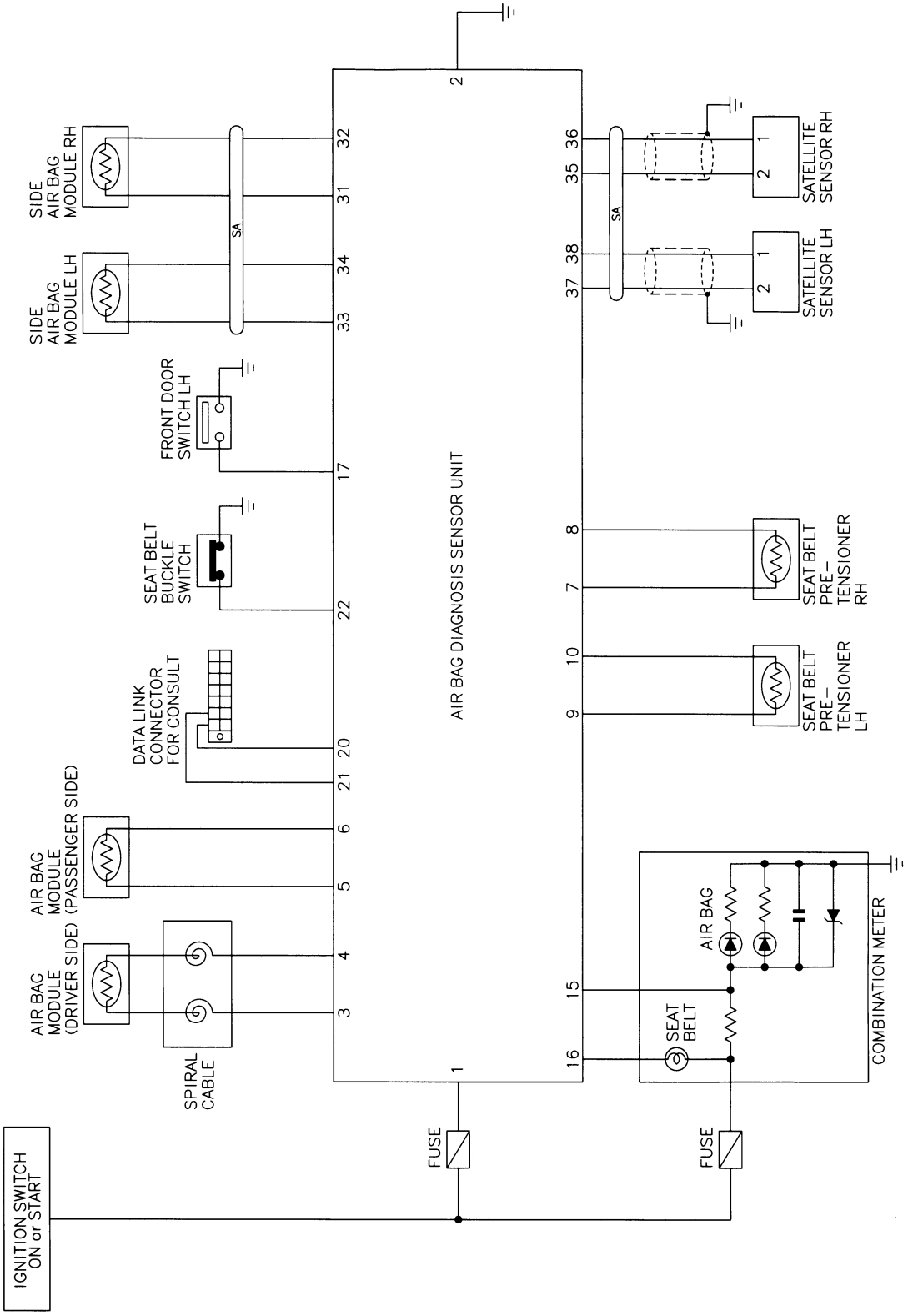
SRS Component Parts Location

NARS0010

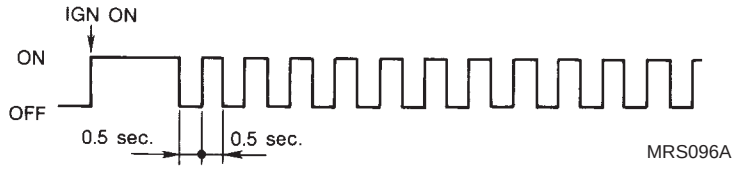
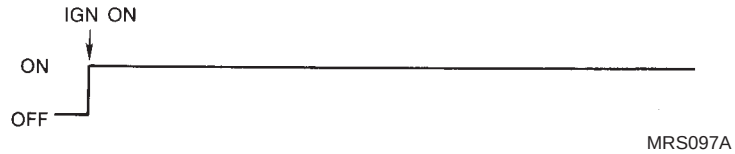


Schematic

NARS0020



MRS286A

"AIR BAG" warning lamp operation — User mode —	SRS condition	Reference item
 MRS096A	The system is malfunctioning and needs to be repaired as indicated.	Go to DIAGNOSTIC PROCEDURE 6 (RS-51).
 MRS097A	Air bag is deployed.	Go to COLLISION DIAGNOSIS (RS-64).
	Air bag fuse, diagnosis sensor unit or harness is malfunctioning and needs to be repaired.	Go to DIAGNOSTIC PROCEDURE 9 (RS-57).
 MRS098A	One of the following has occurred and needs to be repaired. ● Meter fuse is blown. ● "AIR BAG" warning lamp circuit has open or short. ● Diagnosis sensor unit is malfunctioning.	Go to DIAGNOSTIC PROCEDURE 10 (RS-59).

DIAGNOSTIC PROCEDURE 8 (CONTINUED FROM DIAGNOSTIC PROCEDURE 6)

NARS0024S03

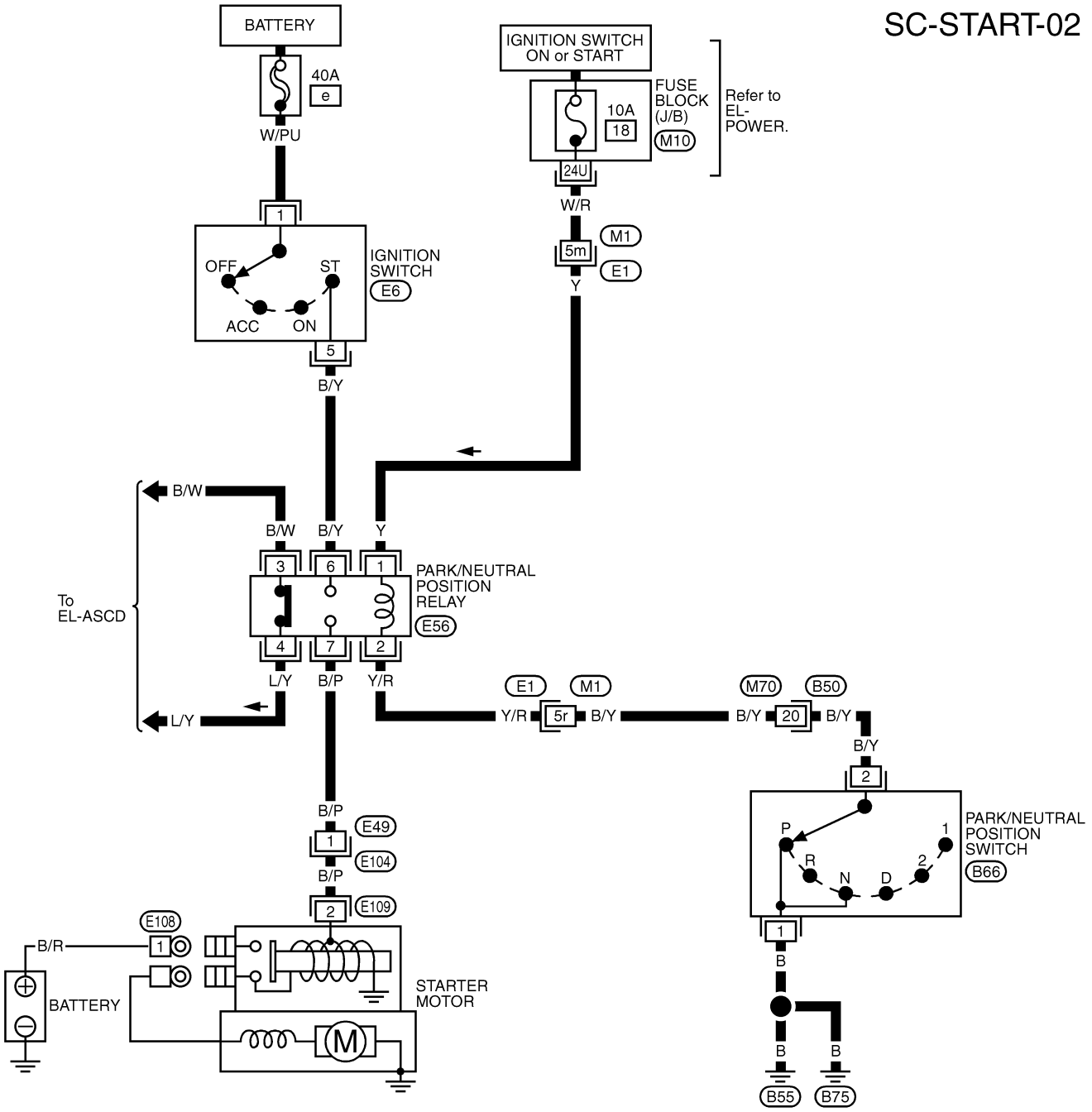
Inspecting SRS malfunctioning record

1	CONSIDER POSSIBILITY OF NOT ERASING SELF-DIAGNOSTIC RESULT AFTER REPAIRING	
Is it the first time for maintenance of SRS? **Yes or No**		
Yes	▶	Go to DIAGNOSTIC PROCEDURE 5 (RS-46). (Further inspection cannot be performed without CONSULT.)
No	▶	Diagnosis results (previously stored in the memory) might not be erased after repair. Go to DIAGNOSTIC PROCEDURE 7, step 5 (RS-54).

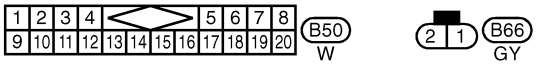
Wiring Diagram — START —/With A/T

NASC0017

SC-START-02





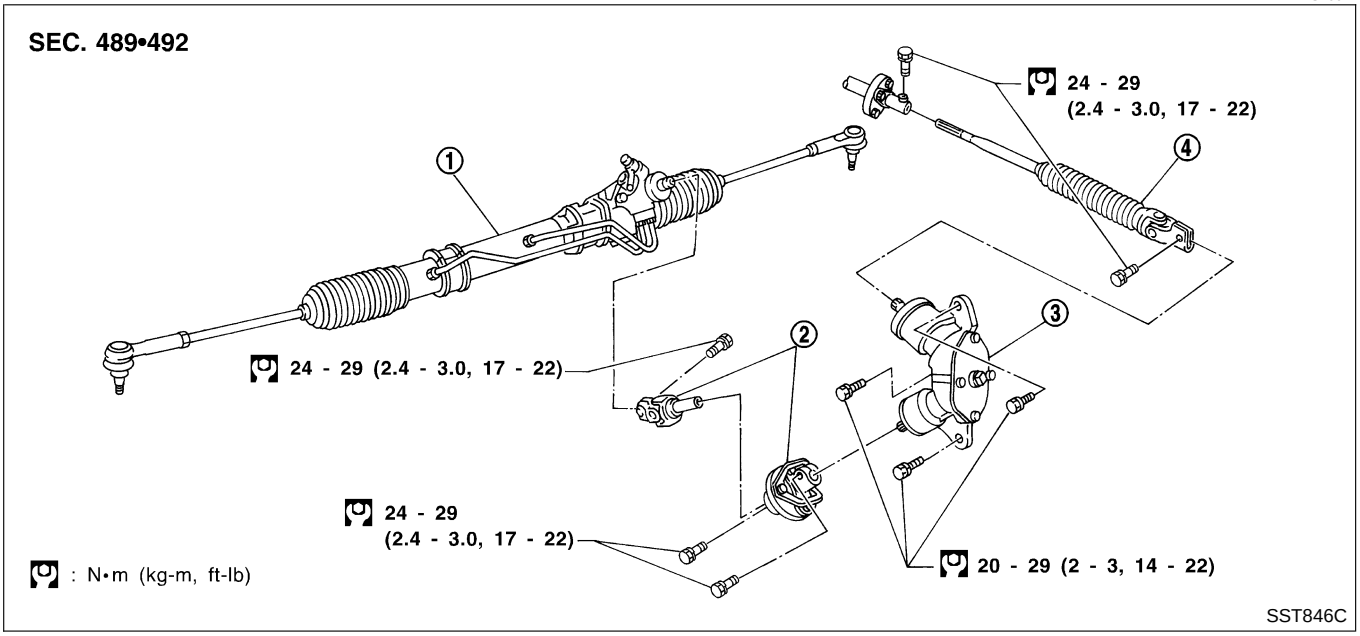


Refer to last page (Foldout page).
M1 , E1
M10

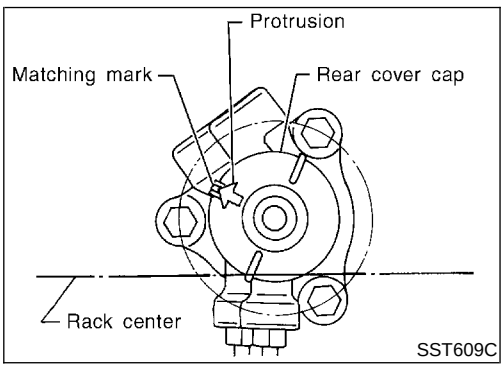
MEL198M

Removal

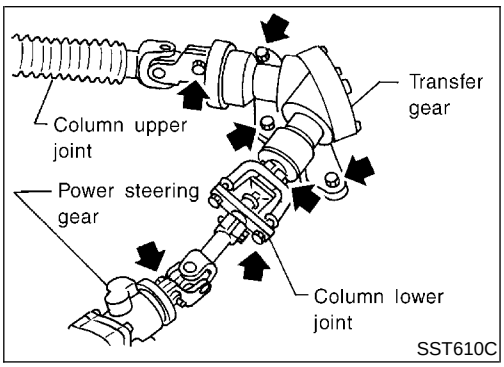
NAST0021



1. Power steering gear assembly
2. Steering column lower joint
3. Transfer gear assembly
4. Steering column upper joint



1. Set wheels in the straight-ahead position.
2. Straight-forward position is indicated by a protrusion on the power steering gear rear cover cap and matching mark on the rear housing.



3. Remove steering column upper and lower joint from transfer gear.
4. Remove transfer gear assembly.

Noise, Vibration and Harshness (NVH) Troubleshooting

=NASU0035

NVH TROUBLESHOOTING CHART

NASU0035S01

Use the chart below to help you find the cause of the symptom. If necessary, repair or replace these parts.

		Reference page	SU-4, 18	SU-9, 21	—	—	—	SU-9, 21	SU-7	SU-12, 23	SU-7	—	—	—	—	—	PD-4	PD-4	AX-3	AX-3	Refer to SUSPENSION in this chart.	Refer to TIRES in this chart.	Refer to ROAD WHEEL in this chart.	BR-6	ST-5
		Possible Cause and SUSPECTED PARTS	Improper installation, looseness	Shock absorber deformation, damage or deflection	Bushing or mounting deterioration	Parts interference	Spring fatigue	Suspension looseness	Incorrect wheel alignment	Stabilizer bar fatigue	Out-of-round	Imbalance	Incorrect air pressure	Uneven tire wear	Deformation or damage	Non-uniformity	Incorrect tire size	PROPELLER SHAFT	DIFFERENTIAL	DRIVE SHAFT	AXLE	SUSPENSION	TIRES	ROAD WHEEL	BRAKES	STEERING
Symptom	SUSPENSION	Noise	×	×	×	×	×	×										×	×	×	×		×	×	×	×
		Shake	×	×	×	×		×										×		×	×		×	×	×	×
		Vibration	×	×	×	×	×											×		×	×		×			×
		Shimmy	×	×	×	×			×												×		×	×	×	×
		Judder	×	×	×																×		×	×	×	×
		Poor quality ride or handling	×	×	×	×	×		×	×											×		×	×		
	TIRES	Noise	×								×	×	×	×	×	×		×	×	×	×	×		×	×	×
		Shake	×								×	×	×	×	×		×	×		×	×	×		×	×	×
		Vibration											×				×	×		×	×	×				×
		Shimmy	×								×	×	×	×	×	×	×				×	×		×	×	×
		Judder	×								×	×	×	×	×		×				×	×		×	×	×
		Poor quality ride or handling	×								×	×	×	×	×		×				×	×		×		
	ROAD WHEEL	Noise	×								×	×			×			×	×	×	×	×	×		×	×
		Shake	×								×	×			×			×		×	×	×	×		×	×
		Shimmy, Judder	×								×	×			×						×	×	×		×	×
		Poor quality ride or handling	×								×	×			×						×	×	×			

×: Applicable

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