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NISSAN MAXIMA

MODEL A33 SERIES

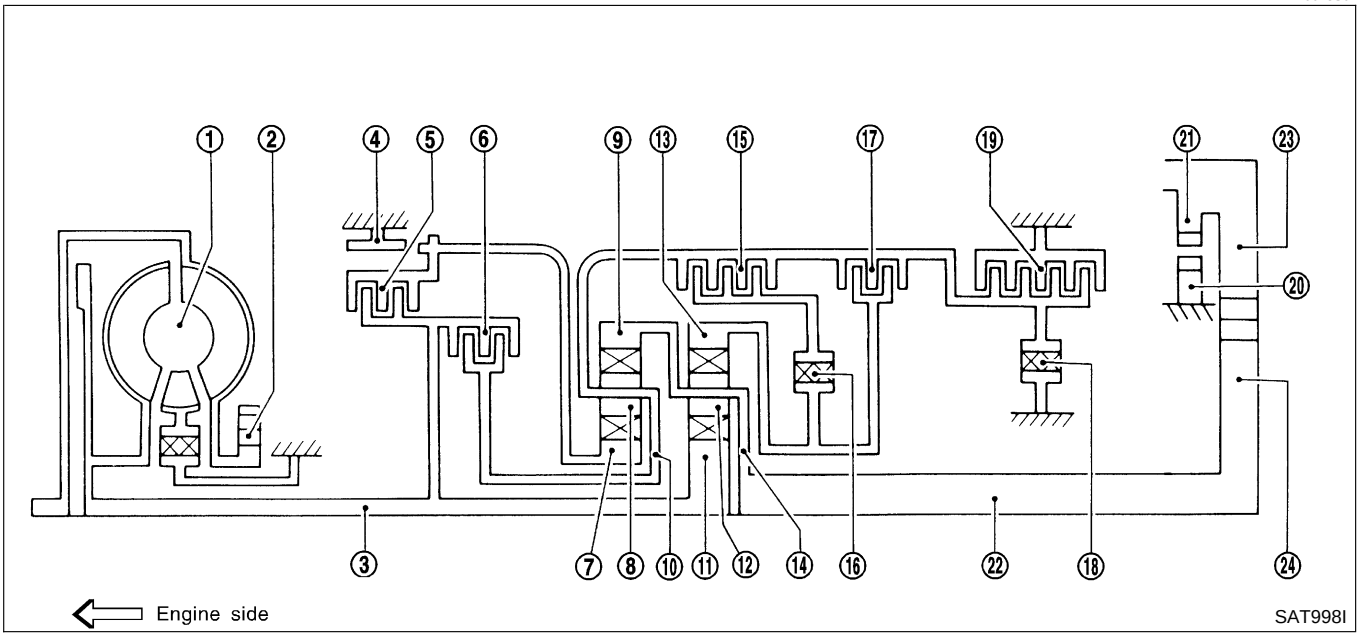
QUICK REFERENCE INDEX

Shift Mechanism

NFAT0013

CONSTRUCTION

NFAT0013S01

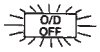


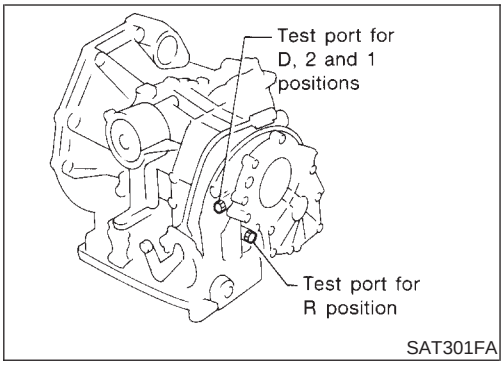
1. Torque converter
2. Oil pump
3. Input shaft
4. Brake band
5. Reverse clutch
6. High clutch
7. Front sun gear
8. Front pinion gear
9. Front internal gear
10. Front planetary carrier
11. Rear sun gear
12. Rear pinion gear
13. Rear internal gear
14. Rear planetary carrier
15. Forward clutch
16. Forward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

FUNCTION OF CLUTCH AND BRAKE

NFAT0013S02

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

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



SAT301FA

Line Pressure Test

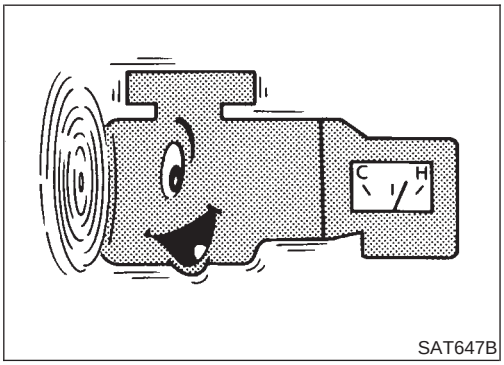
NFAT0028

LINE PRESSURE TEST PORTS

NFAT0028S01

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

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



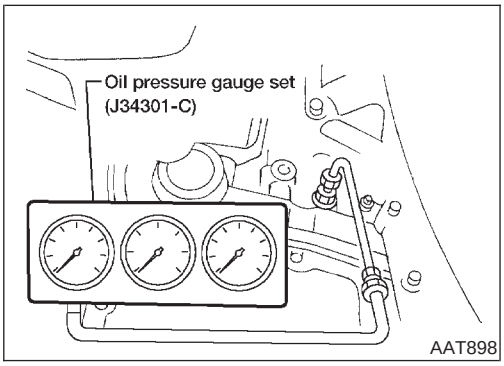
SAT647B

LINE PRESSURE TEST PROCEDURE

NFAT0028S02

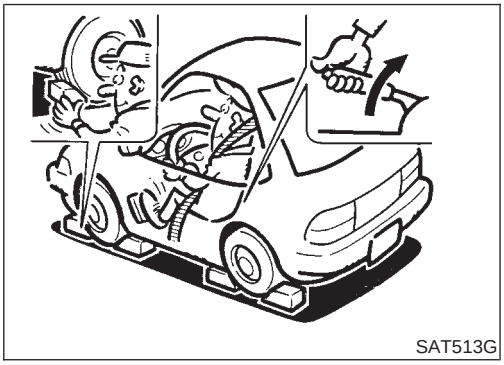
1. Check A/T fluid and engine oil levels. If necessary, add fluid and oil.
2. Drive vehicle for approx. 10 minutes or until fluid and oil reach operating temperature.

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

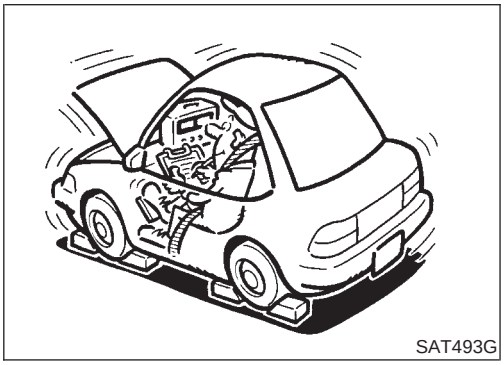


AAT898

3. Install pressure gauge to corresponding line pressure port.


SAT513G

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


SAT493G

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

  Line pressure: Refer to SDS, AT-382.

Symptom Chart (Cont'd)

Items	Symptom	Condition	Diagnostic Item	Reference Page
No Up Shift	Failure to change gear from D_3 to D_4.	ON vehicle	1. Park/neutral position (PNP) switch adjustment	AT-281
			2. Control cable adjustment	AT-282
			3. Shift solenoid valve A	AT-172
			4. Vehicle speed sensor·A/T (Revolution sensor) and vehicle speed sensor·MTR	AT-114, 203
			5. A/T fluid temperature sensor	AT-108
		OFF vehicle	6. Brake band	AT-351
	A/T does not shift to D_4 when driving with overdrive control switch ON.	ON vehicle	1. Throttle position sensor (Adjustment)	EC-55
			2. Park/neutral position (PNP) switch adjustment	AT-281
			3. Vehicle speed sensor·A/T (Revolution sensor) and vehicle speed sensor·MTR	AT-114, 203
			4. Shift solenoid valve A	AT-172
			5. Overrun clutch solenoid valve	AT-191
			6. Control valve assembly	AT-280
			7. A/T fluid temperature sensor	AT-108
			8. Line pressure solenoid valve	AT-166
		OFF vehicle	9. Brake band	AT-351
			10. Overrun clutch	AT-334
Slips/Will Not Engage	Vehicle will not run in R position (but runs in D, 2 and 1 positions). Clutch slips. Very poor acceleration. AT-229	ON vehicle	1. Control cable adjustment	AT-282
			2. Line pressure test	AT-65
			3. Line pressure solenoid valve	AT-166
			4. Control valve assembly	AT-280
		OFF vehicle	5. Reverse clutch	AT-326
			6. High clutch	AT-329
			7. Forward clutch	AT-334
			8. Overrun clutch	AT-334
			9. Low & reverse brake	AT-339
	Vehicle will not run in D and 2 positions (but runs in 1 and R positions).	ON vehicle	1. Control cable adjustment	AT-282
		OFF vehicle	2. Low one-way clutch	AT-286

Diagnostic Procedure

=NFAT0039

1	INSPECTION START

Do you have CONSULT-II?

Yes or No

Yes	▶	GO TO 2.
No	▶	GO TO 6.

2	CHECK INPUT SIGNAL OF A/T FLUID TEMPERATURE SENSOR (With CONSULT-II)

With CONSULT-II

1. Start engine.
2. Select “TCM INPUT SIGNALS” in “DATA MONITOR” mode for “A/T” with CONSULT-II.
3. Read out the value of “FLUID TEMP SE”.

DATA MONITOR	
MONITORING	
VHCL/S SE-A/T	XXX km/h
VHCL/S SE-MTR	XXX km/h
THRTL POS SEN	XXX V
FLUID TEMP SE	XXX V
BATTERY VOLT	XXX V

SAT614J

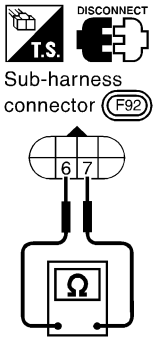
Voltage:
Cold [20°C (68°F)] → Hot [80°C (176°F)]:
Approximately 1.5V → 0.5V

OK or NG

OK	▶	GO TO 7.
NG	▶	GO TO 3.

3	CHECK A/T FLUID TEMPERATURE SENSOR WITH TERMINAL CORD ASSEMBLY

1. Turn ignition switch to OFF position.
2. Disconnect terminal cord assembly connector in engine compartment.
3. Check resistance between terminals 6 and 7 when A/T is cold.



Resistance:
Cold [20°C (68°F)]
Approximately 2.5 kΩ

SAT616J

4. Reinstall any part removed.

OK or NG

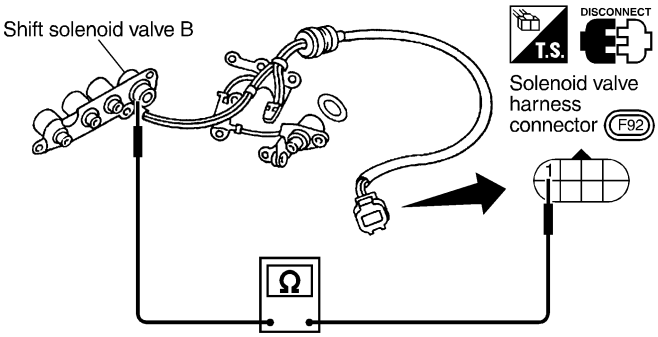
OK	▶	GO TO 4.
NG	▶	GO TO 5.

Diagnostic Procedure

NFAT0051

1	CHECK VALVE RESISTANCE

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



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

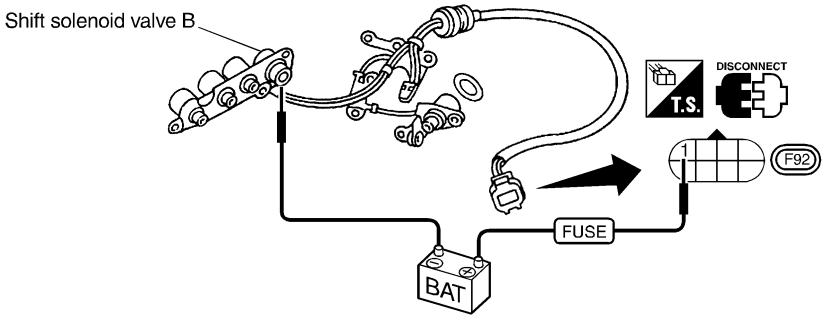
SAT045KA

OK or NG

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

2	CHECK VALVE OPERATION

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



SAT036K

OK or NG

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

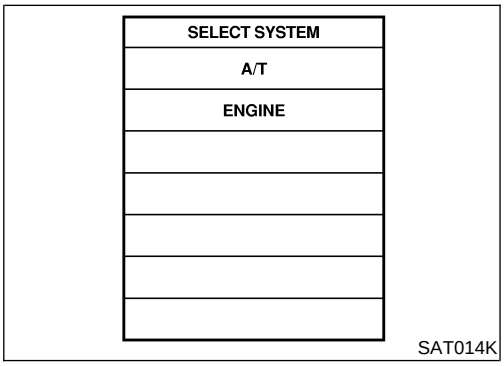
This malfunction will be caused when shift solenoid valve B is stuck closed.
Gear positions supposed by TCM are as follows.
In case of gear position with no malfunctions: 1, 2, 3 and 4 positions
In case of gear position with shift solenoid valve B stuck closed: 1, 2, 2 and 1* positions to each gear position above
*: P0744 is detected.
Diagnostic trouble code A/T TCC S/V FNCTN with CONSULT-II or P0744 without CONSULT-II is detected when A/T cannot perform lock-up even if electrical circuit is good.

Possible Cause

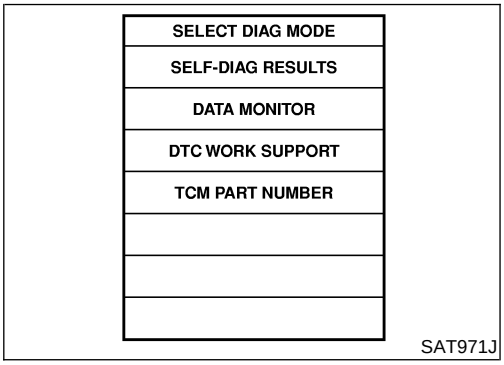
NFAT0229

Check the following items.

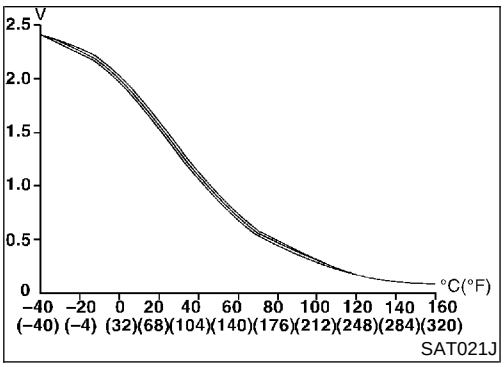
- Line pressure solenoid valve
- Torque converter clutch solenoid valve
- Each clutch
- Hydraulic control circuit



SAT014K



SAT971J



SAT021J

Diagnostic Trouble Code (DTC) Confirmation Procedure

NFAT0230

CAUTION:
Always drive vehicle at a safe speed.

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

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

WITH CONSULT-II

NFAT0230S01

1) Start engine and select "DATA MONITOR" mode for "A/T" with CONSULT-II.
2) Make sure that output voltage of A/T fluid temperature sensor is within the range below.
   FLUID TEMP SEN: 0.4 - 1.5V
   If out of range, drive vehicle to decrease voltage (warm up the fluid) or stop engine to increase voltage (cool down the fluid).
3) Select "TCC S/V FNCTN P0744" of "DTC WORK SUPPORT" mode for "A/T" with CONSULT-II and touch "START".
4) Accelerate vehicle to more than 70 km/h (43 MPH) and maintain the following condition continuously until "TESTING" has turned to "COMPLETE". (It will take approximately 30 seconds after "TESTING" shows.)
   THROTTLE POSI: 1.0/8 - 2.0/8 (at all times during step 4)
   Selector lever: D position (O/D ON)
   TCC S/V DUTY: More than 94%
   VHCL/S SE·A/T: Constant speed of more than 70 km/h (43 MPH)

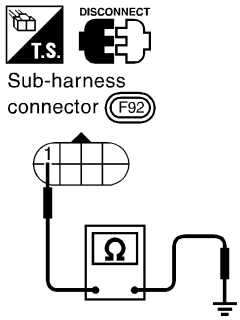
- **Check that "GEAR" shows "4".**
- **For shift schedule, refer to SDS, AT-382.**
- **If "TESTING" does not appear on CONSULT-II for a long time, select "SELF-DIAG RESULTS". In case a 1st trip DTC**

Diagnostic Procedure

NFAT0072

1	CHECK VALVE RESISTANCE

1. Turn ignition switch to OFF position.
2. Disconnect terminal cord assembly connector in engine compartment.
3. Check resistance between terminal 1 and ground.



Resistance: 5 - 20 Ω

SAT633JC

OK or NG

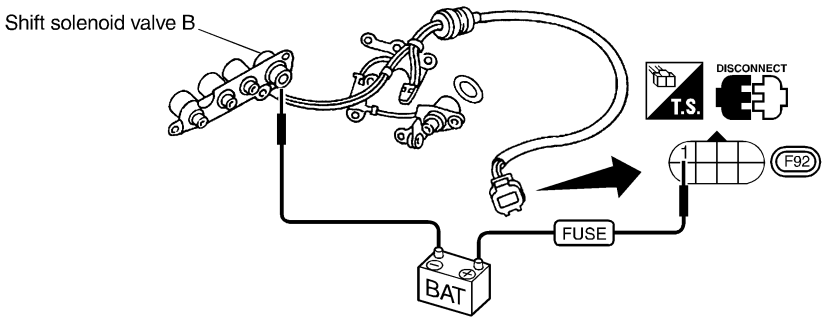
OK	▶	GO TO 3.
NG	▶	GO TO 2.

2	CHECK VALVE OPERATION

1. Remove control valve assembly. Refer to AT-280.
2. Check the following items:

- Shift solenoid valve B
- Operation check

i. Check solenoid valve by listening for its operating sound while applying battery voltage to the terminal and ground.



SAT036K

- Harness of terminal cord assembly for short or open

OK or NG

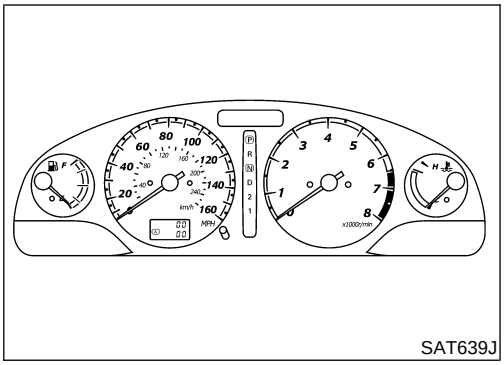
OK	▶	GO TO 3.
NG	▶	Repair or replace damaged parts.

3	CHECK POWER SOURCE CIRCUIT

1. Turn ignition switch to OFF position.
2. Disconnect TCM harness connector.
3. Check continuity between sub-harness connector terminal 1 and TCM harness connector terminal 12. Refer to wiring diagram — AT — SSV/B.
   Continuity should exist.
   If OK, check harness for short to ground and short to power.
4. Reinstall any part removed.

OK or NG

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



Description

NFAT0082

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

TCM TERMINALS AND REFERENCE VALUE

NFAT0082S01

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

NFAT0249

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

Possible Cause

NFAT0250

Check the following items.

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

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

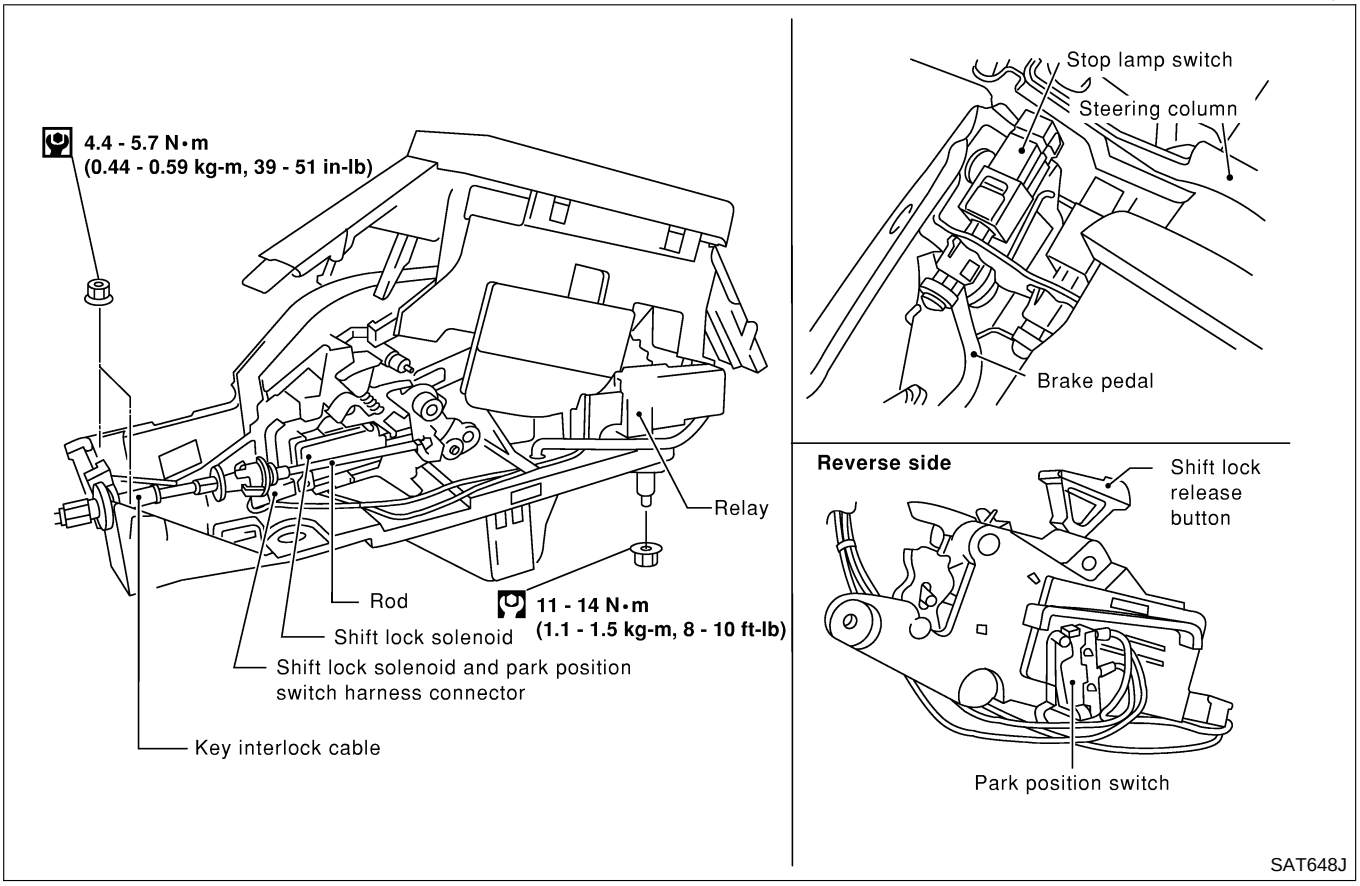
8	CHECK TCM INSPECTION	
1. Perform TCM input/output signal inspection. 2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.		
OK or NG		
OK	▶	**INSPECTION END**
NG	▶	Repair or replace damaged parts.

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

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

Shift Lock System Electrical Parts Location

NFAT0111



Diagnostic Procedure

NFAT0112

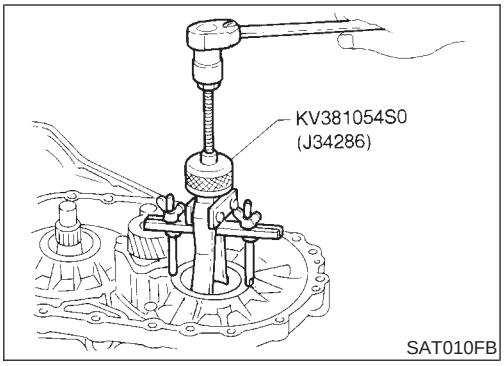
SYMPTOM 1:

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

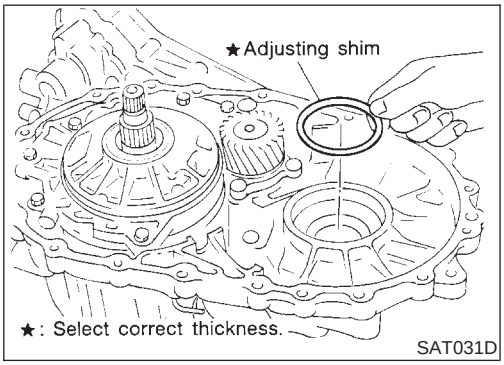
SYMPTOM 2:

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

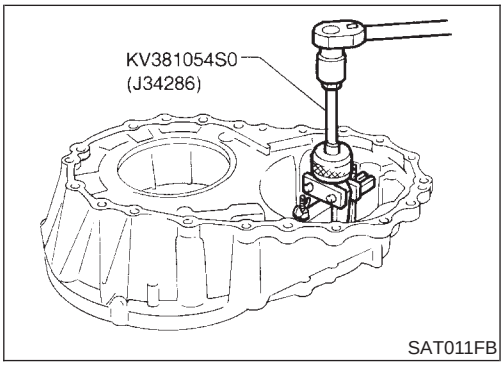
1	CHECK KEY INTERLOCK CABLE	
Check key interlock cable for damaged. **OK or NG**		
OK	▶	GO TO 2.
NG	▶	Repair key interlock cable. Refer to “Key Interlock Cable”, AT-276.



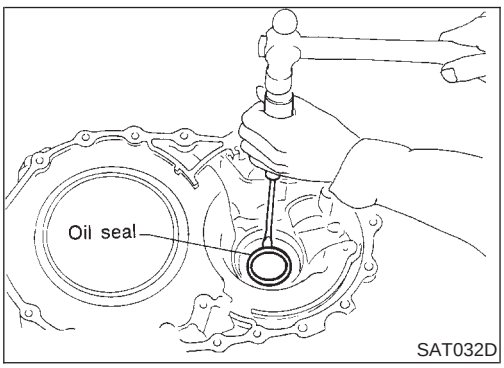
22. Remove differential side bearing outer race and side bearing adjusting shim from transmission case.



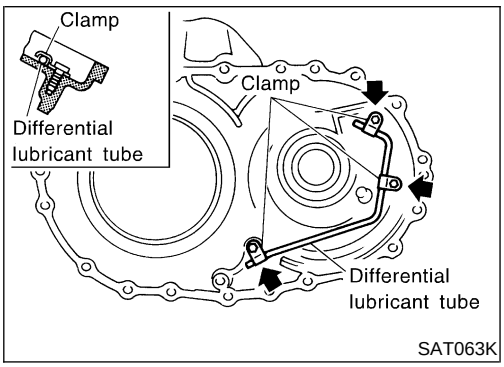
23. Remove differential side bearing adjusting shim from transmission case.



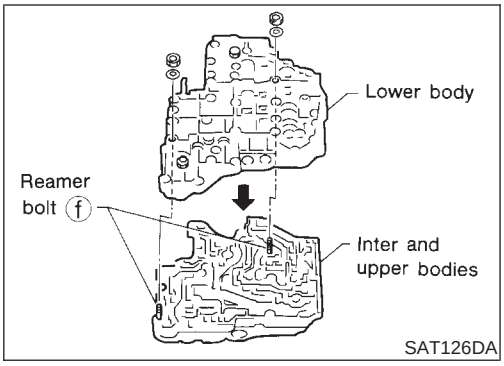
24. Remove differential side bearing outer race from converter housing.



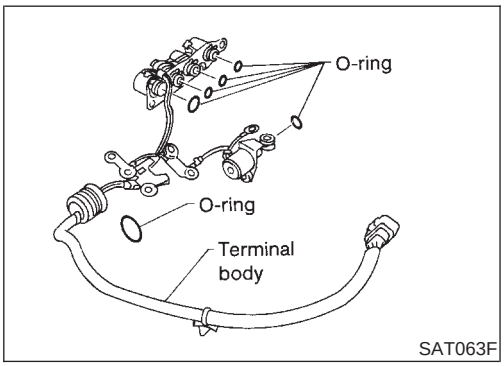
25. Remove oil seal with screwdriver from converter housing.
- **Be careful not to damage case.**



26. Remove differential lubricant tube from converter housing.



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



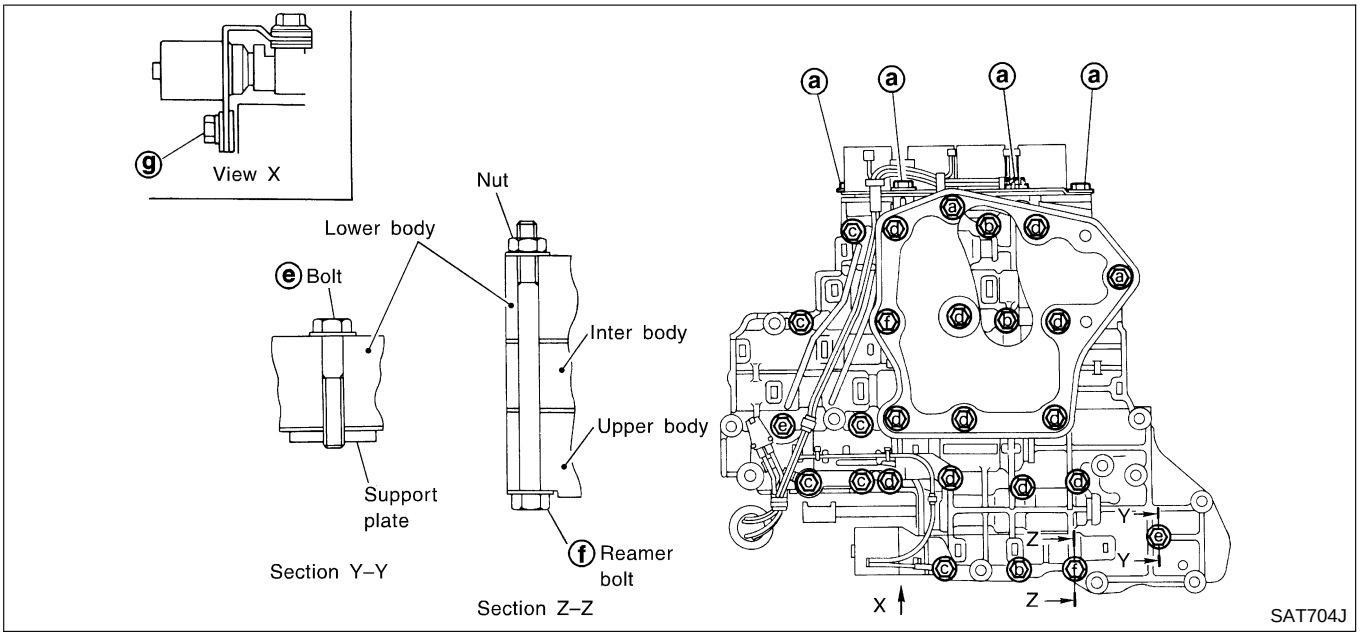
2. Install O-rings to solenoid valves and terminal body.

- **Apply ATF to O-rings.**

3. Install and tighten bolts.

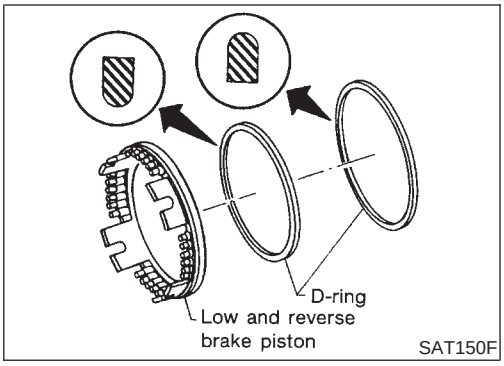
Bolt length, number and location:

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

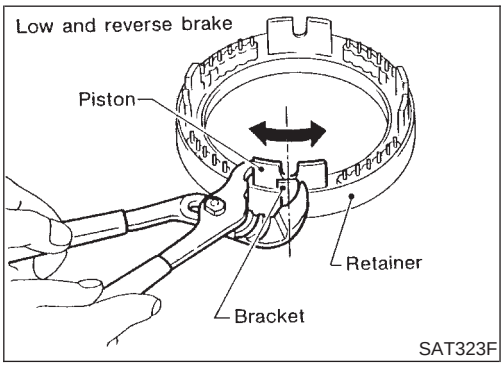


ASSEMBLY

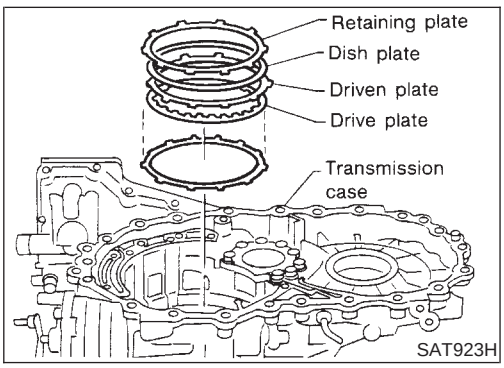
NFAT0160



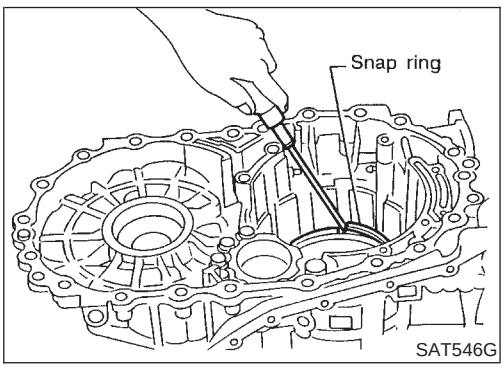
1. Install D-rings on piston.
   - **Apply ATF to both parts.**



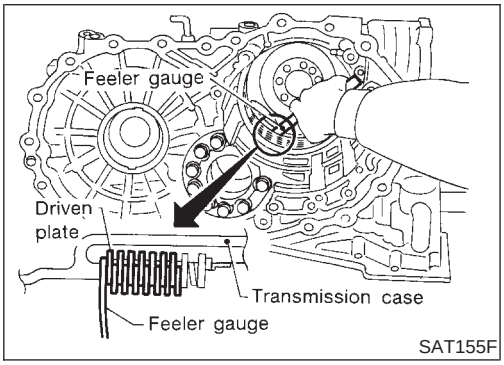
2. Set and align piston with retainer.
   - **This operation is required in order to engage the protrusions of piston to return springs correctly. Further procedures are given in "ASSEMBLY".**



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



4. Install snap ring.



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

   Specified clearance:

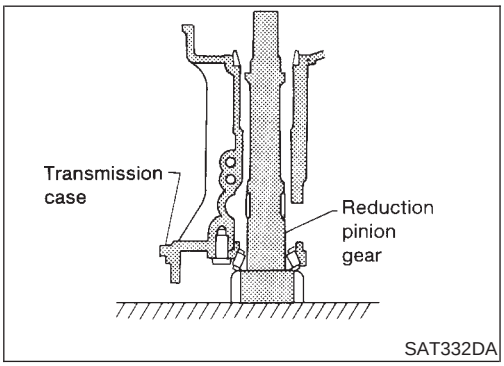
   Standard 1.7 - 2.1 mm (0.067 - 0.083 in)

   Allowable limit 3.3 mm (0.130 in)

   Retaining plate:

   Refer to SDS, AT-386.

RE4F04W-KV38105210 (J39883)

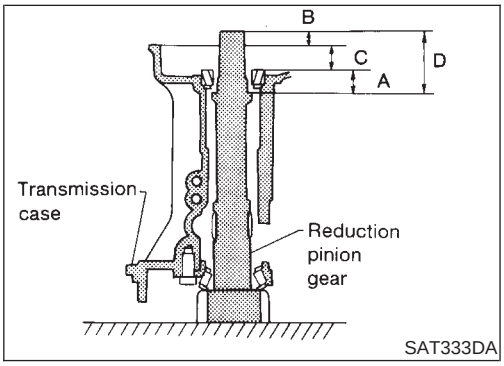


REDUCTION PINION GEAR BEARING PRELOAD

NFAT0178S02

1. Remove transmission case and final drive assembly from converter housing.
2. Select proper thickness of reduction pinion gear bearing adjusting shim using the following procedures.

a. Place reduction pinion gear on transmission case as shown.

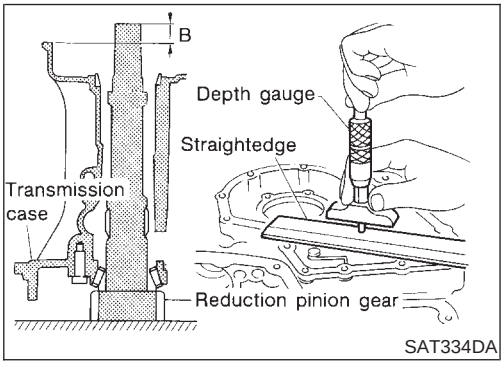


b. Place idler gear bearing on transmission case.

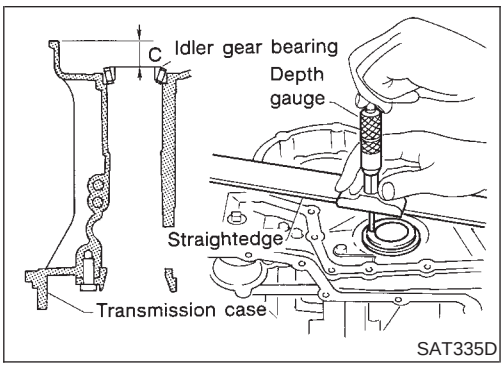
c. Measure dimensions "B" "C" and "D" and calculate dimension "A".

A = D − (B + C)

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



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



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

DIFFERENTIAL SIDE BEARING PRELOAD ADJUSTING SHIMS

NFAT0189S03

RE4F04B

NFAT0189S0301

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

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

RE4F04W

NFAT0189S0302

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

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

BEARING PRELOAD

NFAT0189S04

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

TURNING TORQUE

NFAT0189S05

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

CLUTCH AND BRAKE RETURN SPRINGS

NFAT0189S06

Unit: mm (in)

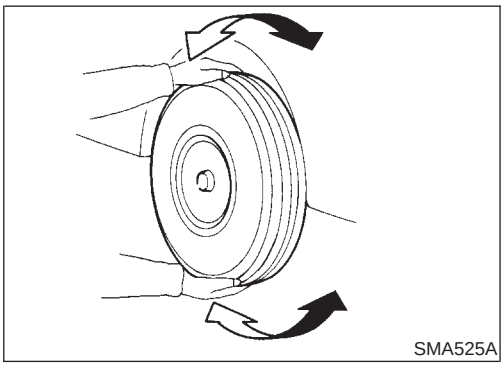
Parts	Part number*	Free length	Outer diameter
Forward clutch (Overrun clutch) (22 pcs)	31505-80X02	21.4 (0.843)	10.3 (0.406)
High clutch (12 pcs)	31505-80X05	22.5 (0.886)	10.8 (0.425)
Low & reverse brake (24 pcs)	31505-80X07	24.1 (0.949)	6.6 (0.260)

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

Noise, Vibration and Harshness (NVH) Troubleshooting

NFAX0025

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


SMA525A

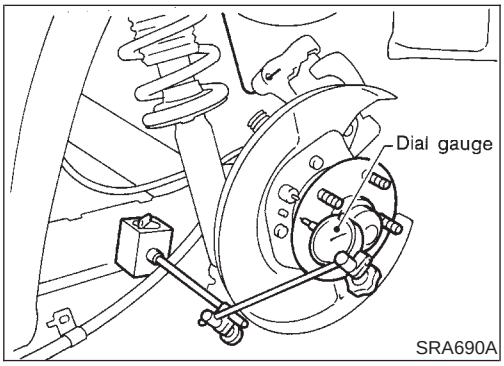
On-vehicle Service

REAR AXLE PARTS

NFAX0026

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

- Shake each rear wheel to check for excessive play.



SRA690A

REAR WHEEL BEARING

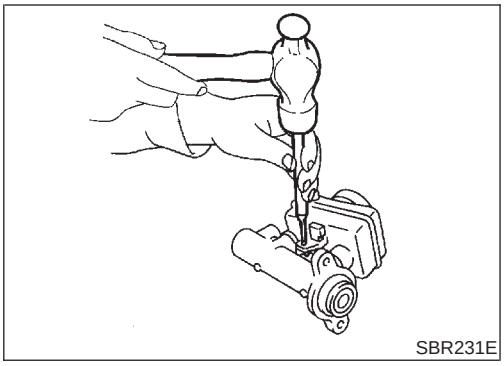
NFAX0027

- Check axial end play.

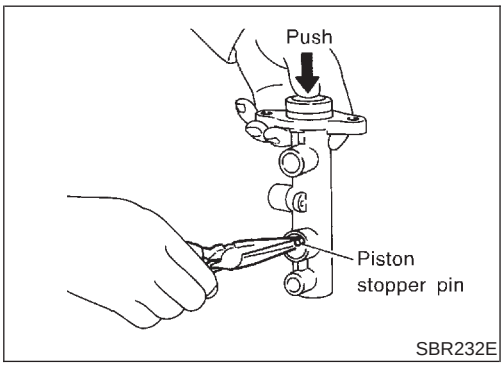
  Axial end play:

  0.05 mm (0.0020 in)
- Check that wheel hub bearings operate smoothly.
- Check tightening torque of wheel bearing lock nut.

  : 187 - 254 N·m (19 - 26 kg-m, 138 - 188 ft-lb)
- Replace wheel bearing assembly if there is axial end play or wheel bearing does not turn smoothly. Refer to “Wheel Hub”, “REAR AXLE”, AX-19.


SBR231E

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



SBR232E

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

Inspection

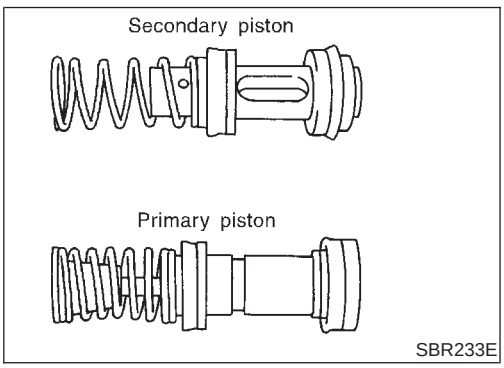
NFBR0097

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

- Pin holes or scratches on inner wall.

Piston:

- Deformation of or scratches on piston cups.

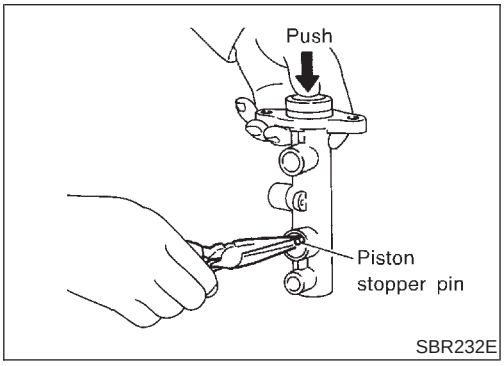


SBR233E

Assembly

NFBR0098

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

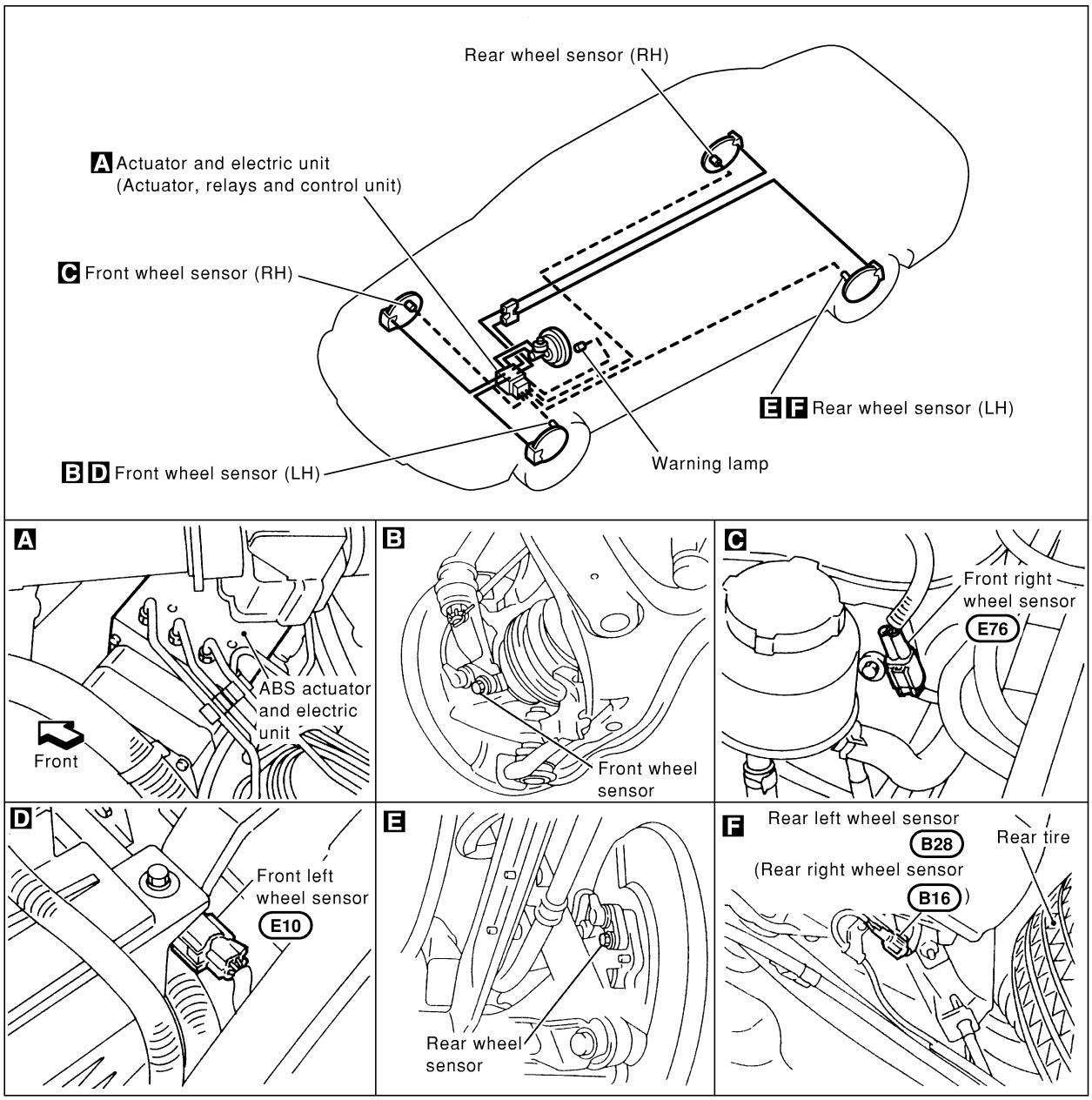


SBR232E

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

Component Parts and Harness Connector Location

NFBR0105



SBR646EA

ABS Actuator Solenoid Valve or Solenoid Valve Relay

=NFBR0116

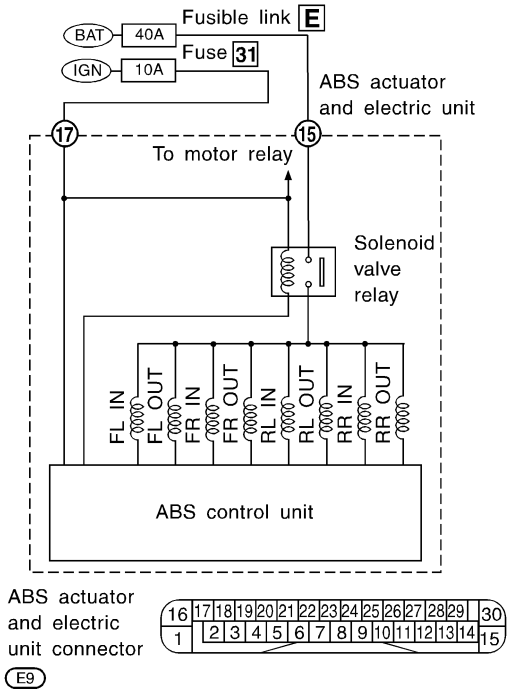
DIAGNOSTIC PROCEDURE

NFBR0116S01

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

1	INSPECTION START

Solenoid valve relay inspection



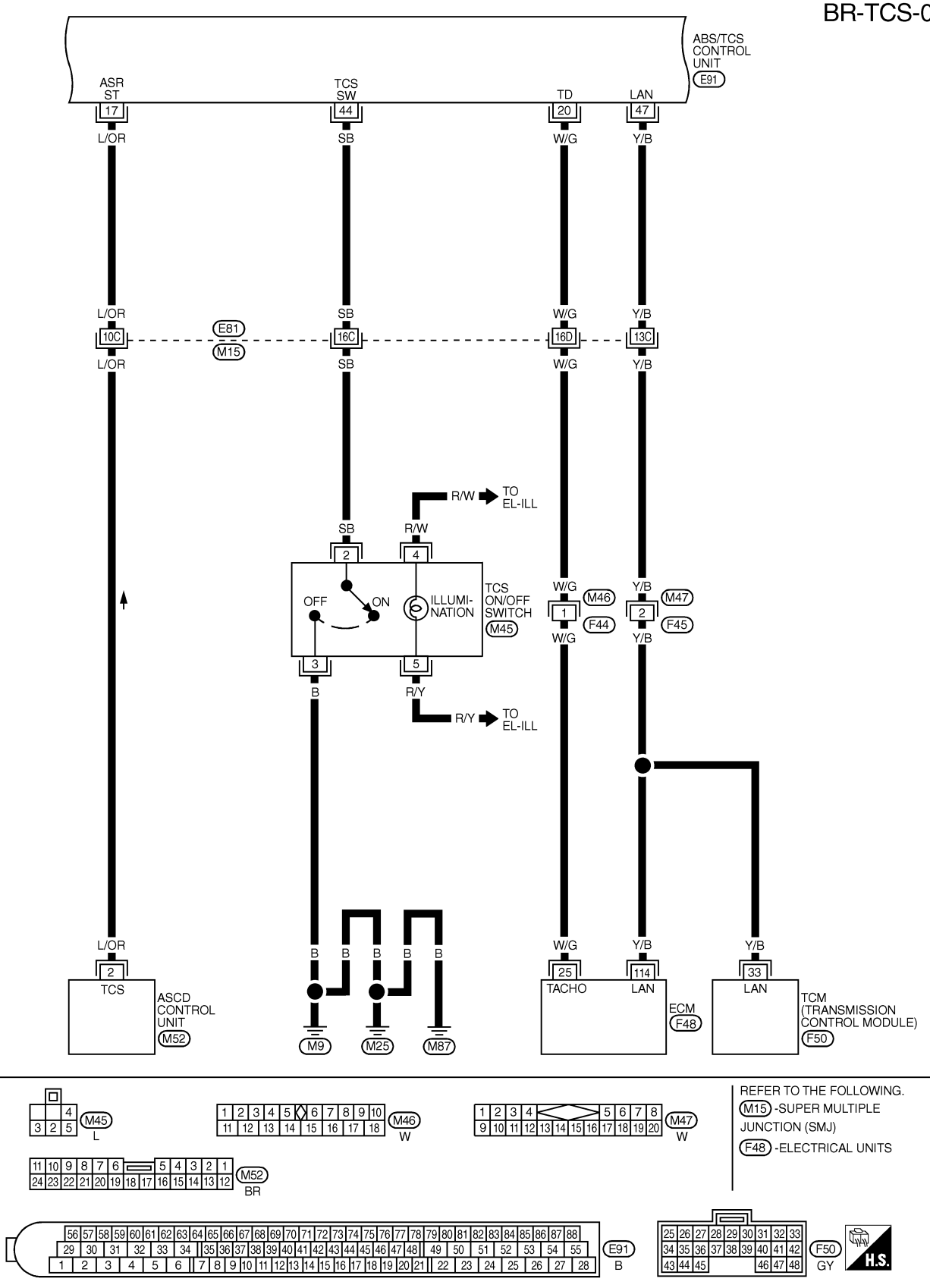
SBR591EA

	▶	GO TO 2.

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

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

BR-TCS-03



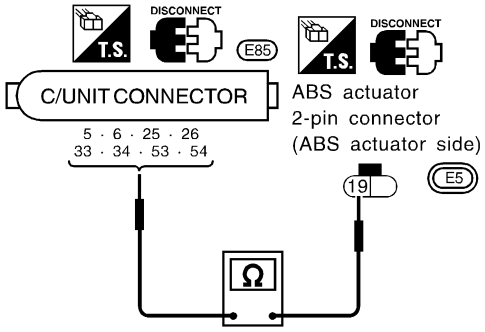
MBR425A

3 **CHECK ABS ACTUATOR SOLENOID VALVE**

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

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

MTBL0084



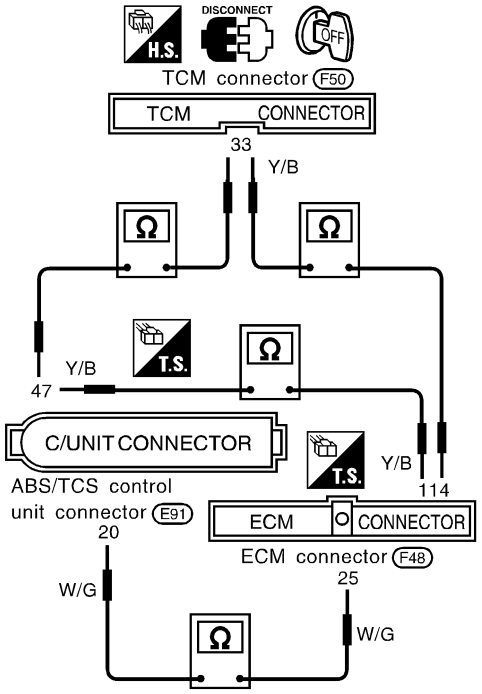
SBR766DH

Is resistance within specifications?

Yes	▶	GO TO 6.
No	▶	GO TO 4.

6	CHECK LAN CIRCUIT

Check continuity between connector terminals.



SBR542E

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

MTBL0320

Does continuity exist?

Yes	▶	Repeat self-diagnostic procedures.
No	▶	**Check the following.** ● Harness connectors E91, F48, F50 ● Harness for open or short between control unit connector and TCM connector ● Harness for open or short between ECM connector and TCM connector If NG, repair harness or connectors.

General Specifications

NFBR0077
Unit: mm (in)

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

Disc Brake

NFBR0078
Unit: mm (in)

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

Brake Pedal

NFBR0079
Unit: mm (in)

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

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

Parking Brake

NFBR0080

Number of notches [under force of 196 N (20 kg, 44 lb)]	10 - 11
Number of notches when warning lamp switch comes on	1

Control Valve

NFBR0092
Unit: kPa (kg/cm^2, psi)

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

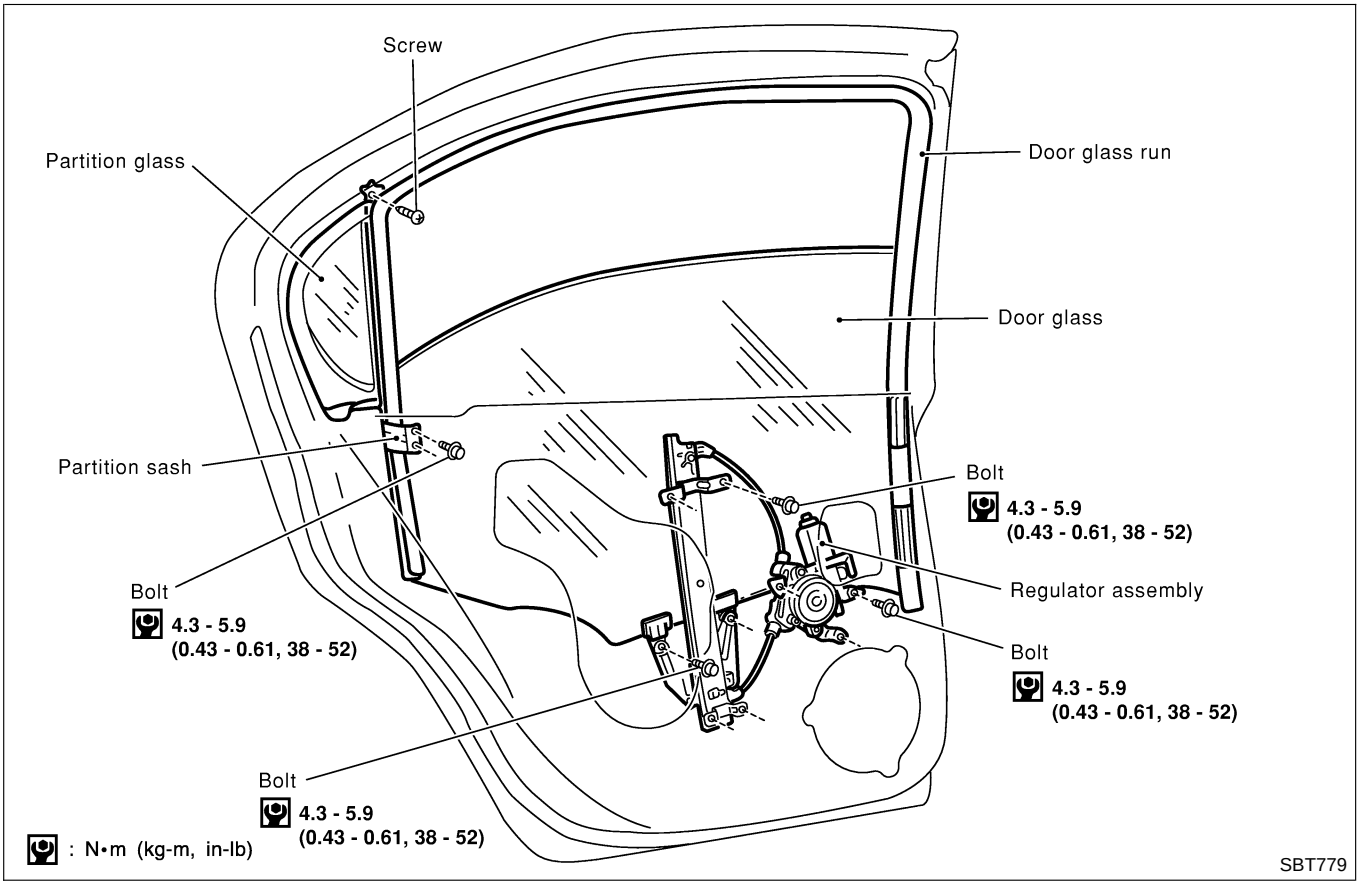
Rear Door Glass

NFBT0009

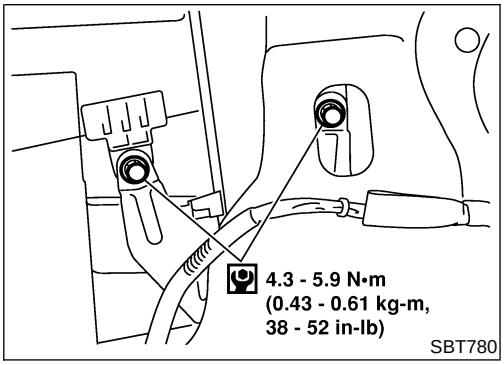
- Make sure that door glass is positioned in glass run groove.
- Make sure that there is no abnormality when door glass is raised or lowered.

REAR DOOR GLASS AND REGULATOR

NFBT0009S01



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

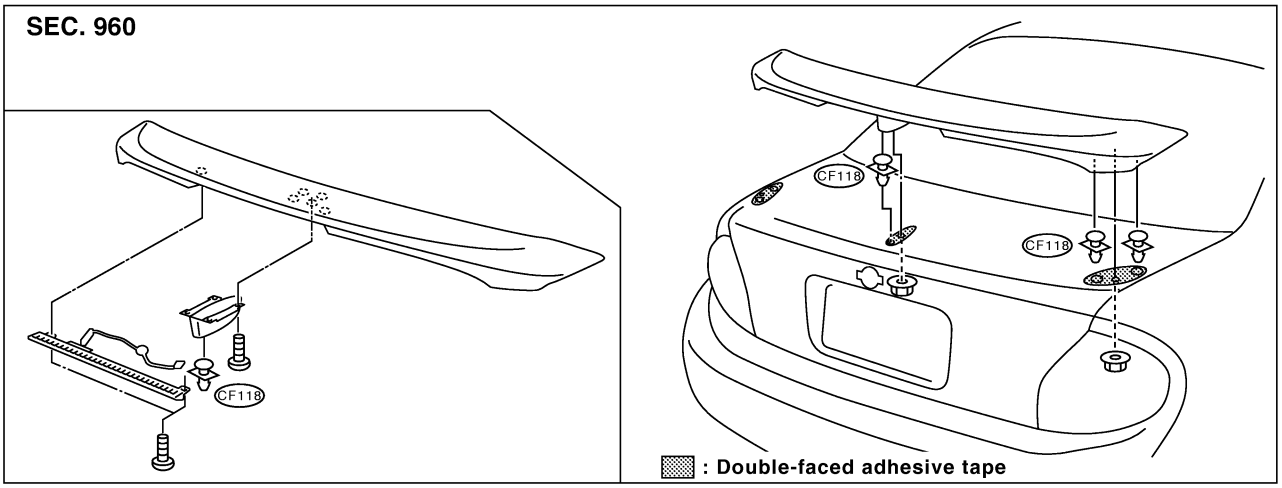


1. Using power window main switch, raise or lower door glass until carrier plate securing bolts are visible.
2. Remove bolts securing carrier plate.

⑳ Rear air spoiler

- When removing, first disconnect high-mounted stop lamp connector located on the back of trunk lid, then remove air spoiler taking care the stop lamp harness does not get caught.
- When installing, make sure that there are not gaps or waves at ends of air spoiler.
- Before installing spoiler, clean and remove oil from surface where spoiler will be mounted.

SEC. 960



SBT087A

NOTES

CONTENTS (Cont'd)

Multiport Fuel Injection (MFI) System

DESCRIPTION

NFEC0014

Input/Output Signal Chart

NFEC0014S01

Sensor	Input Signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed (POS signal)	Fuel injection & mixture ratio control	Injectors
Crankshaft position sensor (REF)	Engine speed (REF signal)		
Camshaft position sensor (PHASE)	Piston position		
Mass air flow sensor	Amount of intake air		
Engine coolant temperature sensor	Engine coolant temperature		
Heated oxygen sensor 1 (front)	Density of oxygen in exhaust gas		
Throttle position sensor	Throttle position Throttle valve idle position		
Park/neutral position (PNP) switch	Gear position		
Vehicle speed sensor	Vehicle speed		
Ignition switch	Start signal		
Air conditioner switch	Air conditioner operation		
Knock sensor	Engine knocking condition		
Battery	Battery voltage		
Absolute pressure sensor	Ambient air barometric pressure		
Power steering oil pressure switch	Power steering operation		
Heated oxygen sensor 2 (rear)*	Density of oxygen in exhaust gas		
ABS/TCS control unit	TCS operation command		

*: Under normal conditions, this sensor is not for engine control operation.

Basic Multiport Fuel Injection System

NFEC0014S02

The amount of fuel injected from the fuel injector is determined by the ECM. The ECM controls the length of time the valve remains open (injection pulse duration). The amount of fuel injected is a program value in the ECM memory. The program value is preset by engine operating conditions. These conditions are determined by input signals (for engine speed and intake air) from both the crankshaft position sensor and the mass air flow sensor.

Various Fuel Injection Increase/Decrease Compensation

NFEC0014S03

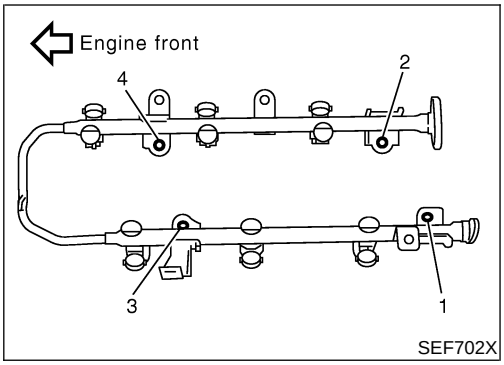
In addition, the amount of fuel injected is compensated to improve engine performance under various operating conditions as listed below.

<Fuel increase>

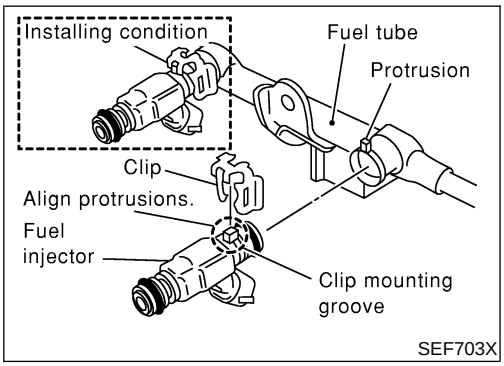
- During warm-up
- When starting the engine
- During acceleration
- Hot-engine operation
- When selector lever is changed from “N” to “D”
- High-load, high-speed operation

<Fuel decrease>

- During deceleration
- During high engine speed operation



SEF702X



SEF703X

Injector

REMOVAL AND INSTALLATION

NFEC0026

1. Release fuel pressure to zero.
2. Remove intake manifold collector. Refer to EM-19, “TIMING CHAIN”.
3. Remove fuel tube assemblies in numerical sequence as shown in the figure at left.
4. Expand and remove clips securing fuel injectors.
5. Extract fuel injectors straight from fuel tubes.

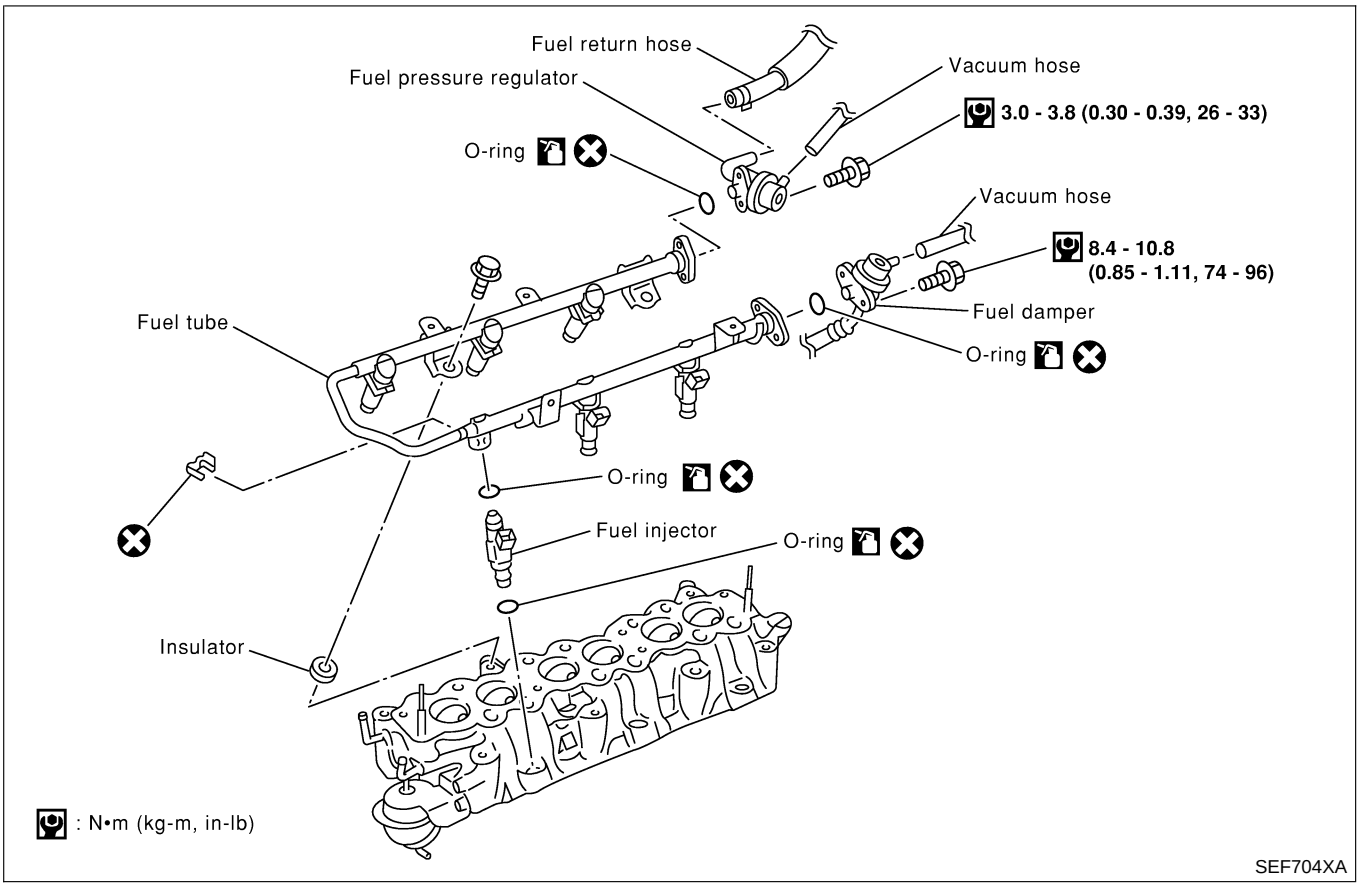
- **Be careful not to damage injector nozzles during removal.**
- **Do not bump or drop fuel injectors.**

6. Carefully install O-rings, including the one used with the pressure regulator.

- **Lubricate O-rings with a smear of engine oil.**
- **Be careful not to damage O-rings with service tools, finger nails or clips. Do not expand or twist O-rings.**
- **Discard old clips; replace with new ones.**

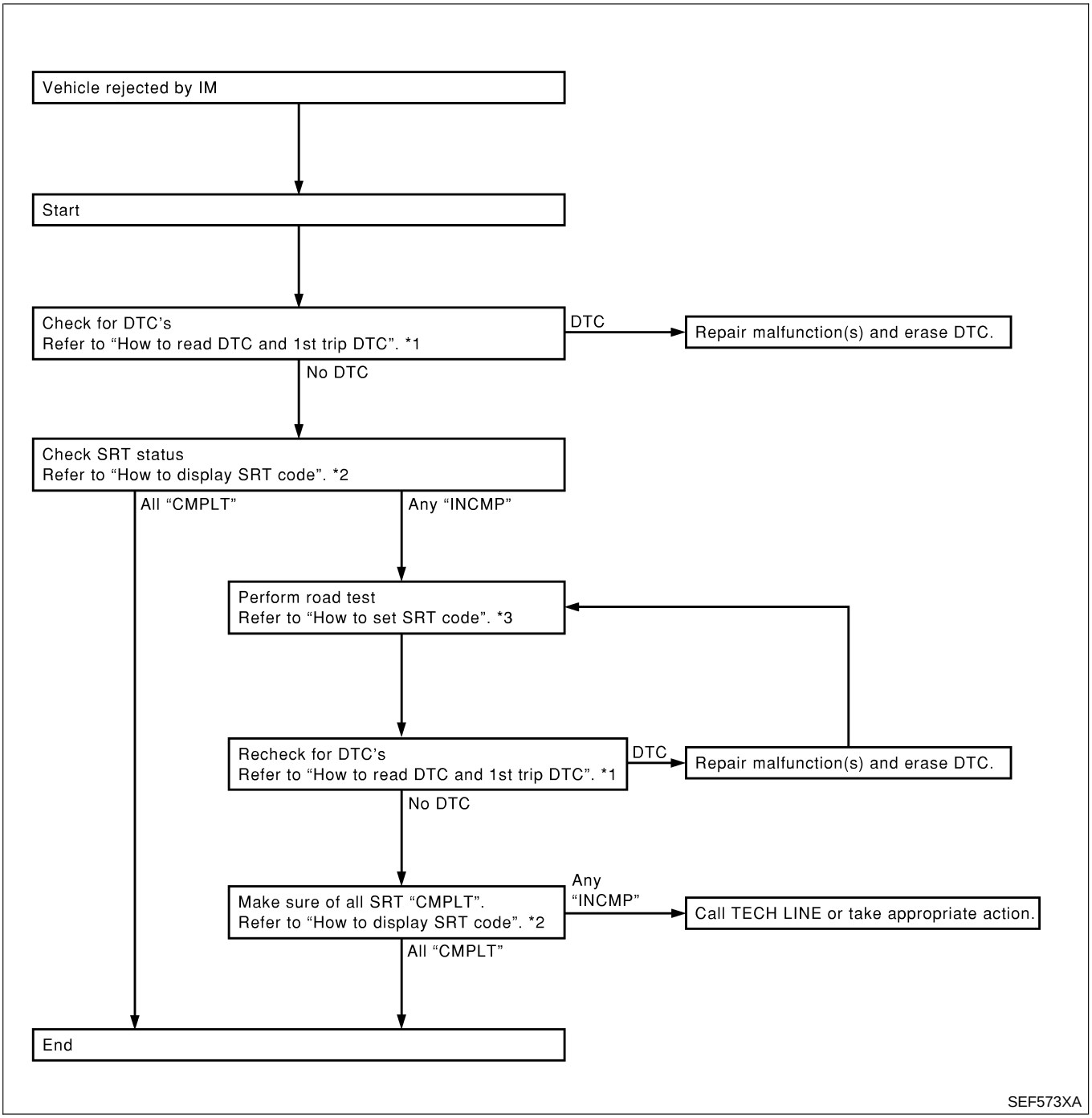
7. Position clips in grooves on fuel injectors.

- **Make sure that protrusions of fuel injectors are aligned with cutouts of clips after installation.**



SEF704XA

8. Align protrusions of fuel tubes with those of fuel injectors. Insert fuel injectors straight into fuel tubes.
9. After properly inserting fuel injectors, check to make sure that fuel tube protrusions are engaged with those of fuel injectors, and that flanges of fuel tubes are engaged with clips.



*1 EC-70 *2 EC-74 *3 EC-75

How to Display SRT Code

NFEC0031S0301

With CONSULT-II

Selecting "SRT STATUS" in "DTC CONFIRMATION" mode with CONSULT-II.
For items whose SRT codes are set, a "CMPLT" is displayed on the CONSULT-II screen; for items whose SRT codes are not set, "INCMP" is displayed.

With GST

Selecting Mode 1 with GST (Generic Scan Tool)
A sample of CONSULT-II display for SRT code is shown below.
"INCMP" means the self-diagnosis is incomplete and SRT is not set. "CMPLT" means the self-diagnosis is complete and SRT is set.

DATA MONITOR MODE

=NFEC0034S06

Monitored item [Unit]	ECM input signals	Main signals	Description	Remarks
ENG SPEED [rpm]	○	○	• Indicates the engine speed computed from the REF signal (120° signal) of the crankshaft position sensor (REF).	
CKPS·RPM (POS) [rpm]	○		• Indicates the engine speed computed from the POS signal (1° signal) of the crankshaft position sensor (POS).	• Accuracy becomes poor if engine speed drops below the idle rpm. • If the signal is interrupted while the engine is running, an abnormal value may be indicated.
POS COUNT	○		• Indicates the number of signal plate (Flywheel/Drive Plate) cogs (tooth) during one revolution of the engine.	
MAS A/F SE-B1 [V]	○	○	• The signal voltage of the mass air flow sensor is displayed.	• When the engine is stopped, a certain value is indicated.
COOLAN TEMP/S [°C] or [°F]	○	○	• The engine coolant temperature (determined by the signal voltage of the engine coolant temperature sensor) is displayed.	• When the engine coolant temperature sensor is open or short-circuited, ECM enters fail-safe mode. The engine coolant temperature determined by the ECM is displayed.
HO2S1 (B1) [V]	○	○	• The signal voltage of the heated oxygen sensor 1 (front) is displayed.	
HO2S1 (B2) [V]	○	○		
HO2S2 (B1) [V]	○	○	• The signal voltage of the heated oxygen sensor 2 (rear) is displayed.	
HO2S2 (B2) [V]	○	○		
HO2S1 MNTR (B1) [RICH/LEAN]	○		• Display of heated oxygen sensor 1 (front) signal during air-fuel ratio feedback control: RICH ... means the mixture became "rich", and control is being affected toward a leaner mixture. LEAN ... means the mixture became "lean", and control is being affected toward a rich mixture.	• After turning ON the ignition switch, "RICH" is displayed until air-fuel mixture ratio feedback control begins. • When the air-fuel ratio feedback is clamped, the value just before the clamping is displayed continuously.
HO2S1 MNTR (B2) [RICH/LEAN]	○			
HO2S2 MNTR (B1) [RICH/LEAN]	○		• Display of heated oxygen sensor 2 (rear) signal: RICH ... means the amount of oxygen after three way catalyst is relatively small. LEAN ... means the amount of oxygen after three way catalyst is relatively large.	• When the engine is stopped, a certain value is indicated.
HO2S2 MNTR (B2) [RICH/LEAN]	○			
VHCL SPEED SE [km/h] or [mph]	○	○	• The vehicle speed computed from the vehicle speed sensor signal is displayed.	
BATTERY VOLT [V]	○	○	• The power supply voltage of ECM is displayed.	
THRTL POS SEN [V]	○	○	• The throttle position sensor signal voltage is displayed.	
FUEL T/TMP SE [°C] or [°F]	○		• The fuel temperature judged from the tank fuel temperature sensor signal voltage is displayed.	

17	CHECK TARGET IDLE SPEED AGAIN
With CONSULT-II 1. Start engine and warm it up to normal operating temperature. 2. Select "ENG SPEED" in "DATA MONITOR" mode with CONSULT-II. 3. Check idle speed. **M/T: 625±50 rpm** **A/T: 700±50 rpm (in "P" or "N" position)**	
Without CONSULT-II 1. Start engine and warm it up to normal operating temperature. 2. Check idle speed. **M/T: 625±50 rpm** **A/T: 700±50 rpm (in "P" or "N" position)**	
OK or NG	
OK ▶	GO TO 22.
NG ▶	GO TO 18.

18	REPLACE IACV-AAC VALVE
Replace IACV-AAC valve.	
▶	GO TO 19.

19	PERFORM IDLE AIR VOLUME LEARNING
Refer to "Idle Air Volume Learning", EC-67. **Which is the result CMPLT or INCMP?**	
CMPLT or INCMP	
CMPLT ▶	GO TO 20.
INCMP ▶	1. Follow the construction of "Idle Air Volume Learning". 2. GO TO 16.

20	CHECK TARGET IDLE SPEED AGAIN
With CONSULT-II 1. Start engine and warm it up to normal operating temperature. 2. Select "ENG SPEED" in "DATA MONITOR" mode with CONSULT-II. 3. Check idle speed. **M/T: 625±50 rpm** **A/T: 700±50 rpm (in "P" or "N" position)**	
Without CONSULT-II 1. Start engine and warm it up to normal operating temperature. 2. Check idle speed. **M/T: 625±50 rpm** **A/T: 700±50 rpm (in "P" or "N" position)**	
OK or NG	
OK ▶	GO TO 22.
NG ▶	GO TO 21.

Description

NFEC0648

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

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

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

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

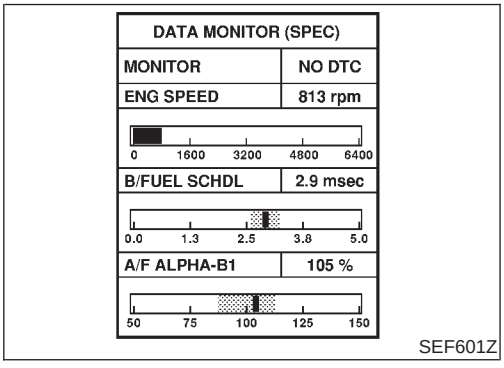
Testing Condition

NFEC0649

- Vehicle driven distance: More than 5,000 km (3,107 miles)
- Barometric pressure: 98.3 - 104.3 kPa (1.003 - 1.064 kg/cm^2, 14.25 - 15.12 psi)
- Atmospheric temperature: 20 - 30°C (68 - 86°F)
- Engine coolant temperature: 75 - 95°C (167 - 203°F)
- Transmission: Warmed-up*1
- Electrical load: Not applied*2
- Engine speed: Idle

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

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



Inspection Procedure

NFEC0650

NOTE:

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

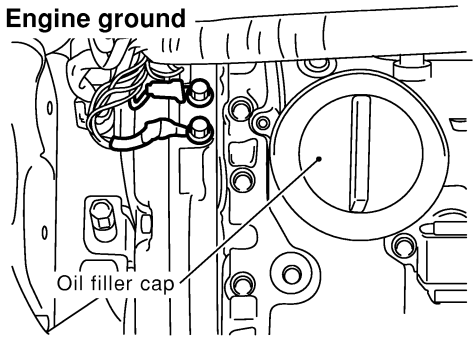
1. Perform "Basic Inspection", EC-111.
2. Confirm that the testing conditions indicated above are met.
3. Select "B/FUEL SCHDL", "A/F ALPHA-B1", "A/F ALPHA-B2" and "MAS A/F SE-B1" in "DATA MONITOR (SPEC)" mode with CONSULT-II.
4. Make sure that monitor items are within the SP value.
5. If NG, go to "Diagnostic Procedure", EC-144.

Diagnostic Procedure

NFEC0063

1	RETIGHTEN GROUND SCREWS

1. Turn ignition switch “OFF”.
2. Loosen and retighten engine ground screws.

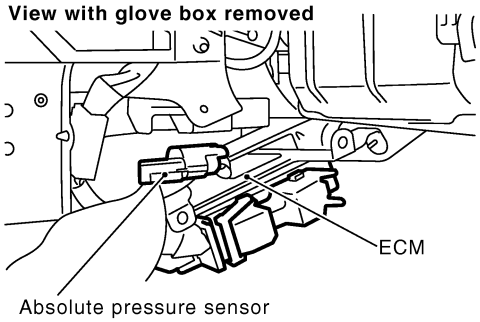


SEF255X

▶	GO TO 2.

2	CHECK ABSOLUTE PRESSURE SENSOR CONNECTOR FOR WATER

1. Disconnect absolute pressure sensor harness connector.



SEC004C

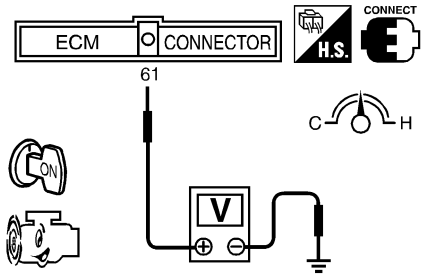
2. Check sensor harness connector for water.
   Water should not exist.

OK or NG

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

12	CHECK MASS AIR FLOW SENSOR

1. Reconnect harness connectors disconneted.
2. Start engine and warm it up to normal operating temperature.
3. Check voltage between ECM terminal 61 (Mass air flow sensor signal) and ground.



Condition	Voltage V
Ignition switch "ON" (Engine stopped.)	Approx. 1.0
Idle (Engine is warmed-up to normal operating temperature.)	1.2 - 1.8
2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.6 - 2.2
Idle to about 4,000 rpm*	1.2 - 1.8 to Approx. 4.0

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

SEF298X

4. If the voltage is out of specification, disconnect mass air flow sensor harness connector and connect it again. Then repeat above check.

OK or NG

OK	▶	GO TO 13.
NG	▶	Replace mass air flow sensor.

13	CHECK CRANKSHAFT POSITION SENSOR (POS)

1. Install all removed parts.
2. Perform "DTC Confirmation Procedure" for DTC P0335 and P1336. Refer to EC-344, 524.

OK or NG

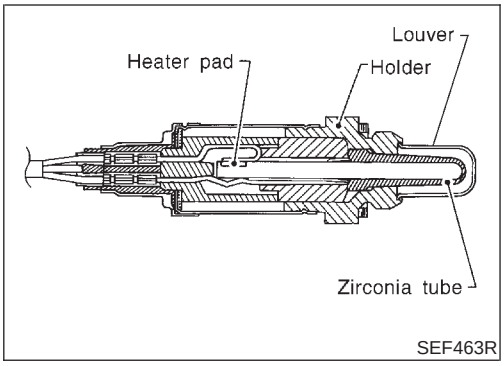
OK	▶	GO TO 14.
NG	▶	Replace crankshaft position sensor (POS).

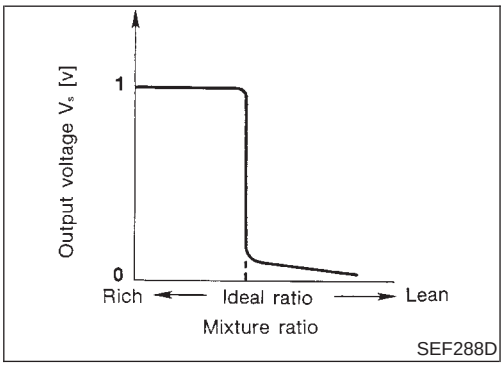
14	CHECK CRANKSHAFT POSITION SENSOR (REF)

Perform "DTC Confirmation Procedure" for DTC P1335. Refer to EC-518.

OK or NG

OK	▶	GO TO 15.
NG	▶	Replace crankshaft position sensor (REF).





Component Description

NFEC0101

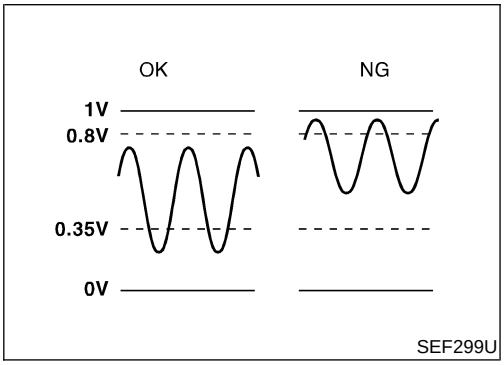
The heated oxygen sensor 1 (front) is placed into the front tube. It detects the amount of oxygen in the exhaust gas compared to the outside air. The heated oxygen sensor 1 (front) has a closed-end tube made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions. The heated oxygen sensor 1 (front) signal is sent to the ECM. The ECM adjusts the injection pulse duration to achieve the ideal air-fuel ratio. The ideal air-fuel ratio occurs near the radical change from 1V to 0V.

CONSULT-II Reference Value in Data Monitor Mode

NFEC0102

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
HO2S1 (B1) HO2S1 (B2)	● Engine: After warming up	Maintaining engine speed at 2,000 rpm	0 - 0.3V ⟷ Approx. 0.6 - 1.0V
HO2S1 MNTR (B1) HO2S1 MNTR (B2)			LEAN ⟷ RICH Changes more than 5 times during 10 seconds.



On Board Diagnosis Logic

NFEC0104

To judge the malfunction, the output from the heated oxygen sensor 1 (front) is monitored to determine whether the “rich” output is sufficiently high. The “lean” output is sufficiently low. When both the outputs are shifting to the rich side, the malfunction will be detected.

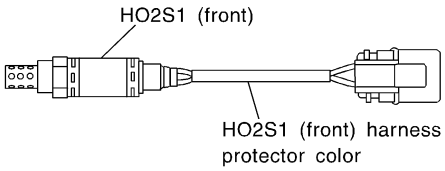
Malfunction is detected when the maximum and minimum voltages from the sensor are beyond the specified voltages.

Diagnostic Procedure

NFEC0122

1	INSPECTION START

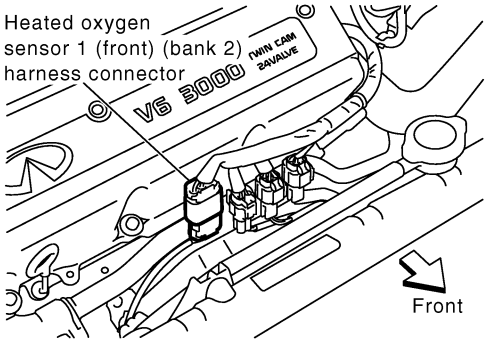
1. Turn ignition switch “OFF”.
2. Check heated oxygen sensor 1 (front) harness protector color.

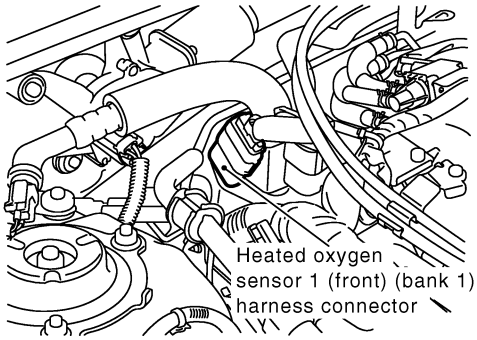


HO2S1 (front) (bank 1): Black
HO2S1 (front) (bank 2): Blue

SEC020C

3. Disconnect corresponding heated oxygen sensor 1 (front) harness connector.





SEF902XA

▶	GO TO 2.

2	RETIGHTEN HEATED OXYGEN SENSOR 1 (FRONT)

Loosen and retighten corresponding heated oxygen sensor 1 (front).

Tightening torque:

40 - 60 N·m (4.1 - 6.2 kg-m, 30 - 44 ft-lb)

▶	GO TO 3.

Overall Function Check (Cont'd)

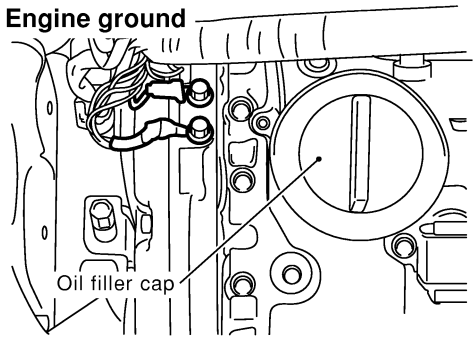
4) Check the voltage when racing up to 4,000 rpm under no load at least 10 times.
(Depress and release accelerator pedal as soon as possible.)
The voltage should be above 0.56V at least once during this procedure.
If the voltage can be confirmed in step 4, step 5 is not necessary.
5) Keep vehicle at idling for 10 minutes, then check the voltage. Or check the voltage when coasting from 80 km/h (50 MPH) in 3rd gear position (M/T), "D" position with "OD" OFF (A/T).
The voltage should be above 0.56V at least once during this procedure.
6) If NG, go to "Diagnostic Procedure", EC-261.

Diagnostic Procedure

NFEC0161

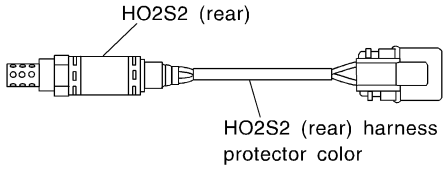
1	INSPECTION START

1. Turn ignition switch “OFF”.
2. Loosen and retighten engine ground screws.



SEF255X

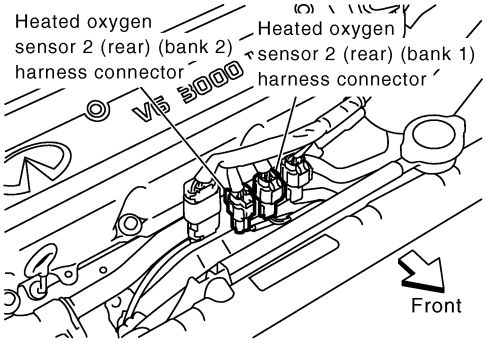
3. Check heated oxygen sensor 2 (rear) harness protector color.



HO2S2 (rear) (bank 1): White
HO2S2 (rear) (bank 2): Red

SEC021C

4. Disconnect corresponding heated oxygen sensor 2 (rear) harness connector.



SEF467WB

5. Disconnect ECM harness connector.

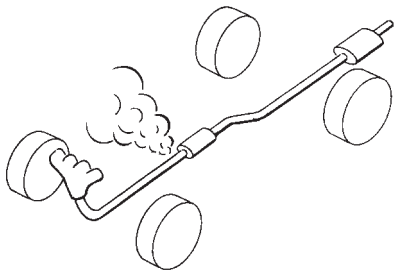
▶	GO TO 2.

Diagnostic Procedure

NFEC0176

1	CHECK EXHAUST AIR LEAK

1. Start engine and run it at idle.
2. Listen for an exhaust air leak before three way catalyst (Manifold).



SEF099P

OK or NG

OK	▶	GO TO 2.
NG	▶	Repair or replace.

2	CHECK FOR INTAKE AIR LEAK

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

OK or NG

OK	▶	GO TO 3.
NG	▶	Repair or replace.

3	CHECK HEATED OXYGEN SENSOR 1 (FRONT) CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch “OFF”.
2. Disconnect corresponding heated oxygen sensor 1 (front) harness connector.
3. Disconnect ECM harness connector.
4. Check harness continuity between ECM terminal and HO2S1 (front) terminal as follows. Refer to Wiring Diagram.

DTC	Terminals		Bank
	ECM	Sensor	
P0172	63	1	1
P0175	62	1	2

MTBL0611

Continuity should exist.

5. Check harness continuity between ECM terminal or HO2S1 (front) terminal and ground as follows. Refer to Wiring Diagram.

DTC	Terminals		Bank
	ECM or Sensor	Ground	
P0172	63 or 1	Ground	1
P0175	62 or 1	Ground	2

MTBL0612

Continuity should not exist.

6. Also check harness for short to power.

OK or NG

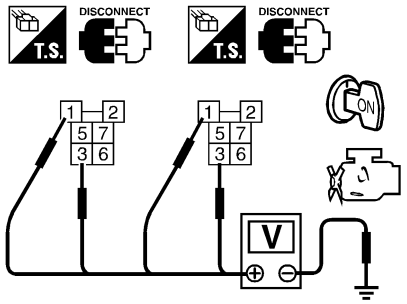
OK	▶	GO TO 4.
NG	▶	Repair open circuit or short to ground or short to power in harness or connectors.

PROCEDURE B

=NFEC0614S02

1	CHECK COOLING FAN POWER SUPPLY CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect cooling fan relays-2 and -3.
3. Turn ignition switch "ON".
4. Check voltage between cooling fan relays-2 and -3 terminals 1, 3 and ground with CONSULT-II or tester.



Voltage: Battery voltage

SEF593X

OK or NG

OK	▶	GO TO 3.
NG	▶	GO TO 2.

2	DETECT MALFUNCTIONING PART

Check the following.
- Joint connector-8
- Joint connector-9
- Harness for open or short between cooling fan relays-2 and -3 and joint connectors-8, -9
- Harness for open or short between cooling fan relays-2 and -3 and joint connectors-8, -9

	▶	Repair harness or connectors.

3	CHECK COOLING FAN GROUND CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch "OFF".
2. Disconnect cooling fan motor-1 harness connector and cooling fan motor-2 harness connector.
3. Check harness continuity between cooling fan relay-2 terminal 5 and cooling fan motor-1 terminal 1, cooling fan relay-2 terminal 7 and cooling fan motor-1 terminal 4, cooling fan relay-2 terminal 6 and body ground. Refer to Wiring Diagram.
   Continuity should exist.
4. Also check harness for short to ground and short to power.
5. Check harness continuity between cooling fan relay-3 terminal 5 and cooling fan motor-2 terminal 1, cooling fan relay-3 terminal 7 and cooling fan motor-2 terminal 4, cooling fan relay-3 terminal 6 and body ground. Refer to Wiring Diagram.
   Continuity should exist.
6. Also check harness for short to ground and short to power.

OK or NG

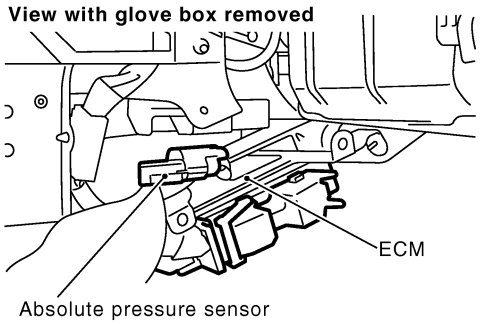
OK	▶	GO TO 4.
NG	▶	Repair open circuit or short to ground or short to power in harness or connectors.

11	DETECT MALFUNCTIONING PART
Check the following. ● Harness connectors F25, F171 ● Joint connector-18 ● Harness for open or short between harness connector F25 and engine ground	
▶	Repair open circuit or short to power in harness or connectors.

12	CHECK INTERMITTENT INCIDENT
Refer to "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT", EC-147.	
▶	**INSPECTION END**

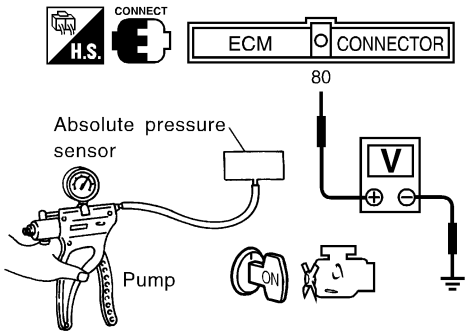
18	CHECK ABSOLUTE PRESSURE SENSOR

1. Remove absolute pressure sensor with its harness connector connected.



SEC004C

2. Remove hose from absolute pressure sensor.
3. Install a vacuum pump to absolute pressure sensor.
4. Turn ignition switch "ON" and check output voltage between ECM terminal 80 and engine ground under the following conditions.



Applied vacuum kPa (mmHg, inHg)	Voltage V
Not applied	3.2 - 4.8
–26.7 (–200, –7.87)	1.0 to 1.4V lower than above value

SEF300X

CAUTION:

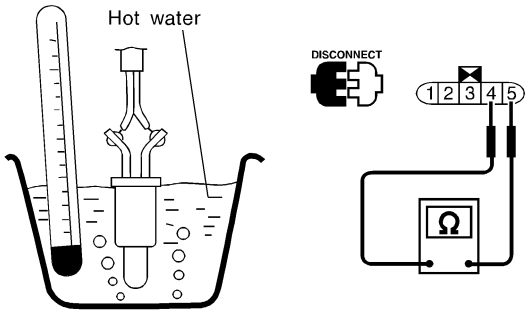
- **Always calibrate the vacuum pump gauge when using it.**
- **Do not apply below −93.3 kPa (–700 mmHg, –27.56 inHg) or over 101.3 kPa (760 mmHg, 29.92 inHg) of pressure.**

OK or NG

OK	▶	GO TO 19.
NG	▶	Replace absolute pressure sensor.

19	CHECK FUEL TANK TEMPERATURE SENSOR

1. Remove fuel level sensor unit.
2. Check resistance between fuel level sensor unit and fuel pump terminals 4 and 5 by heating with hot water or heat gun as shown in the figure.



Temperature °C (°F)	Resistance kΩ
20 (68)	2.3 - 2.7
50 (122)	0.79 - 0.90

SEF587X

OK or NG

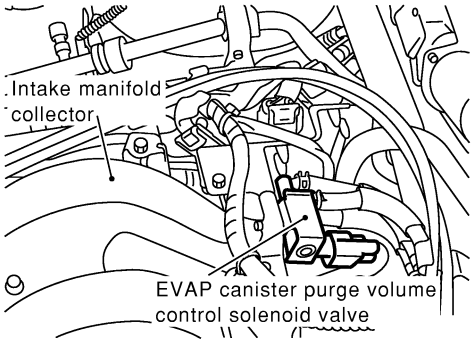
OK	▶	GO TO 20.
NG	▶	Replace fuel level sensor unit.

Diagnostic Procedure (Cont'd)

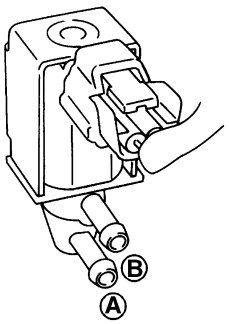
11	CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

With CONSULT-II

Check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.



SEF266X

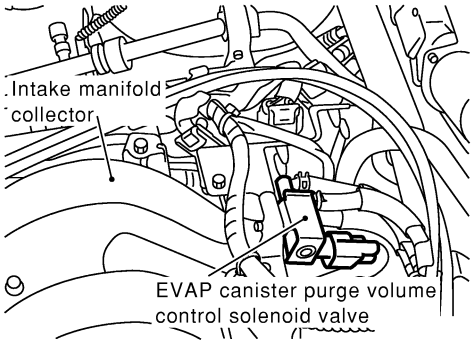


Condition PURG VOL CONT/V value	Air passage continuity between A and B
100.0%	Yes
0.0%	No

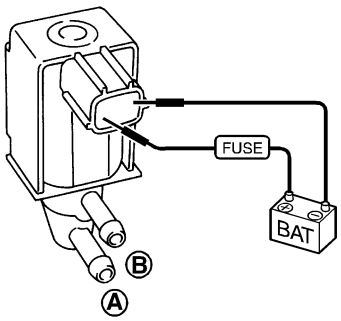
SEF334X

Without CONSULT-II

Check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.



SEF266X

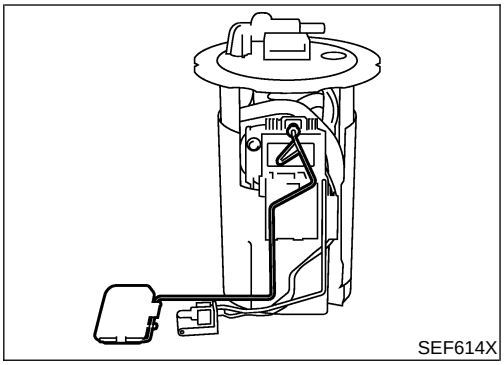


Condition	Air passage continuity between A and B
12V direct current supply between terminals 1 and 2	Yes
No supply	No

SEF335X

OK or NG

OK	▶	GO TO 12.
NG	▶	Replace EVAP canister purge volume control solenoid valve.


SEF614X

Component Description

=NFEC0622

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

On Board Diagnostic Logic

NFEC0623

Driving long distances naturally affect fuel gauge level.
This diagnosis detects the fuel gauge malfunction of the gauge not moving even after a long distance has been driven.
Malfunction is detected when the output signal of the fuel level sensor does not change within the specified range even though the vehicle has been driven a long distance.

Possible Cause

NFEC0624

- Harness or connectors
  (The level sensor circuit is open or shorted.)
- Fuel level sensor

Overall Function Check

NFEC0625

Use this procedure to check the overall function of the fuel level sensor function. During this check, a 1st trip DTC might not be confirmed.

WARNING:
When performing following procedure, be sure to observe the handling of the fuel. Refer to FE-5 “Fuel Tank”.

TESTING CONDITION:
Before starting overall function check, preparation of draining fuel and refilling fuel is required.

7

DATA MONITOR	
MONITOR	NO DTC
FUEL T/TMP SE	XXX °C
FUEL LEVEL SE	XXX V

SEF195Y

WITH CONSULT-II

NFEC0625S01

NOTE:
Start from step 11, if it is possible to confirm that the fuel cannot be drained by 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal) in advance.

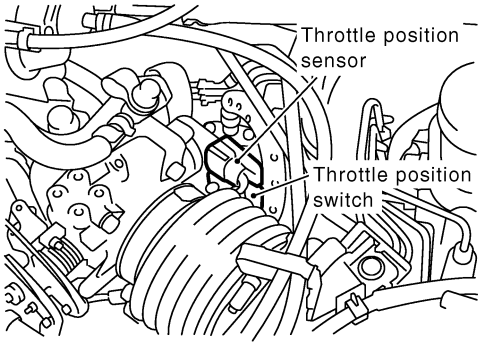
1) Prepare a fuel container and a spare hose.
2) Release fuel pressure from fuel line, refer to “Fuel Pressure Release”, EC-49.
3) Remove the fuel feed hose on the fuel level sensor unit.
4) Connect a spare fuel hose where the fuel feed hose was removed.

Diagnostic Procedure

NFEC0263

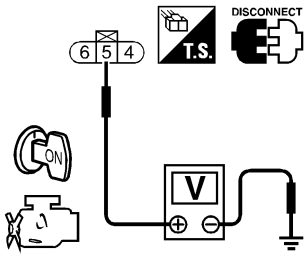
1	CHECK CLOSED THROTTLE POSITION SWITCH POWER SUPPLY CIRCUIT

1. Turn ignition switch “OFF”.
2. Disconnect throttle position switch harness connector.



SEC001C

3. Turn ignition switch “ON”.
4. Check voltage between throttle position switch terminal 5 and engine ground with CONSULT-II or tester.



Voltage: Battery voltage

SEF346X

OK or NG

OK	▶	GO TO 3.
NG	▶	GO TO 2.

2	DETECT MALFUNCTIONING PART

Check the following.
- Harness connectors E15, F18
- Harness for open or short between throttle position switch and ECM relay
- Harness for open or short between throttle position switch and ECM

	▶	Repair harness or connectors.

3	CHECK CLOSED THROTTLE POSITION SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch “OFF”.
2. Disconnect ECM harness connector.
3. Check harness continuity between ECM terminal 56 and throttle position switch terminal 4.
   Refer to Wiring Diagram.
   Continuity should exist.
4. Also check harness for short to ground and short to power.

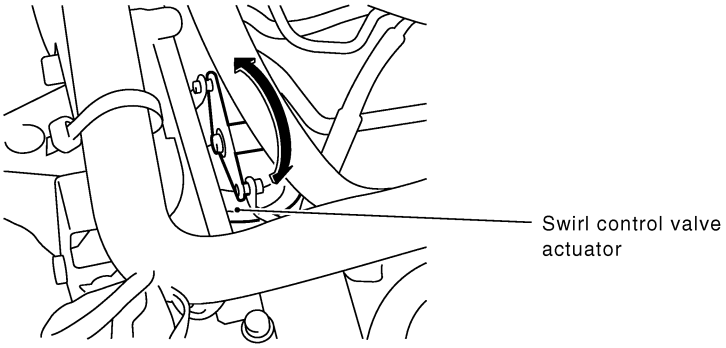
OK or NG

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

8	CHECK SWIRL CONTROL VALVE ACTUATOR

With CONSULT-II

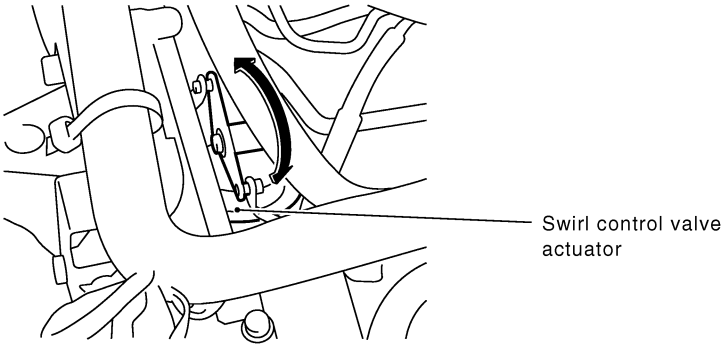
1. Reconnect vacuum hose between swirl control valve actuator and swirl control valve control solenoid valve.
2. Start engine and let it idle.
3. Select "SWIRL CONT SOL VALVE" in "ACTIVE TEST" mode.
4. Touch "ON" and "OFF" on CONSULT-II screen.
5. Make sure that swirl control valve actuator rod moves according to "SWIRL CONT S/V indication.



SEF621X

Without CONSULT-II

1. Reconnect vacuum hose between swirl control valve actuator and swirl control valve control solenoid valve.
2. Start engine and let it idle.
3. Apply 12V direct current between swirl control valve control solenoid valve terminals 1 and 2.
4. Make sure that swirl control valve actuator rod moves according to 12V direct current being applied.



SEF621X

OK or NG

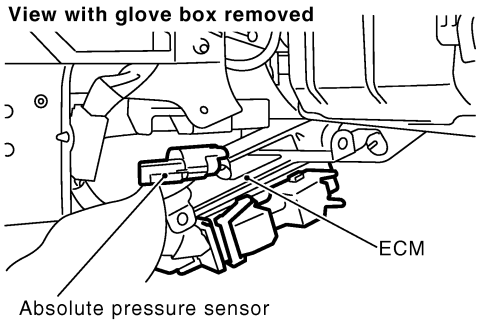
OK	▶	GO TO 9.
NG	▶	Replace swirl control valve and actuator.

Diagnostic Procedure

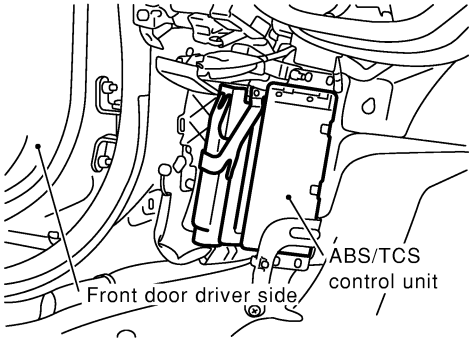
NFEC0553

1	CHECK INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch “OFF”.
2. Disconnect ECM harness connector and ABS/TCS control unit harness connector.



SEC004C



SEF280X

3. Check harness continuity between ECM terminal 114 and ABS/TCS control unit terminal 47.
   Continuity should exist.
4. Also check harness for short to ground and short to power.

OK or NG

OK	▶	GO TO 3.
NG	▶	GO TO 2.

2	DETECT MALFUNCTIONING PART

Check the following.
- Harness connectors E81, M15
- Harness connectors M47, F45
- Check harness for open or short between ECM and ABS/TCS control unit.

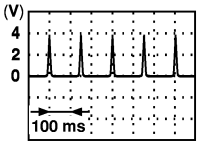
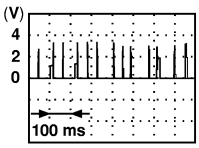
	▶	Repair open circuit or short to ground or short to power in harness or connectors.

3	CHECK INTERMITTENT INCIDENT

Perform “TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT”, EC-147.

	▶	**INSPECTION END**

ECM TERMINALS AND REFERENCE VALUE MEASURED BETWEEN EACH TERMINAL AND GROUND.
CAUTION:
DO NOT USE ECM GROUND TERMINALS WHEN MEASURING INPUT/OUTPUT VOLTAGE. DOING SO MAY RESULT IN DAMAGE TO THE ECM'S TRANSISTOR. USE A GROUND OTHER THAN ECM TERMINALS, SUCH AS THE GROUND.

TERMINAL	WIRE COLOR	ITEM	CONDITION	DATA (DC)
21	Y/R	IGNITION SIGNAL NO. 1	ENGINE RUNNING AT IDLE SPEED UNDER WARM UP CONDITION	0 - 0.2V★ 
22	G/R	IGNITION SIGNAL NO. 2		
23	L/R	IGNITION SIGNAL NO. 3		
30	GY	IGNITION SIGNAL NO. 4	ENGINE RUNNING AT 2,500 RPM	0 - 0.2V★ 
31	PU/W	IGNITION SIGNAL NO. 5		
32	GY/R	IGNITION SIGNAL NO. 6		

★: AVERAGE VOLTAGE FOR PULSE SIGNAL (ACTUAL PULSE SIGNAL CAN BE CONFIRMED BY OSCILLOSCOPE.) SEF798YA

Diagnostic Procedure

NFEC0291

1	CHECK ENGINE START
Turn ignition switch "OFF", and restart engine. **Is engine running?**	
Yes or No	
Yes (With CONSULT-II) ▶	GO TO 2.
Yes (Without CONSULT-II) ▶	GO TO 12.
No ▶	GO TO 3.

2	SEARCH FOR MALFUNCTIONING CIRCUIT

With CONSULT-II
1. Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-II.
2. Search for circuit which does not produce a momentary engine speed drop.

ACTIVE TEST	
POWER BALANCE	
MONITOR	
ENG SPEED	XXX rpm
MAS AIF SE-B1	XXX V
IACV-AAC/V	XXX step

SEF070Y

▶	GO TO 12.

On Board Diagnosis Logic

NFEC0322

Malfunction is detected when the canister purge flow is detected during the specified driving conditions, even when EVAP canister purge volume control solenoid valve is completely closed.

Possible Cause

NFEC0588

- EVAP control system pressure sensor
- EVAP canister purge volume control solenoid valve (The valve is stuck open.)
- EVAP canister vent control valve
- EVAP canister
- Hoses
  (Hoses are connected incorrectly or clogged.)

DTC Confirmation Procedure

NFEC0323

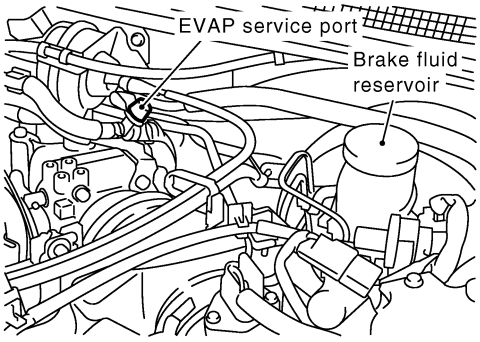
NOTE:
If “DTC Confirmation Procedure” has been previously conducted, always turn ignition switch “OFF” and wait at least 10 seconds before conducting the next test.

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

3	CHECK PURGE FLOW

Without CONSULT-II

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.



SEC022C

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

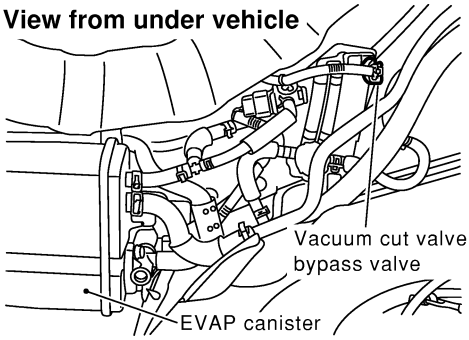
1. Turn ignition switch "OFF".
2. Check EVAP purge line for improper connection or disconnection.
   Refer to "EVAPORATIVE EMISSION LINE DRAWING", EC-36.

OK or NG

OK (With CONSULT-II)	▶	GO TO 5.
OK (Without CONSULT-II)	▶	GO TO 6.
NG	▶	Repair it.

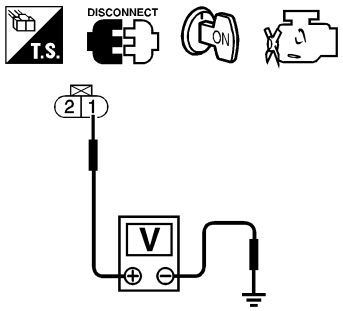
3	CHECK VACUUM CUT VALVE BYPASS VALUE POWER SUPPLY CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect vacuum cut valve bypass valve harness connector.



SEF278X

3. Turn ignition switch "ON".
4. Check voltage between vacuum cut valve bypass valve terminal 1 and ground with CONSULT-II or tester.



Voltage: Battery voltage

SEF356X

OK or NG

OK	▶	GO TO 5.
NG	▶	GO TO 4.

4	DETECT MALFUNCTIONING PART

Check the following.
- Harness connectors M5, B1
- Fuse block (J/B) connector M19
- 15A fuse
- Harness for open or short between vacuum cut valve bypass valve and fuse

	▶	Repair harness or connectors.

5	CHECK VACUUM CUT VALVE BYPASS VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch "OFF".
2. Disconnect ECM harness connector.
3. Check harness continuity between ECM terminal 39 and vacuum cut valve bypass valve terminal 2. Refer to Wiring Diagram.
   Continuity should exist.
4. Also check harness for short to ground and short to power.

OK or NG

OK	▶	GO TO 7.
NG	▶	GO TO 6.

Description

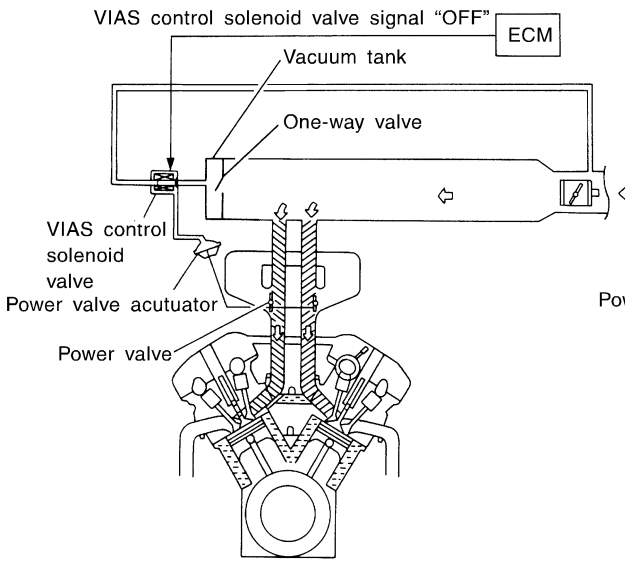
NFEC0596

SYSTEM DESCRIPTION

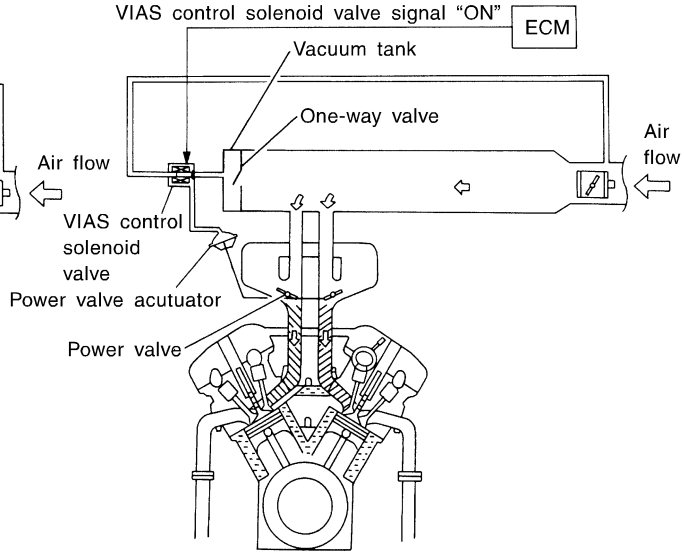
NFEC0596S01

Sensor	Input Signal to ECM	ECM function	Actuator
Mass air flow sensor	Amount of intake air	VIAS control	VIAS control solenoid valve
Throttle position sensor	Throttle position		
Closed throttle position	Throttle valve idle position		
Ignition switch	Start signal		
Crankshaft position sensor (POS)	Engine speed (POS signal)		
Crankshaft position sensor (REF)	Engine speed (REF signal)		
Engine coolant temperature sensor	Engine coolant temperature		

When VIAS control signal is “OFF”.



When VIAS control signal is “ON”.



SEF599X

When the engine is running at low or medium speed, the power valve is fully closed. Under this condition, the effective suction port length is equivalent to the total length of the intake manifold collector’s suction port including the intake valve. This long suction port provides increased air intake which results in improved suction efficiency and higher torque generation.

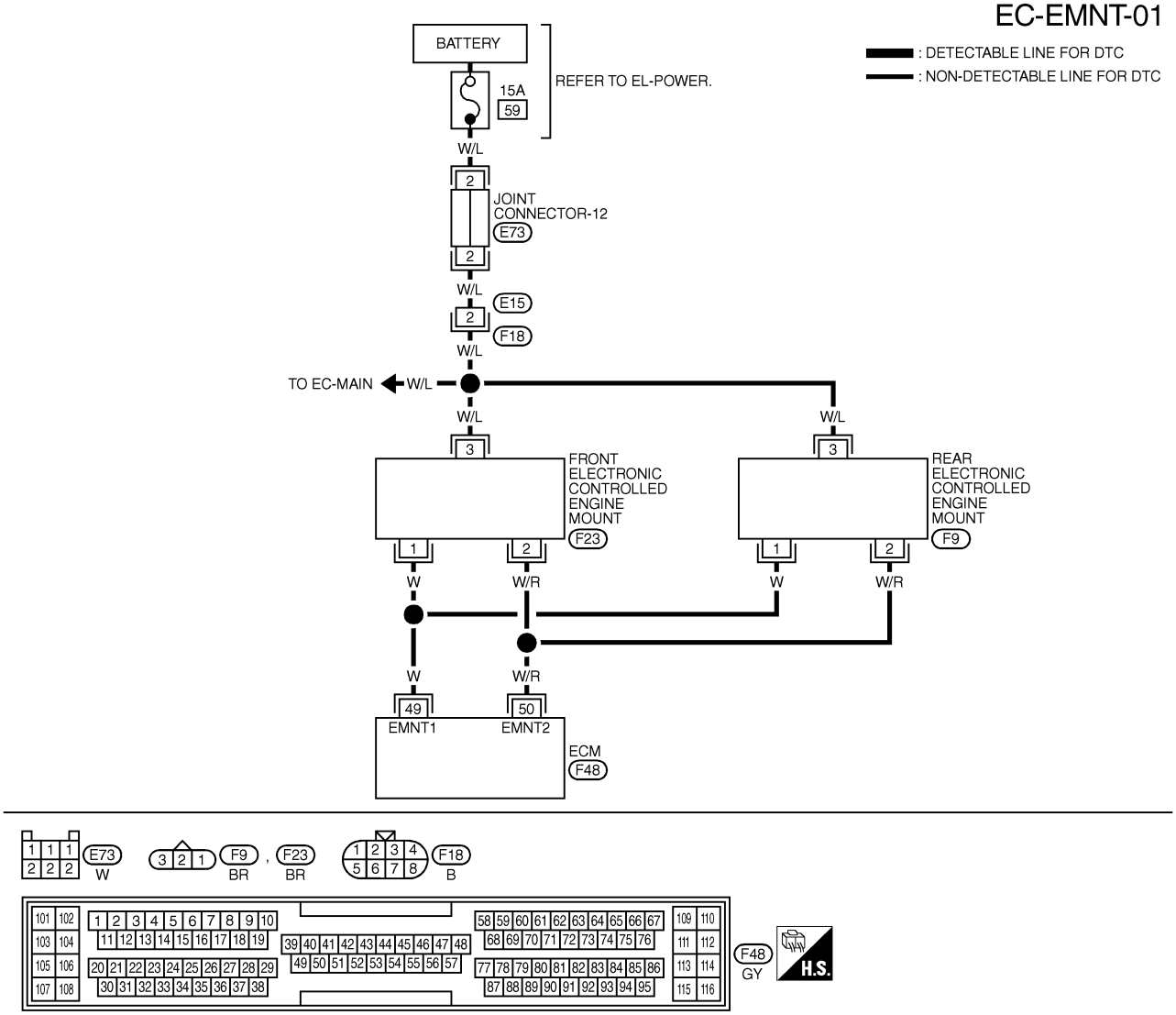
The surge tank and one-way valve are provided. When engine is running at high speed, the ECM sends the signal to the VIAS control solenoid valve. This signal introduces the intake manifold vacuum into the power valve actuator and therefore opens the power valve to two suction passages together in the collector.

Under this condition, the effective port length is equivalent to the length of the suction port provided independently for each cylinder. This shortened port length results in enhanced engine output with reduced suction resistance under high speeds.

Wiring Diagram

NFEC0602

EC-EMNT-01



MEC224D

ECM TERMINALS AND REFERENCE VALUE MEASURED BETWEEN EACH TERMINAL AND GROUND.
CAUTION:
DO NOT USE ECM GROUND TERMINALS WHEN MEASURING INPUT/OUTPUT VOLTAGE. DOING SO MAY RESULT IN DAMAGE TO THE ECM'S TRANSISTOR. USE A GROUND OTHER THAN ECM TERMINALS, SUCH AS THE GROUND.

TERMINAL	WIRE COLOR	ITEM	CONDITION	DATA (DC)
49	W	ELECTRONIC CONTROLLED ENGINE MOUNT-1	ENGINE RUNNING AT IDLE SPEED	0 - 1.0V
			ENGINE RUNNING AT 2,000 RPM	BATTERY VOLTAGE
50	W/R	ELECTRONIC CONTROLLED ENGINE MOUNT-2	ENGINE RUNNING AT IDLE SPEED	BATTERY VOLTAGE
			ENGINE RUNNING AT 2,000 RPM	0 - 1.0V

SEF640XB

Description

NFEL0003

HARNESS CONNECTOR (TAB-LOCKING TYPE)

NFEL0003S01

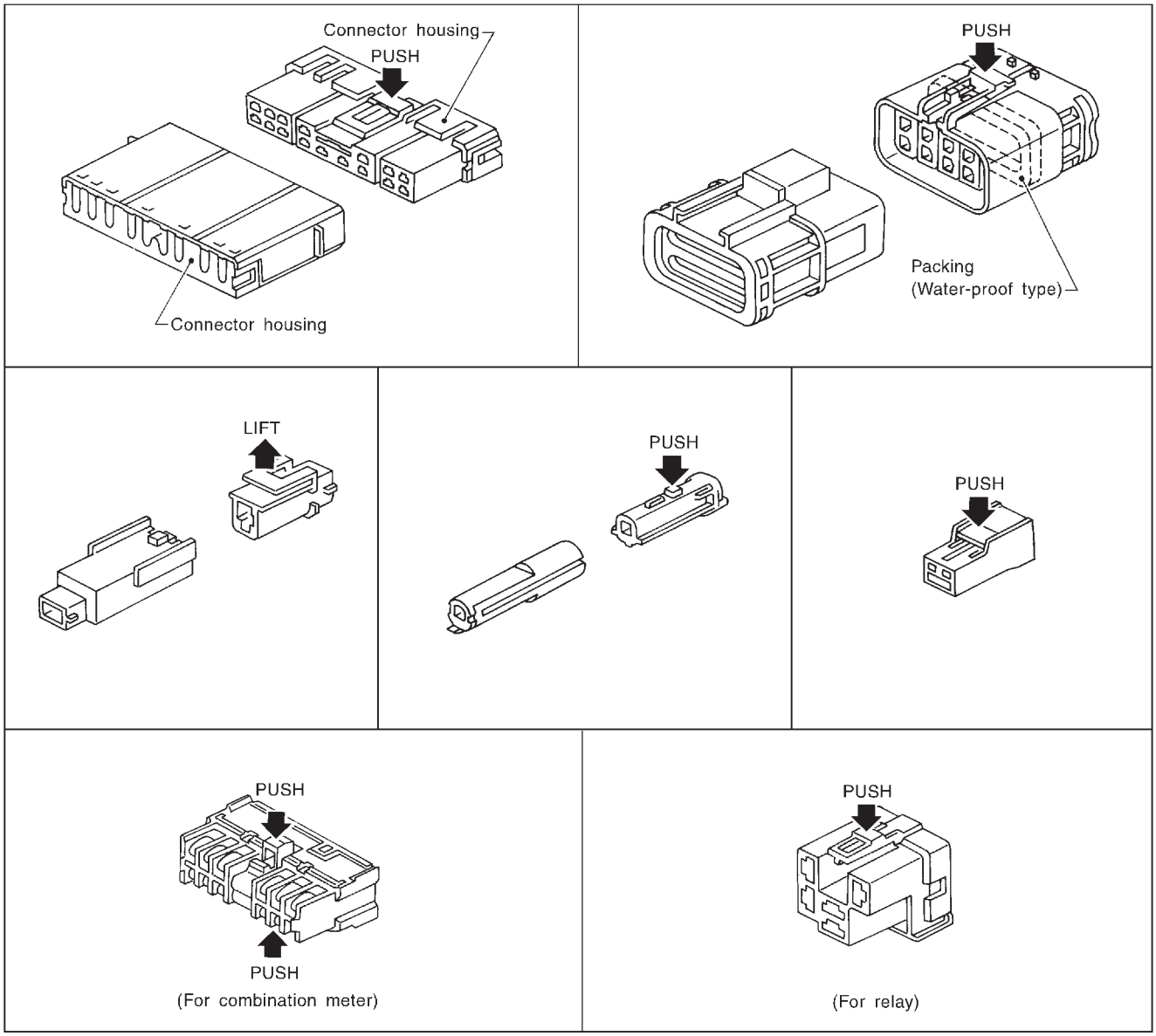
- The tab-locking type connectors help prevent accidental looseness or disconnection.
- The tab-locking type connectors are disconnected by pushing or lifting the locking tab(s). Refer to the illustration below.

Refer to the next page for description of the slide-locking type connector.

CAUTION:

Do not pull the harness or wires when disconnecting the connector.

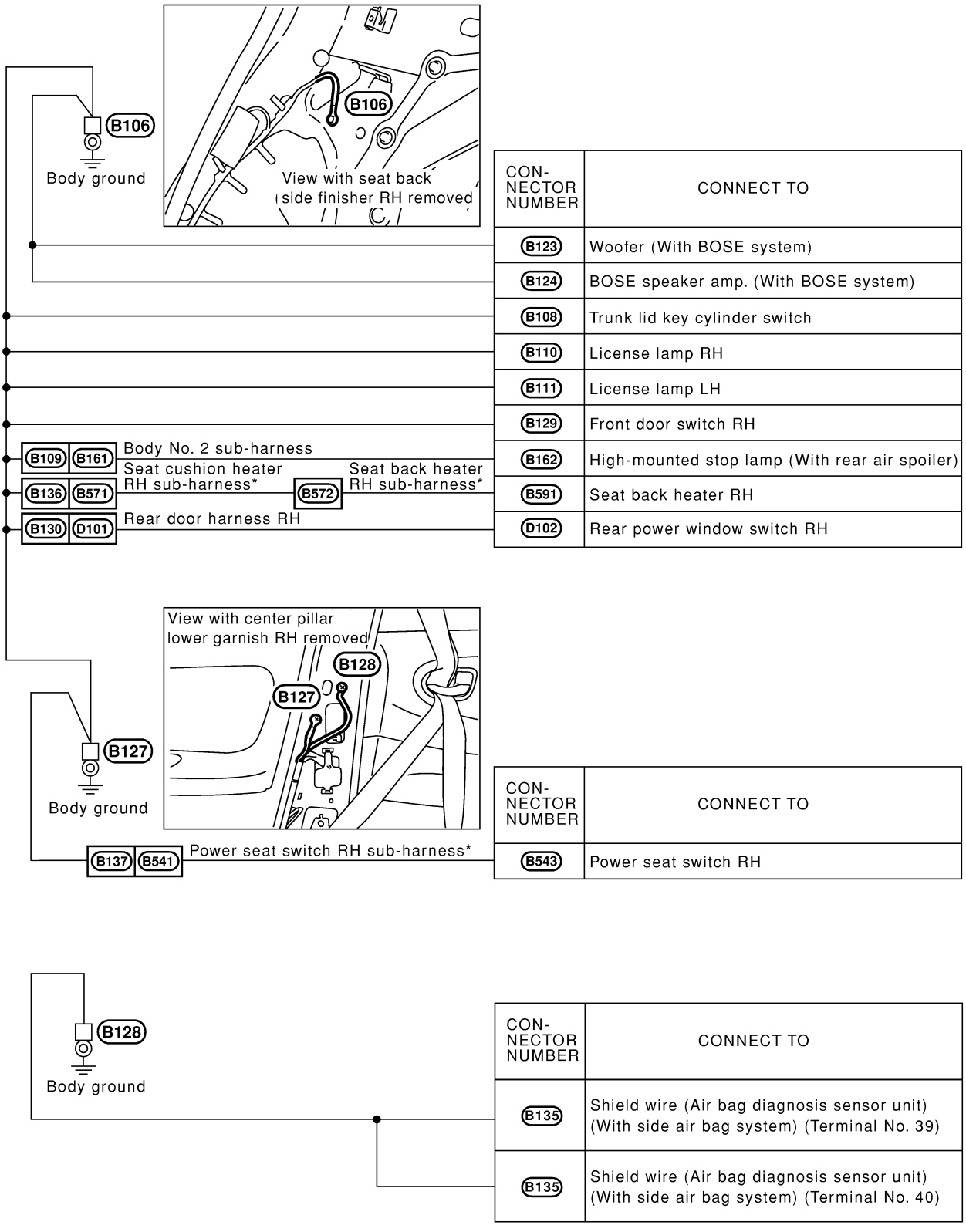
[Example]



SEL769DA

BODY NO. 2 HARNESS

=NFEL0008S05



CONNECTOR NUMBER	CONNECT TO
B123	Woofer (With BOSE system)
B124	BOSE speaker amp. (With BOSE system)
B108	Trunk lid key cylinder switch
B110	License lamp RH
B111	License lamp LH
B129	Front door switch RH
B162	High-mounted stop lamp (With rear air spoiler)
B591	Seat back heater RH
D102	Rear power window switch RH

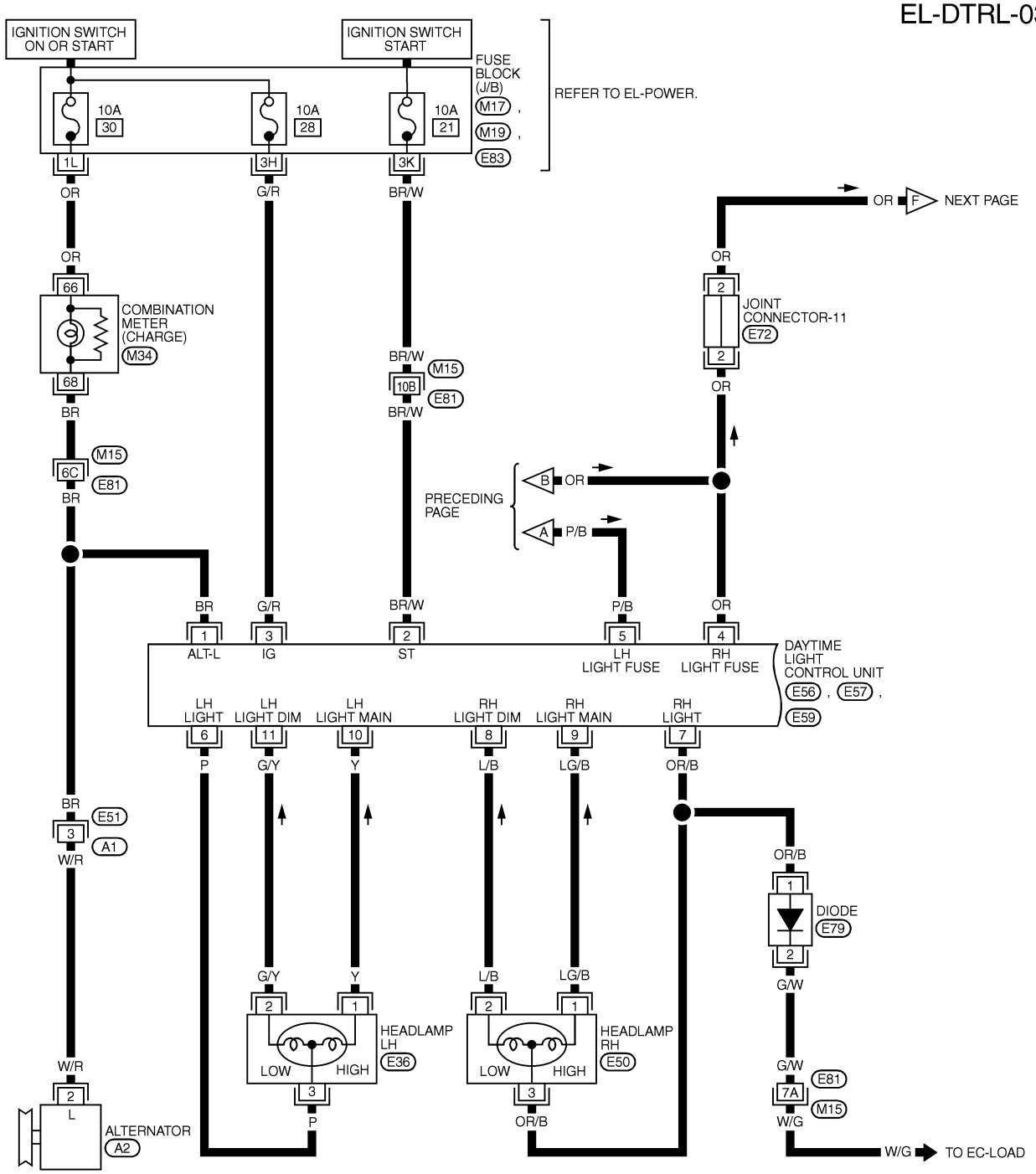
CONNECTOR NUMBER	CONNECT TO
B543	Power seat switch RH

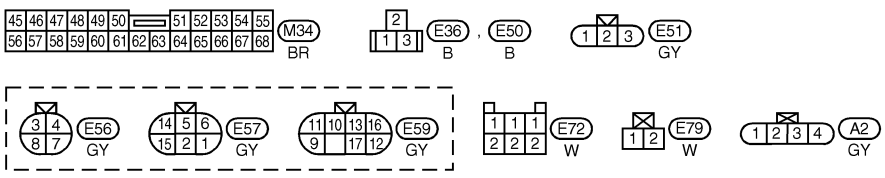
CONNECTOR NUMBER	CONNECT TO
B135	Shield wire (Air bag diagnosis sensor unit) (With side air bag system) (Terminal No. 39)
B135	Shield wire (Air bag diagnosis sensor unit) (With side air bag system) (Terminal No. 40)

*: This sub-harness is not shown in "Harness layout", EL-section.

MEL098N

EL-DTRL-03





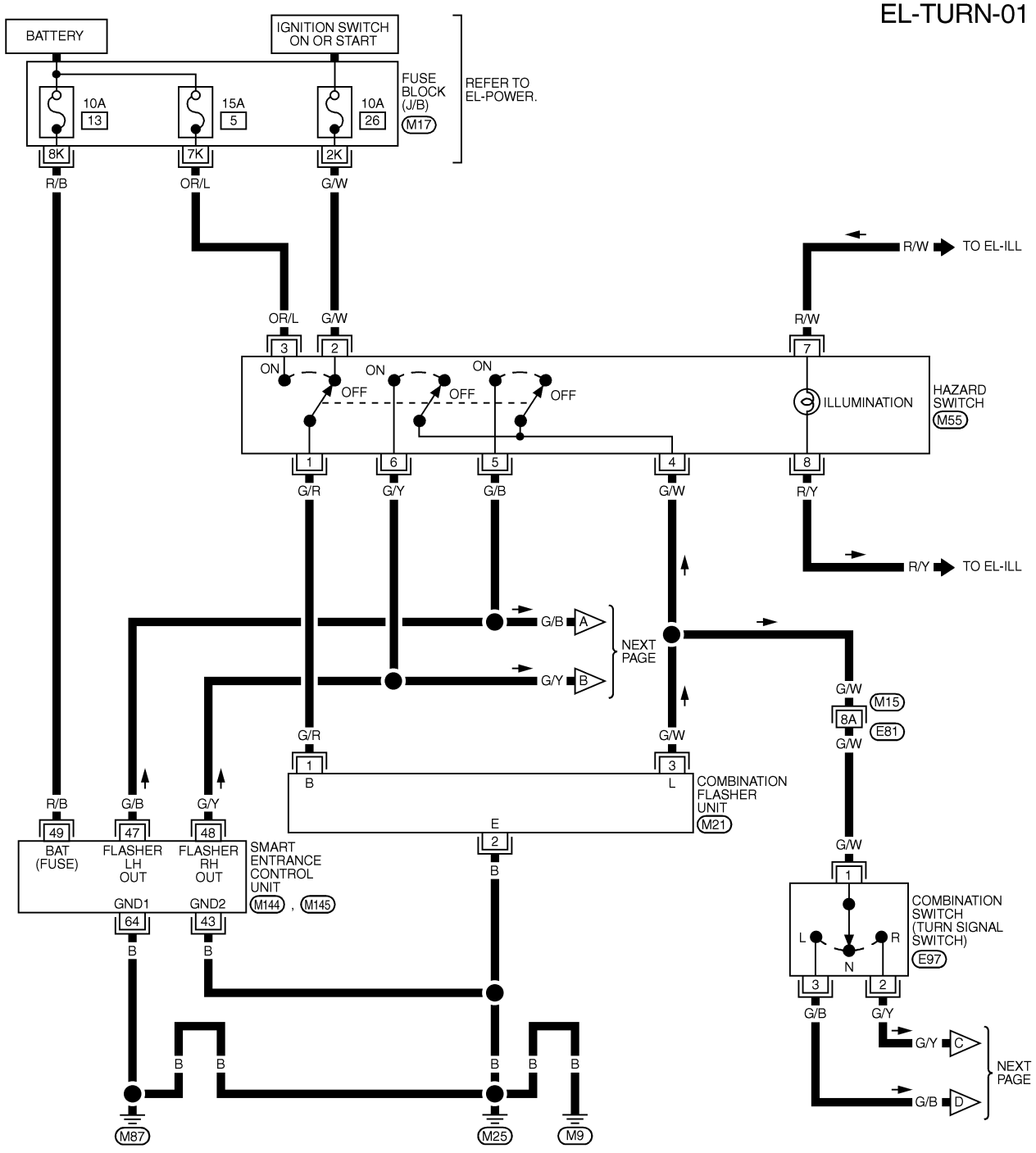
REFER TO THE FOLLOWING.
M15 -SUPER MULTIPLE JUNCTION (SMJ)
M17 , M19 , E83
-FUSE BLOCK- JUNCTION BOX (J/B)

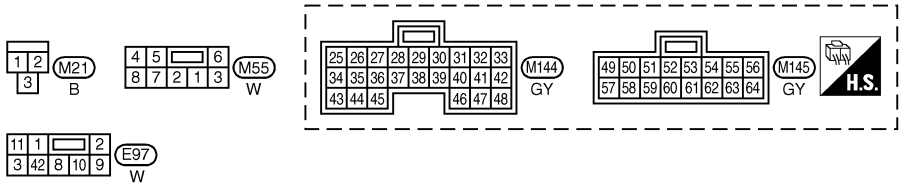
MEL019N

Wiring Diagram — TURN —

NFEL0032

EL-TURN-01





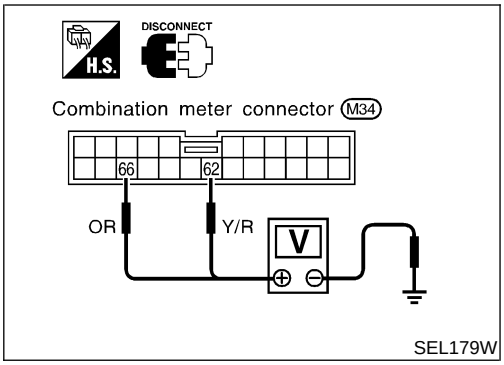
REFER TO THE FOLLOWING.
M15 -SUPER MULTIPLE JUNCTION (SMJ)
M17 -FUSE BLOCK-JUNCTION BOX (J/B)

MEL029N

Active Test

NFEL0259S0202

Test Item	Description
BATTERY SAVER	This test enables to check interior lamp, front step lamps, spot lamp, vanity mirror illuminations and trunk room lamp operations. When touch "ON" on CONSULT-II screen. ● Interior lamp turns on when the switch is in ON. (Smart entrance control unit supplies power to interior lamp.) ● Front step lamps turn on when any doors are open. (Smart entrance control unit supplies power to front step lamps.) ● Spot lamp, vanity mirror illuminations, trunk room lamp turn on when the switch is in ON. (Smart entrance control unit supplies power to Spot lamp, vanity mirror illuminations, trunk room lamp.)



POWER SUPPLY AND GROUND CIRCUIT CHECK

=NFEL0046S07

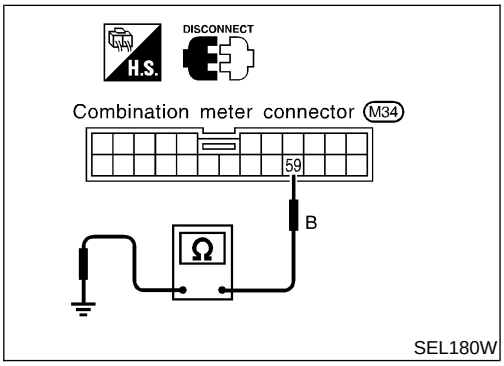
Power Supply Circuit Check

NFEL0046S0701

Terminals		Ignition switch position		
(+)	(−)	OFF	ACC	ON
62	Ground	Battery voltage	Battery voltage	Battery voltage
66	Ground	0V	0V	Battery voltage

If NG, check the following.

- 10A fuse [No. 12, located in fuse block (J/B)]
- 10A fuse [No. 30, located in fuse block (J/B)]
- Harness for open or short between fuse and combination meter



Ground Circuit Check

NFEL0046S0702

Terminals	Continuity
59 - Ground	Yes

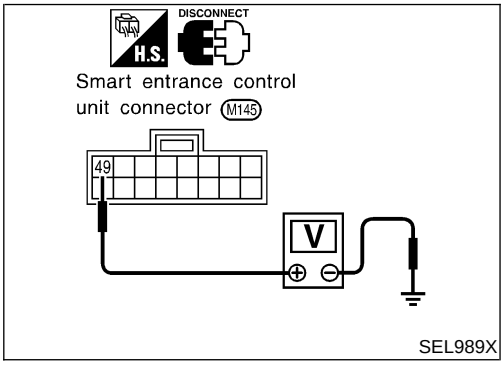
Trouble Diagnoses

NFEL0055

SYMPTOM CHART

NFEL0055S01

REFERENCE PAGE (EL-)	143	145	146	147	148
SYMPTOM	POWER SUPPLY AND GROUND CIRCUIT CHECK	DIAGNOSTIC PROCEDURE 1 (LIGHTING SWITCH INPUT SIGNAL CHECK)	DIAGNOSTIC PROCEDURE 2 (KEY SWITCH INSERT SIGNAL CHECK)	DIAGNOSTIC PROCEDURE 3 (SEAT BELT BUCKLE SWITCH CHECK)	DIAGNOSTIC PROCEDURE 4
Light warning chime does not activate.	X	X			X
Ignition key warning chime does not activate.	X		X		X
Seat belt warning chime does not activate.	X			X	X
All warning chimes do not activate.	X				X



POWER SUPPLY AND GROUND CIRCUIT CHECK

NFEL0055S02

Power Supply Circuit Check

NFEL0055S0201

Terminals	Voltage
46 - Ground	Battery voltage

3	CHECK REAR WINDOW DEFOGGER SWITCH INPUT SIGNAL

With CONSULT-II

Select "REAR DEF SW" in "DATA MONITOR" mode with CONSULT-II.

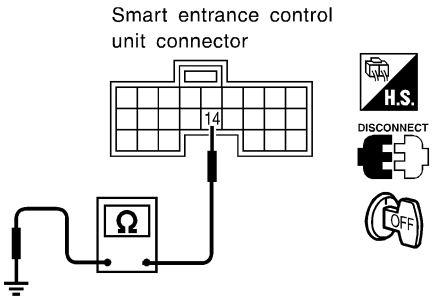
DATA MONITOR	
MONITOR	
REAR DEF SW	ON

When rear window defogger switch is pushed:
REAR DEF SW should be ON.

SEL352W

Without CONSULT-II

Check continuity between smart entrance control unit harness connector M143 terminal 14 (G/R for with door mirror defogger or G/W for without door mirror defogger) and ground.



Continuity:
Rear window defogger switch is pushed.
Continuity should exist.
Rear window defogger switch is released.
Continuity should not exist.

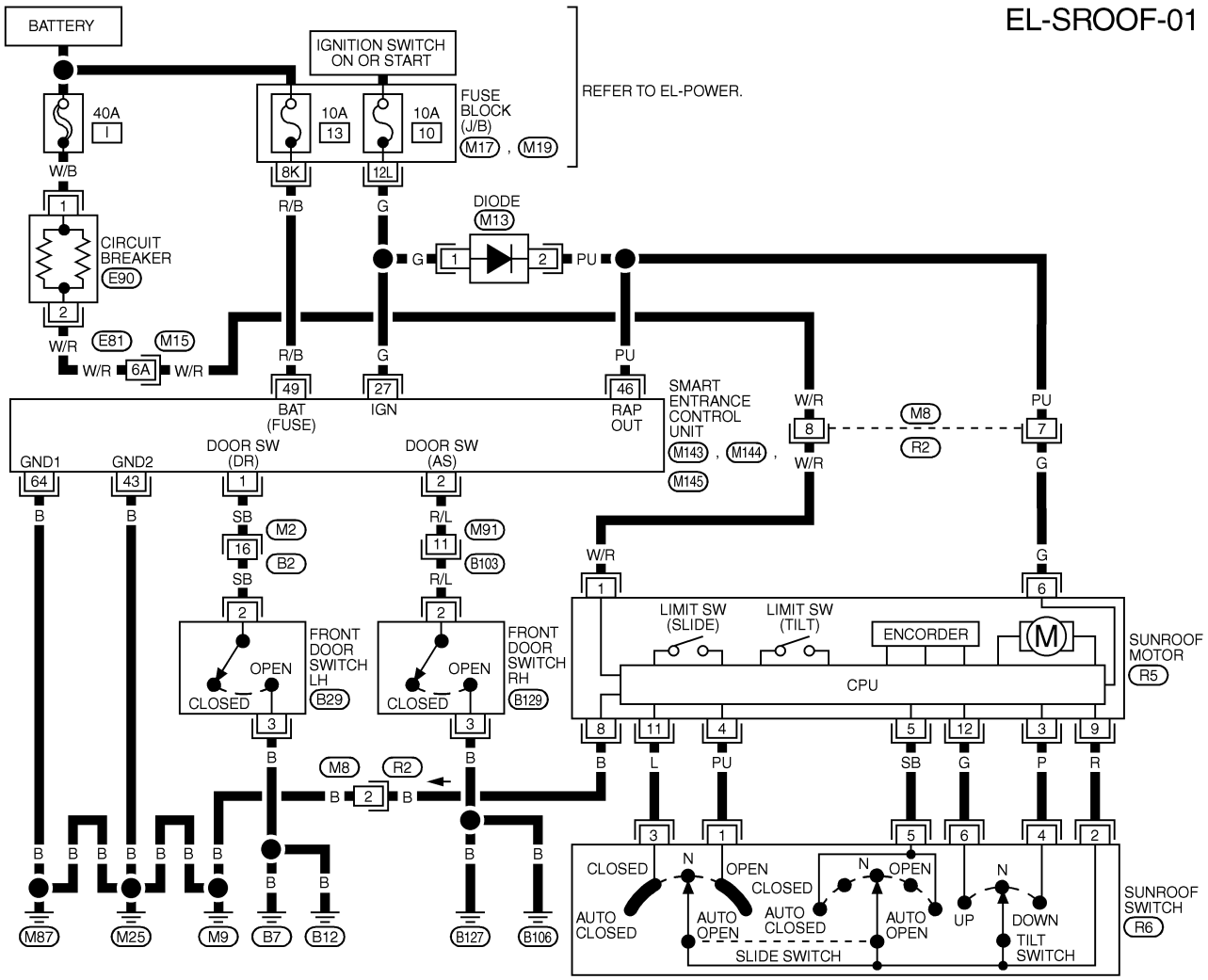
SEL999X

OK or NG

OK	▶	GO TO 4.
NG	▶	**Check the following.** ● Rear window defogger switch (Refer to EL-168.) ● Harness for open or short between smart entrance control unit and rear window defogger switch ● Rear window defogger switch ground circuit

Wiring Diagram — SROOF —

NFEL0089



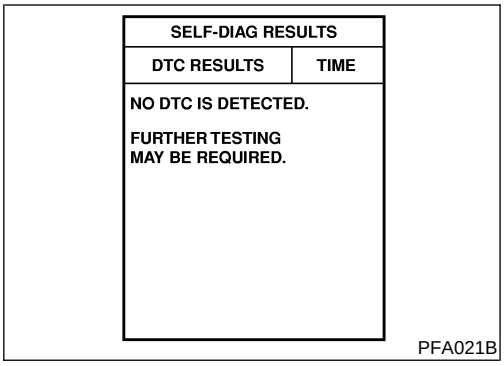
REFER TO THE FOLLOWING.
M15 - SUPER MULTIPLE JUNCTION (SMJ)
M17 , M19 - FUSE BLOCK - JUNCTION BOX (J/B)

MEL056N

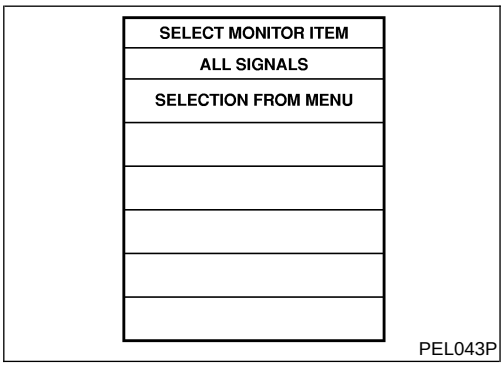
SMART ENTRANCE CONTROL UNIT TERMINALS AND REFERENCE VALUE BETWEEN EACH TERMINAL AND GROUND

TERMINAL	WIRE COLOR	ITEM	CONDITION	DATA (DC)
1	SB	DRIVER DOOR SWITCH	OFF (CLOSED) → ON (OPEN)	5V → 0V
2	R/L	PASSENGER DOOR SWITCH	OFF (CLOSED) → ON (OPEN)	5V → 0V
27	G	IGNITION SWITCH (ON)	IGNITION SWITCH IS IN “ON” POSITION	12V
43	B	GROUND	–	–
46	PU	SUNROOF MOTOR	RETAIND POWER OPERATION IS OPERATED (ON → OFF)	12V → 0V
49	R/B	POWER SOURCE (FUSE)	–	12V
64	B	GROUND	–	–

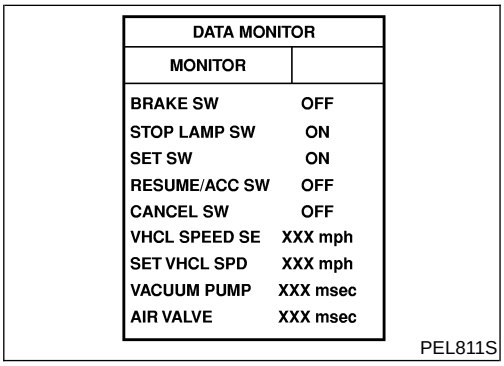
SEL986XA



- Self-diagnostic results are shown on display.
  Refer to "CONSULT-II self-diagnostic Results" table (EL-212).



8. Touch DATA MONITOR.



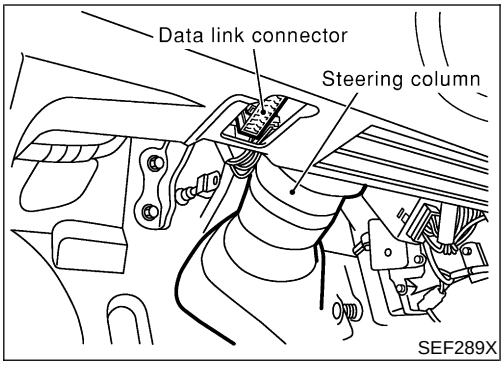
- Touch START.
- Data monitor results are shown on display.
  Refer to "CONSULT-II Data Monitor" table (EL-213).

For further information, read the CONSULT-II Operation Manual.

CONSULT-II Self-diagnostic Results

NFEL0230

Diagnostic item	Description	Repair/Check order
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	• Even if no malfunction is indicated, further testing may be required as far as the customer complains.	—
POWER SUPPLY-VALVE	• The power supply circuit for the ASCD pump is open. (An abnormally high voltage is entered.)	ASCD PUMP CIRCUIT CHECK (EL-222)
VACUUM PUMP	• The vacuum motor circuit is open or shorted. (An abnormally high or low voltage is entered.)	ASCD PUMP CIRCUIT CHECK (EL-222)
AIR VALVE	• The air valve circuit is open or shorted. (An abnormally high or low voltage is entered.)	ASCD PUMP CIRCUIT CHECK (EL-222)
RELEASE VALVE	• The release valve circuit is open or shorted. (An abnormally high or low voltage is entered.)	ASCD PUMP CIRCUIT CHECK (EL-222)
VHCL SP·S/FAILSAFE	• The vehicle speed sensor is malfunctioning.	VEHICLE SPEED SENSOR CHECK (EL-221)
CONTROL UNIT	• The ASCD control unit is malfunctioning.	Replace ASCD control unit.
BRAKE SW/STOP/L SW	• The brake switch or stop lamp switch circuit is malfunctioning.	ASCD BRAKE/STOP LAMP SWITCH CHECK (EL-217)



SEF289X

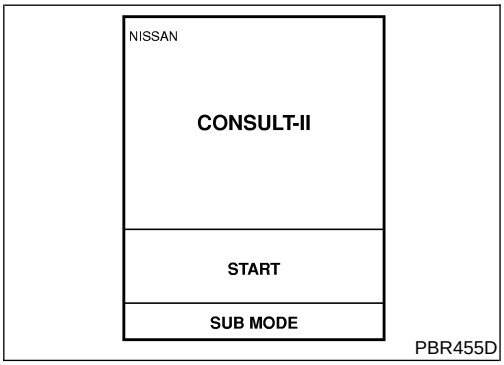
CONSULT-II Inspection Procedure

NFEL0235

“RETAINED PWR”

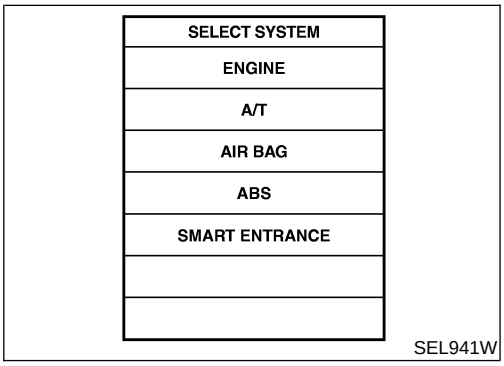
NFEL0235S01

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



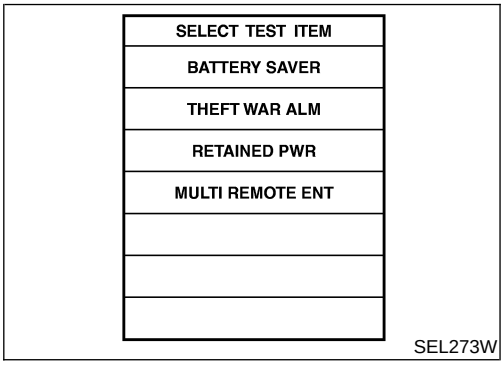
PBR455D

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



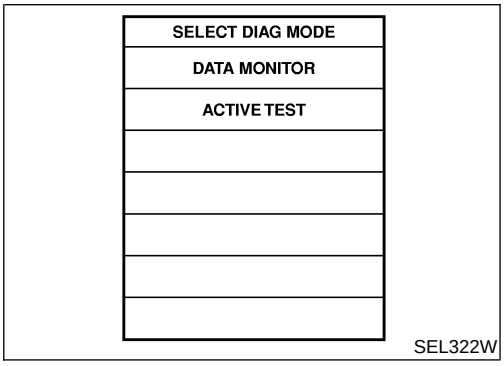
SEL941W

5. Touch “SMART ENTRANCE”.



SEL273W

6. Touch “RETAINED PWR”.

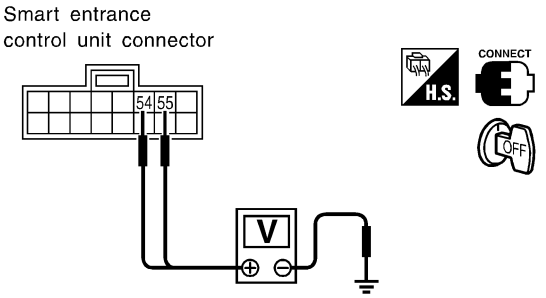


SEL322W

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

2	CHECK DOOR LOCK ACTUATOR CIRCUIT

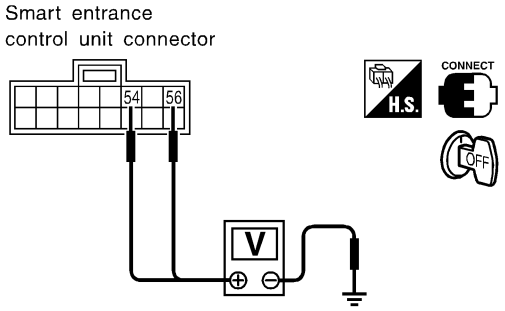
- Door lock actuator front LH
  Check voltage between smart entrance control unit harness connector M145 terminal 54 (GY), 55 (W/B) and ground.



Door lock/unlock switch condition	Terminal No. (+)	Terminal No. (–)	Voltage V
Lock	54	Ground	Approx. 12
Unlock	55	Ground	

SEL014Y

- Door lock actuator front RH and rear
  Chcek voltage between smart entrance control unit harness connector M145 terminal 54 (GY), 56 (G/Y) and ground.



Door lock/unlock switch condition	Terminal No. (+)	Terminal No. (–)	Voltage V
Lock	54	Ground	Approx. 12
Unlock	56	Ground	

SEL015Y

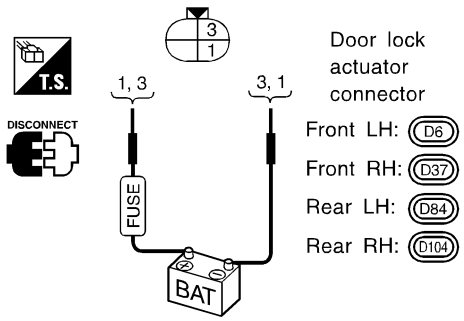
Refer to wiring diagram in EL-244.

OK or NG

OK	▶	GO TO 3.
NG	▶	Replace smart entrance control unit. (Before replacing the control unit, perform "DOOR LOCK/UNLOCK SWITCH CHECK".)

3	CHECK DOOR LOCK ACTUATOR

1. Disconnect door lock actuator harness connector.
2. Apply 12V direct current to door lock actuator and check operation.



Door lock actuator operation:
Terminals between (+): 1 and (–): 3
Unlocked → Locked
Terminals between (+): 3 and (–): 1
Locked → Unlocked

SEL222W

OK or NG

OK	▶	Check harness for open or short between smart entrance control unit connector and door lock actuator.
NG	▶	Replace door lock actuator.

INTERIOR LAMP OPERATION CHECK

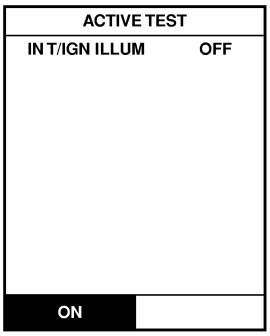
=NFEL0195S10

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

2	CHECK INTERIOR LAMP OPERATION	

With CONSULT-II

1. Select "ACTIVE TEST" in "MULTI REMOTE ENT" with CONSULT-II.
2. Select "INT/IGN ILLUM" and touch "ON".

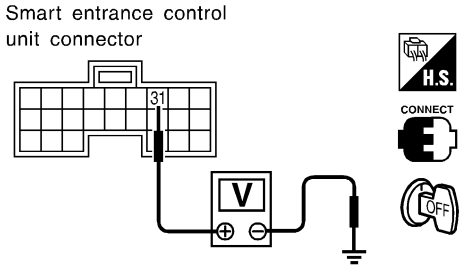


Interior lamp should illuminate.

SEL349W

Without CONSULT-II

Push unlock button of remote controller with all doors closed and driver's door locked, and check voltage between smart entrance control unit harness connector M144 terminal 31 (R/Y) and ground.



Voltage [V]:
Unlock button is pushed.
0 (For approx. 30 seconds.)
Unlock button is not pushed.
Battery voltage

SEL029Y

Refer to wiring diagram in EL-263.

OK or NG

OK	▶	System is OK.
NG	▶	Check harness open or short between smart entrance control unit and interior lamp.

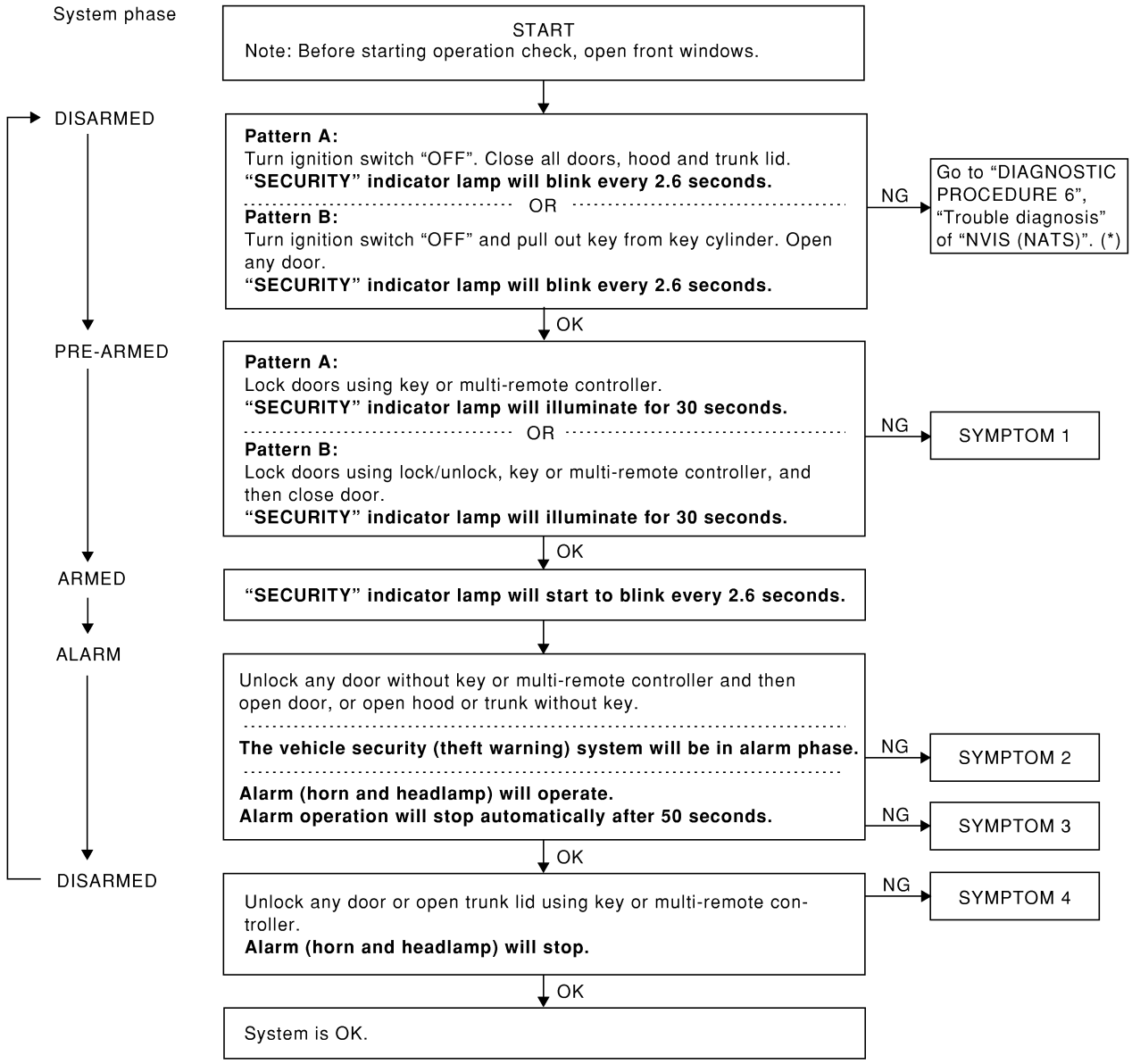
Trouble Diagnoses

=NFEL0123

PRELIMINARY CHECK

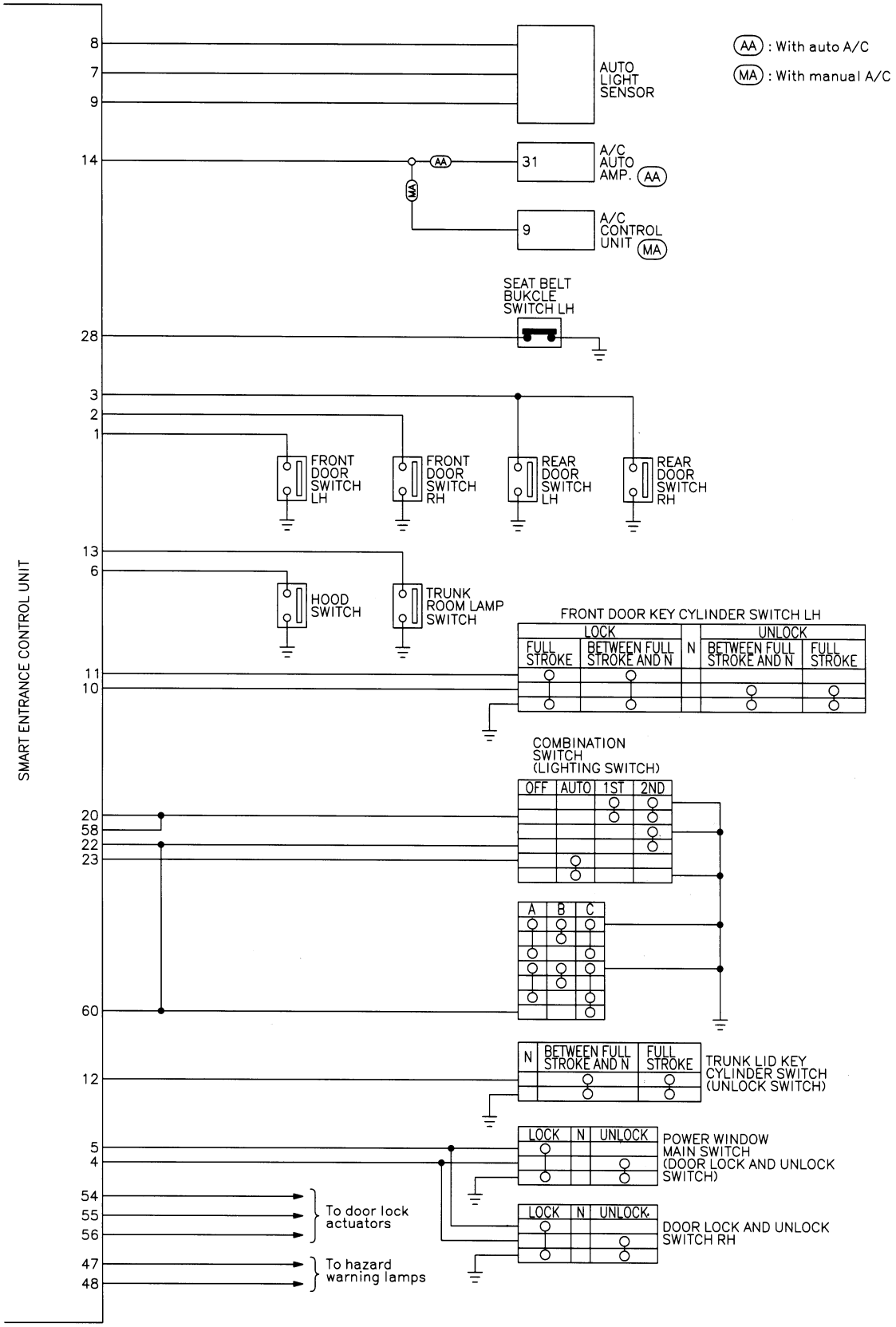
NFEL0123S01

The system operation is canceled by turning ignition switch to “ACC” at any step between START and ARMED in the following flow chart.



SEL254WA

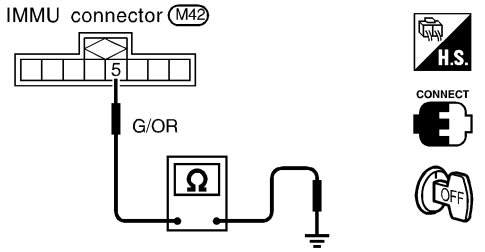
For details of “Pattern A” and “Pattern B” about vehicle security (theft warning) system setting, refer to EL-289.
*: Refer to EL-349.
After performing preliminary check, go to symptom chart on next page.


SMART ENTRANCE CONTROL UNIT
AA : With auto A/C
MA : With manual A/C
8
7
9
AUTO LIGHT SENSOR
14
31
A/C AUTO AMP. AA
9
A/C CONTROL UNIT MA
SEAT BELT BUKCLE SWITCH LH
28
3
2
1
FRONT DOOR SWITCH LH
FRONT DOOR SWITCH RH
REAR DOOR SWITCH LH
REAR DOOR SWITCH RH
13
6
HOOD SWITCH
TRUNK ROOM LAMP SWITCH
FRONT DOOR KEY CYLINDER SWITCH LH
LOCK
FULL STROKE
BETWEEN FULL STROKE AND N
N
UNLOCK
BETWEEN FULL STROKE AND N
FULL STROKE
11
10
COMBINATION SWITCH (LIGHTING SWITCH)
OFF
AUTO
1ST
2ND
20
58
22
23
A
B
C
60
N
BETWEEN FULL STROKE AND N
FULL STROKE
TRUNK LID KEY CYLINDER SWITCH (UNLOCK SWITCH)
12
LOCK
N
UNLOCK
POWER WINDOW MAIN SWITCH (DOOR LOCK AND UNLOCK SWITCH)
5
4
54
55
56
To door lock actuators
LOCK
N
UNLOCK
DOOR LOCK AND UNLOCK SWITCH RH
47
48
To hazard warning lamps

MEL083N

5	CHECK IMMU FUNCTION

1. Connect IMMU connector.
2. Disconnect security indicator lamp connector.
3. Check continuity between IMMU terminal 5 and ground.



Cotinuity should exist intermittently.

SEL300W

OK or NG

OK	▶	Check harness for open or short between security indicator lamp and IMMU.
NG	▶	IMMU is malfunctioning. Replace IMMU. Perform initialization with CONSULT-II. For initialization, refer to "CONSULT-II operation manual IVIS/NVIS".

Body No. 2 harness

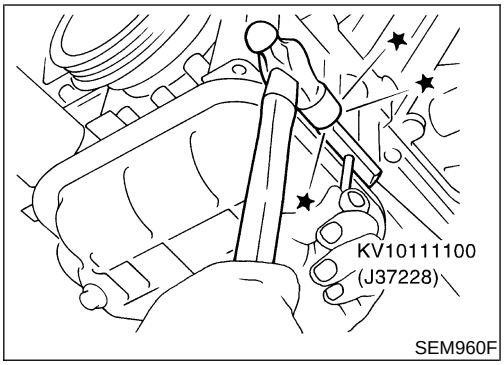
G3	B103	W/12	: To M91
G3	B104	W/10	: To M92
E3	B106	–	: Body ground
E3	B107	W/1	: Rear door switch RH
C4	B108	W/2	: Trunk lid key cylinder switch
B2	B109	BR/2	: To B161
B4	B110	W/2	: License lamp RH
A3	B111	W/2	: License lamp LH
A3	B119	W/16	: To B24
C2	B123	BR/6	: Woofer (With BOSE system)
C3	B124	GY/26	: BOSE speaker amp. (With BOSE system)
E2	B127	–	: Body ground
F2	B128	–	: Body ground (With side air bag system)
E3	B129	W/3	: Front door switch RH
E3	B130	W/10	: To D101
E3	B131	Y/2	: Satellite sensor RH (With side air bag system)
E3	B132	W/4	: Seat belt pre-tensioner RH
F5	B135	Y/12	: Side air bag diagnosis sensor unit RH (With side air bag system)
G5	B136	W/3	: Heated seat RH (Via sub-harness)
G5	B137	W/2	: Power seat RH (Via sub-harness)
G5	B138	Y/2	: Side air bag module RH (With side air bag system) (Via sub-harness)
A3	B144	W/4	: To B45

Body No. 2 sub-harness

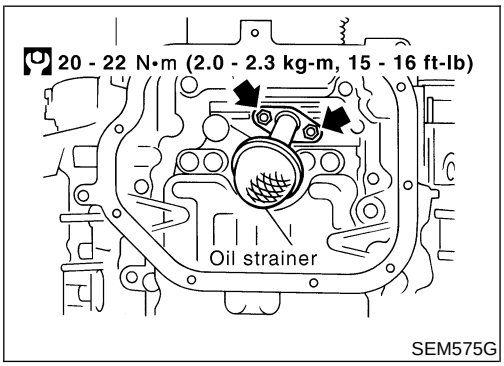
B4	B161	BR/2	: To B109
B3	B162	B/2	: High-mounted stop lamp (With rear air spoiler)

MEL112N

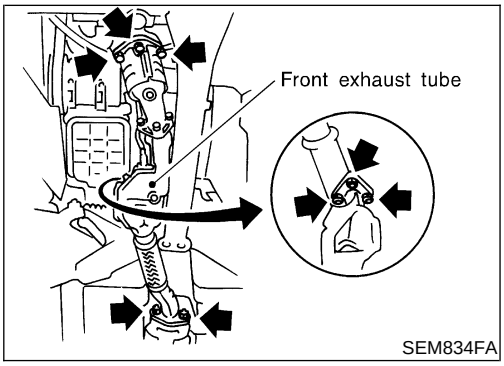
Removal (Cont'd)



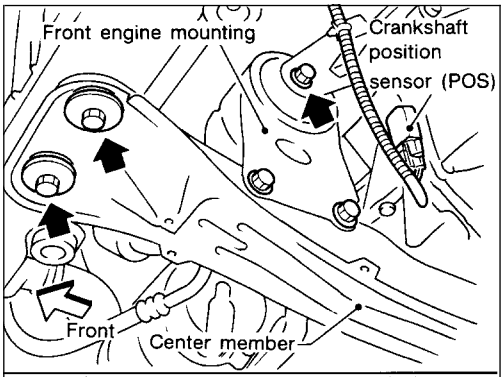
b. Slide Tool by tapping on the side of the Tool with a hammer.
c. Remove steel oil pan.

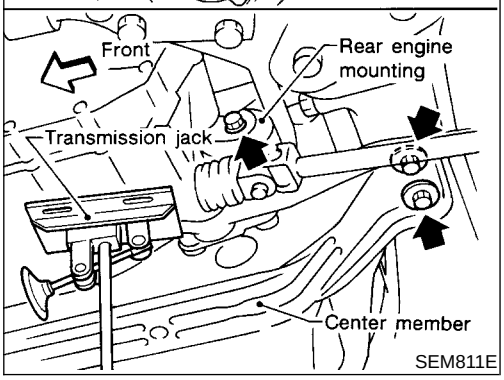


5. Remove oil strainer.

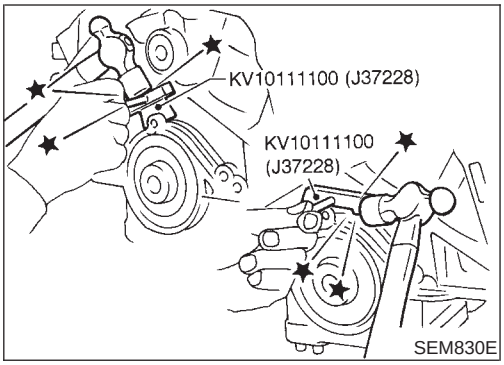


6. Remove front exhaust tube and its support.
Refer to FE-10, "Removal and Installation".





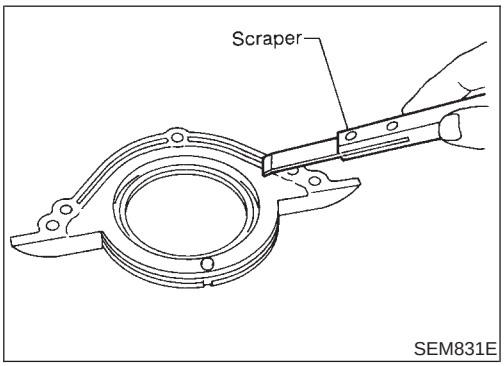
7. Set a suitable transmission jack under transaxle and hoist engine with engine slinger.
8. Remove crankshaft position sensors (POS and REF) from oil pan.
9. Remove front and rear engine mounting nuts and bolts.
10. Remove center member.



REAR OIL SEAL

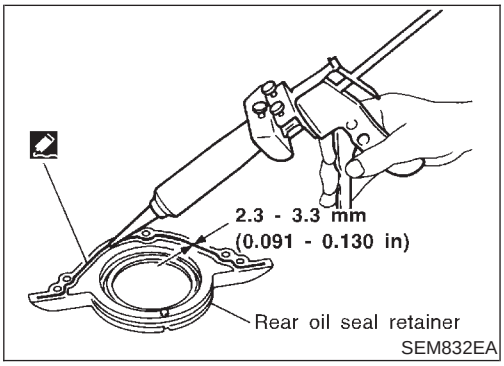
NFEM0015S04

1. Remove transaxle. Refer to MT-10 or AT-284.
2. Remove flywheel or drive plate.
3. Remove oil pan. Refer to EM-13.
4. Remove rear oil seal retainer.



5. Remove old liquid gasket using scraper.

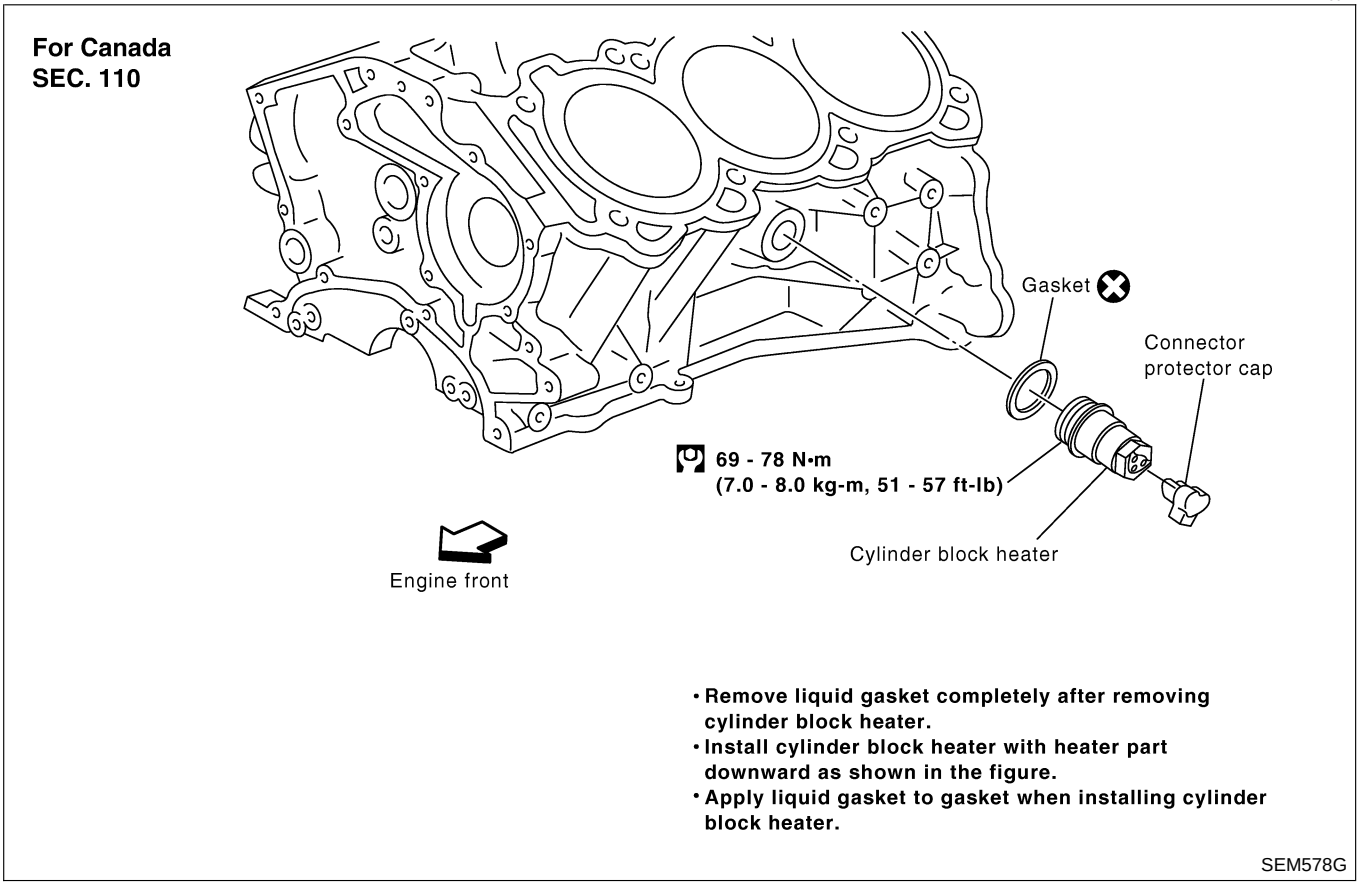
- **Remove old liquid gasket from the bolt hole and thread.**

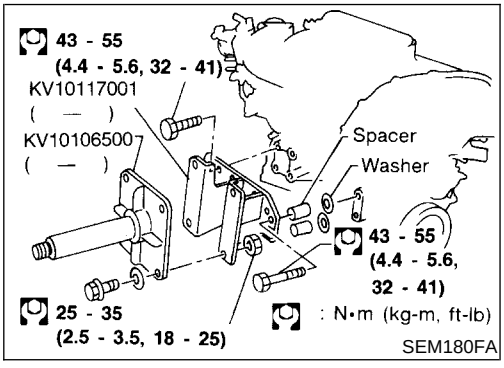


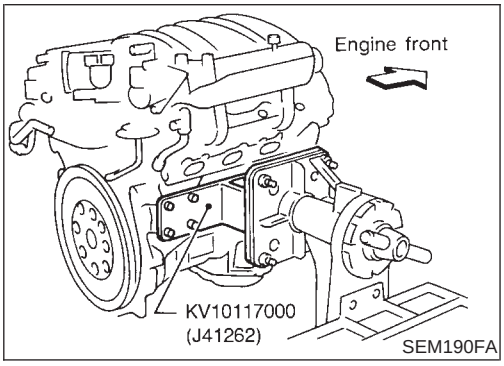
6. Apply liquid gasket to rear oil seal retainer.

Cylinder Block Heater

NFEM0042







Removal and Installation

NFEM0025

CAUTION:

- **When installing bearings, pistons, or other sliding parts, lubricate contacting surfaces with new engine oil.**
- **Place removed parts such as bearings and bearing caps in their proper order and direction.**
- **When installing connecting rod nuts, and main bearing cap bolts, apply new engine oil to threads and seating surfaces.**
- **Do not allow any magnetic materials to contact the signal plate teeth of flywheel or drive plate.**

Disassembly

NFEM0026

PISTON AND CRANKSHAFT

NFEM0026S01

1. Remove engine. Refer to “Removal and Installation”, EM-56.
2. Place engine on a work stand.
3. Drain coolant and oil.
4. Remove oil pan. Refer to “Removal”, EM-13.
5. Remove timing chain. Refer to “Removal”, EM-22.
6. Remove cylinder head. Refer to “Removal”, EM-39.

Available Connecting Rod Bearing

NFEM0040

CONNECTING ROD BEARING

NFEM0040S01

Grade number	Thickness "T" mm (in)	Identification color (mark)
0	1.500 - 1.503 (0.0591 - 0.0592)	Black
1	1.503 - 1.506 (0.0592 - 0.0593)	Brown
2	1.506 - 1.509 (0.0593 - 0.0594)	Green

UNDERSIZE

NFEM0040S02

Unit: mm (in)

	Thickness	Crank pin journal diameter "Dp"
0.25 (0.0098)	1.626 - 1.634 (0.0640 - 0.0643)	Grind so that bearing clearance is the specified value.

Miscellaneous Components

NFEM0041

Unit: mm (in)

Flywheel runout [TIR]*	Less than 0.15 (0.0059)
Drive plate runout [TIR]*	Less than 0.15 (0.0059)

*: Total indicator reading

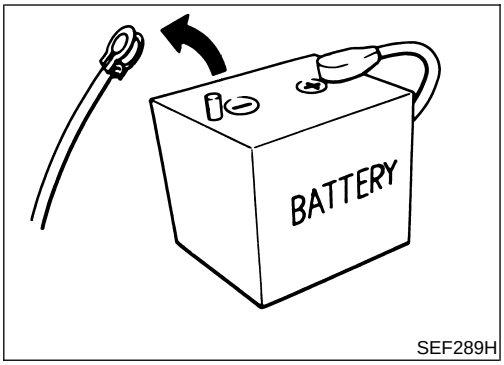
BEARING CLEARANCE

NFEM0041S01

Unit: mm (in)

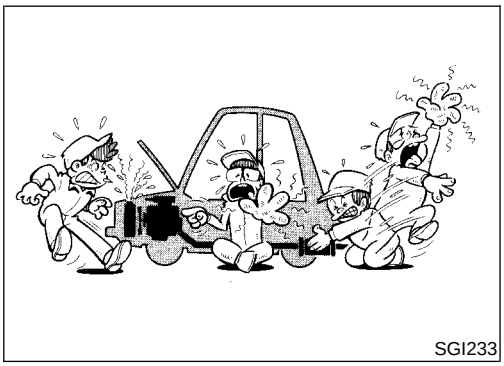
Main bearing clearance	Standard	0.035 - 0.045 (0.0014 - 0.0018)*
	Limit	0.065 (0.0026)
Connecting rod bearing clearance	Standard	0.034 - 0.059 (0.0013 - 0.0023)*
	Limit	0.070 (0.0028)

*: Actual clearance

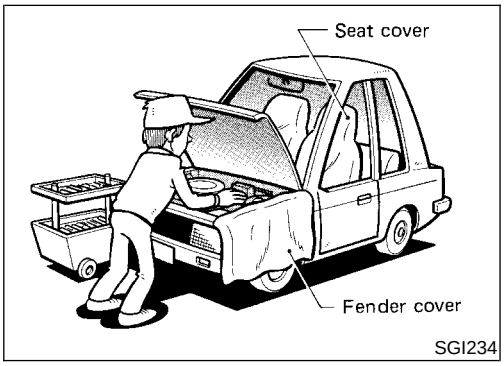


SEF289H

- Before starting repairs which do not require battery power:
  Turn off ignition switch.
  Disconnect the negative battery terminal.


SGI233

- To prevent serious burns:
  Avoid contact with hot metal parts.
  Do not remove the radiator cap when the engine is hot.



SGI234

- Before servicing the vehicle:
  Protect fenders, upholstery and carpeting with appropriate covers.
  Take caution that keys, buckles or buttons do not scratch paint.

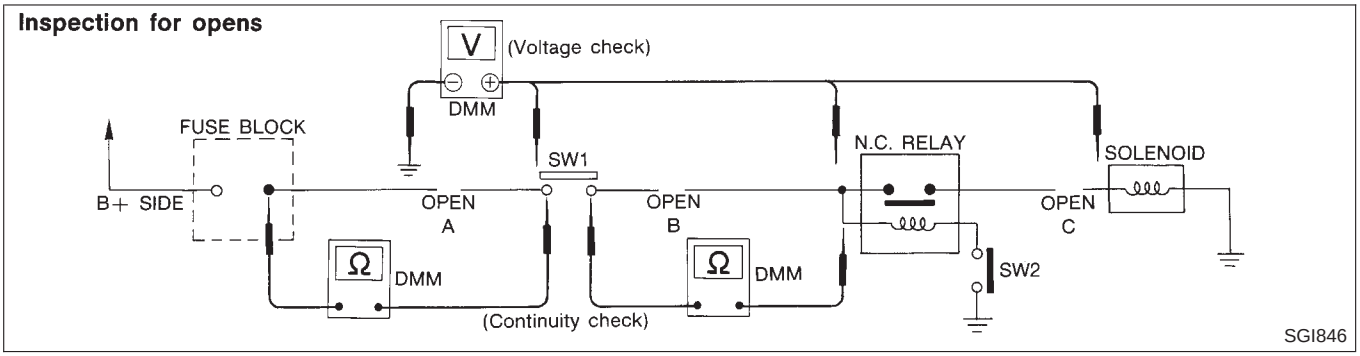
- Clean all disassembled parts in the designated liquid or solvent prior to inspection or assembly.
- Replace oil seals, gaskets, packings, O-rings, locking washers, cotter pins, self-locking nuts, etc. with new ones.
- Replace inner and outer races of tapered roller bearings and needle bearings as a set.
- Arrange the disassembled parts in accordance with their assembled locations and sequence.
- Do not touch the terminals of electrical components which use microcomputers (such as ECMs).
  Static electricity may damage internal electronic components.
- After disconnecting vacuum or air hoses, attach a tag to indicate the proper connection.
- Use only the fluids and lubricants specified in this manual.
- Use approved bonding agent, sealants or their equivalents when required.
- Use tools and recommended special tools where specified for safe and efficient service repairs.
- When repairing the fuel, oil, water, vacuum or exhaust systems, check all affected lines for leaks.
- Dispose of drained oil or the solvent used for cleaning parts in an appropriate manner.

NOTE:
Refer to "HOW TO CHECK TERMINAL" in GI-21 to probe or check terminal.

TESTING FOR "OPENS" IN THE CIRCUIT

NFGI0005S0302

Before you begin to diagnose and test the system, you should rough sketch a schematic of the system. This will help you to logically walk through the diagnosis process. Drawing the sketch will also reinforce your working knowledge of the system.



Continuity Check Method

The continuity check is used to find an open in the circuit. The Digital Multimeter (DMM) set on the resistance function will indicate an open circuit as over limit (no beep tone or no ohms symbol). Make sure to always start with the DMM at the highest resistance level.

To help in understanding the diagnosis of open circuits please refer to the schematic above.

1) Disconnect the battery negative cable.
2) Start at one end of the circuit and work your way to the other end. (At the fuse block in this example)
3) Connect one probe of the DMM to the fuse block terminal on the load side.
4) Connect the other probe to the fuse block (power) side of SW1. Little or no resistance will indicate that portion of the circuit has good continuity. If there were an open in the circuit, the DMM would indicate an over limit or infinite resistance condition. (point A)
5) Connect the probes between SW1 and the relay. Little or no resistance will indicate that portion of the circuit has good continuity. If there were an open in the circuit, the DMM would indicate an over limit or infinite resistance condition. (point B)
6) Connect the probes between the relay and the solenoid. Little or no resistance will indicate that portion of the circuit has good continuity. If there were an open in the circuit, the DMM would indicate an over limit or infinite resistance condition. (point C)

Any circuit can be diagnosed using the approach in the above example.

Voltage Check Method

To help in understanding the diagnosis of open circuits please refer to the previous schematic.

In any powered circuit, an open can be found by methodically checking the system for the presence of voltage. This is done by switching the DMM to the voltage function.

1) Connect one probe of the DMM to a known good ground.
2) Begin probing at one end of the circuit and work your way to the other end.
3) With SW1 open, probe at SW1 to check for voltage.

NEW TERM	NEW ACRONYM / ABBREVIATION	OLD TERM
Erasable programmable read only memory	EPROM	***
Evaporative emission canister	EVAP canister	Canister
Evaporative emission system	EVAP system	Evaporative emission control system
Exhaust gas recirculation valve	EGR valve	EGR valve
Exhaust gas recirculation control-BPT valve	EGRC-BPT valve	BPT valve
Exhaust gas recirculation control-solenoid valve	EGRC-solenoid valve	EGR control solenoid valve
Exhaust gas recirculation temperature sensor	EGRT sensor	Exhaust gas temperature sensor
EGR temperature sensor		
Flash electrically erasable programmable read only memory	FEEPROM	***
Flash erasable programmable read only memory	FEPROM	***
Flexible fuel sensor	FFS	***
Flexible fuel system	FF system	***
Fuel level sensor	***	***
Fuel pressure regulator	***	Pressure regulator
Fuel pressure regulator control solenoid valve	***	PRVR control solenoid valve
Fuel tank temperature sensor	FTT sensor	Tank fuel temperature sensor
Fuel trim	FT	***
Heated oxygen sensor	HO2S	Exhaust gas sensor
Idle air control system	IAC system	Idle speed control
Idle air control valve-air regulator	IACV-air regulator	Air regulator
Idle air control valve-auxiliary air control valve	IACV-AAC valve	Auxiliary air control (AAC) valve
Idle air control valve-FICD solenoid valve	IACV-FICD solenoid valve	FICD solenoid valve
Idle air control valve-idle up control solenoid valve	IACV-idle up control solenoid valve	Idle up control solenoid valve
Idle speed control-FI pot	ISC-FI pot	FI pot
Idle speed control system	ISC system	***
Ignition control	IC	***
Ignition control module	ICM	***
Indirect fuel injection system	IFI system	***
Intake air	IA	Air
Intake air temperature sensor	IAT sensor	Air temperature sensor
Knock	***	Detonation
Knock sensor	KS	Detonation sensor

IACV-AAC CONTROL SYSTEM

=NFHA0165

Operation

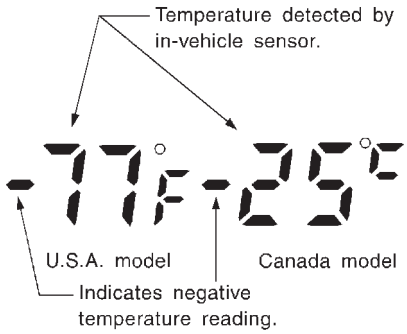
NFHA0165S02

When the air conditioner is OFF, the ECM detects the load applied to the engine, and controls the IACV-AAC valve to adjust the engine idling speed to the appropriate rpm by supplying additional air from the IACV-AAC valve.

When the air conditioner is ON (A/C relay is ON), refrigerant-pressure sensor converts refrigeration-pressure on the high pressure side into the voltage value, which is output to ECM which protects refrigeration cycle and control idle speed by the output voltage data, and additional air is supplied to the engine. If the appropriate engine speed is not reached, the IACV-AAC valve supplies the additional air required to increase the engine rpm.

12	CHECK INTAKE SENSOR

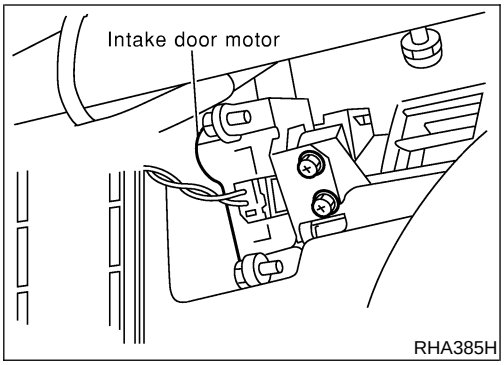
Press DEF third time, temperature detected by the Intake Sensor is displayed.



RHA500G

OK or NG

OK	▶	1. Press (DEF) switch the fourth time. Display returns to original presentation 51. 2. Turn ignition switch OFF or (AUTO) (AUTO) switch ON. 3. END
NG	▶	Go to Intake Sensor Circuit (HA-105).



COMPONENT DESCRIPTION

NFHA0193

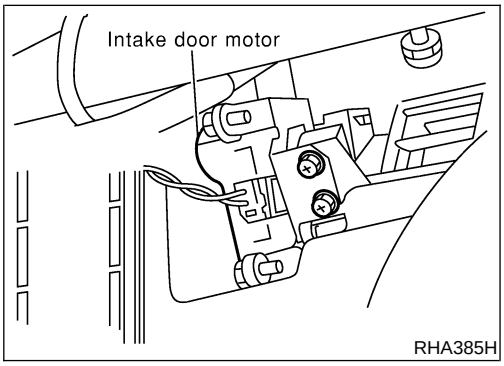
The intake door motor is attached to the intake unit. It rotates so that air is drawn from inlets set by the auto amplifier. Motor rotation is conveyed to a lever which activates the intake door.

DIAGNOSTIC PROCEDURE

NFHA0194

SYMPTOM: Intake door motor does not operate normally.

- **Refer to HA-56.**



CONTROL LINKAGE ADJUSTMENT

NFHA0195

Intake Door

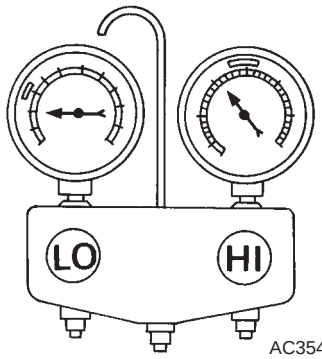
NFHA0195S01

1. Install intake door motor on intake unit and connect it to main harness.
2. Set up code No. 41 in Self-diagnosis STEP 4. Refer to HA-38.
3. Make sure intake door operates properly when changing from code No. 41 to 46 by pushing DEF switch.

41	42	43	44	45	46
REC		20% FRE	FRE		

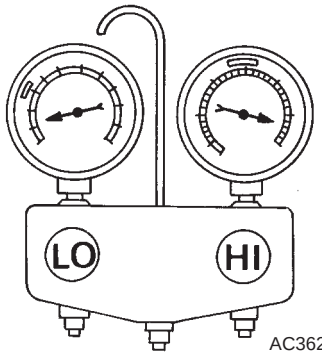
Low-pressure Side Sometimes Becomes Negative.

NFHA0208S05

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Low-pressure side sometimes becomes negative. E  AC354A	• Air conditioning system does not function and does not cyclically cool the compartment air. • The system constantly functions for a certain period of time after compressor is stopped and restarted.	Refrigerant does not discharge cyclically. ↓ Moisture is frozen at expansion valve outlet and inlet. ↓ Water is mixed with refrigerant.	• Drain water from refrigerant or replace refrigerant. • Replace liquid tank or desiccant assembly (HA-119).

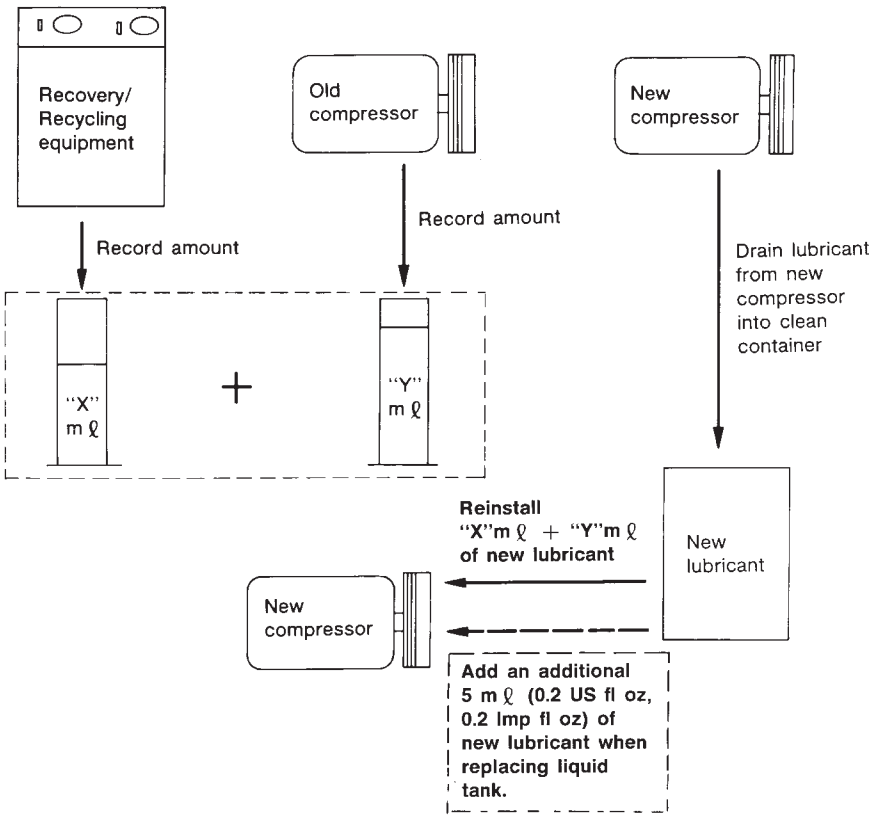
Low-pressure Side Becomes Negative.

NFHA0208S06

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Low-pressure side becomes negative. F  AC362A	Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.	High-pressure side is closed and refrigerant does not flow. ↓ Expansion valve or liquid tank is frosted.	Leave the system at rest until no frost is present. Start it again to check whether or not the problem is caused by water or foreign particles. • If water is the cause, initially cooling is okay. Then the water freezes causing a blockage. Drain water from refrigerant or replace refrigerant. • If due to foreign particles, remove expansion valve and remove the particles with dry and compressed air (not shop air). • If either of the above methods cannot correct the problem, replace expansion valve. • Replace liquid tank or desiccant assembly (HA-119). • Check lubricant for contamination.

10. If the liquid tank also needs to be replaced, add an additional 5 mℓ (0.2 US fl oz, 0.2 Imp fl oz) of lubricant at this time.
    Do not add this 5 mℓ (0.2 US fl oz, 0.2 Imp fl oz) of lubricant if only replacing the compressor.

Lubricant adjusting procedure for compressor replacement

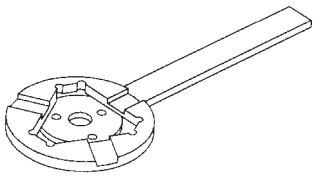
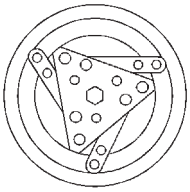
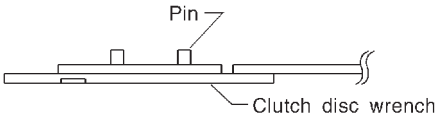
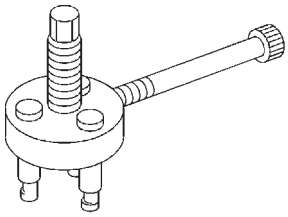
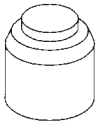


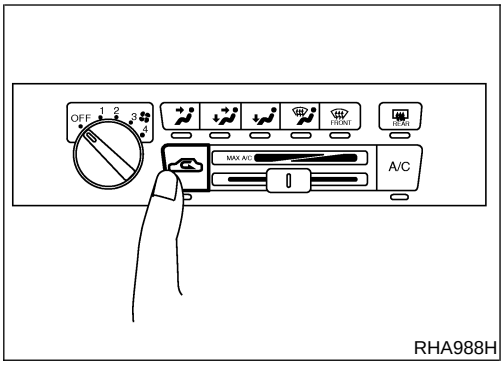
RHA065DD

Special Service Tools

NFHA0067

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

Tool number (Kent-Moore No.) Tool name	Description	
KV99106100 (J-41260) Clutch disc wrench	 NT232  When replacing the magnet clutch in the above compressor, use a clutch disc wrench with the pin side on the clutch disc to remove it.  NT378	Removing center bolt
KV99232340 (J-38874) or KV992T0001 (—) Clutch disc puller	 NT376	Removing clutch disc
KV99106200 (J-41261) Pulley installer	 NT235	Installing pulley



RHA988H

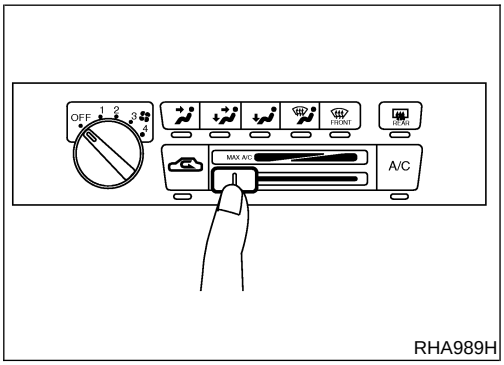
3. Check Recirculation

NFHA0076S0203

1. Press recirculation switch.
   Recirculation indicator should light.
2. Listen for intake door position change (you should hear blower sound change slightly).

NOTE:
Confirm that the RECIRCULATION (REC) switch is canceled in the DEF ( ) and D/F ( ) mode.

If NG, go to trouble diagnosis procedure for intake door motor (HA-162).
If OK, continue with next check.



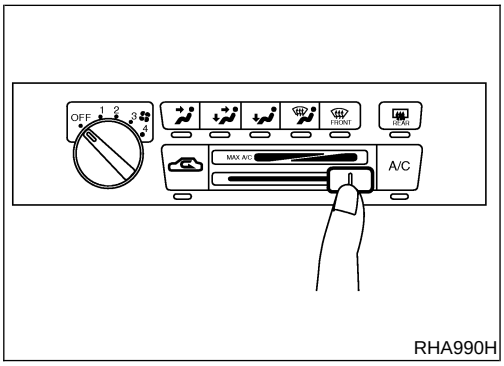
RHA989H

4. Check Temperature Decrease

NFHA0076S0204

1. Turn fan control dial to 1–speed.
2. Slide temperature control lever to full cold.
3. Check for cold air at discharge air outlets.

If NG, go to trouble diagnosis procedure for insufficient cooling (HA-172).
If OK, continue with next check.



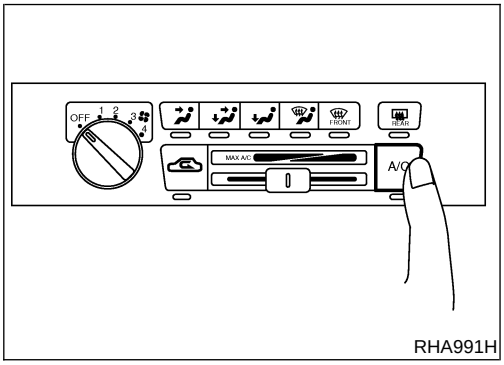
RHA990H

5. Check Temperature Increase

NFHA0076S0205

1. Slide temperature control lever to full hot.
2. Check for hot air at discharge air outlets.

If NG, go to trouble diagnosis procedure for insufficient heating (HA-180).
If OK, continue with next check.



RHA991H

6. Check Air Conditioner Switch

NFHA0076S0206

Turn fan control switch to the desired (1 to 4-speed) position and push the air conditioner switch to turn ON the air conditioner.
The indicator light should come on when air conditioner is ON.
If NG, go to trouble diagnosis procedure for A/C system (HA-159).
If OK, continue with next check.
If all operational check are OK (symptom can not be duplicated), go to "Incident Simulation Tests" (GI-25) and perform tests as outlined to simulate driving conditions environment. If symptom appears, refer to "Symptom Table" (HA-156) and perform applicable trouble diagnosis procedures.

Air Mix Door

TROUBLE DIAGNOSIS PROCEDURE FOR AIR MIX DOOR MOTOR

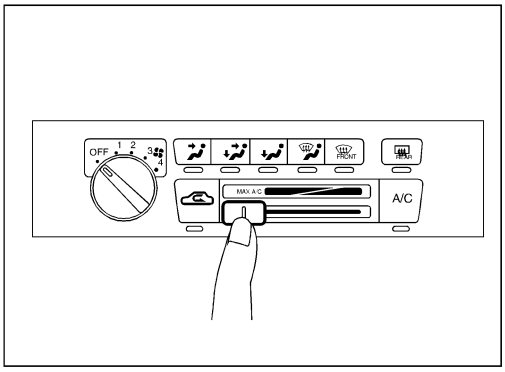
=NFHA0256

SYMPTOM:

- **Air mix door motor does not operate normally.**

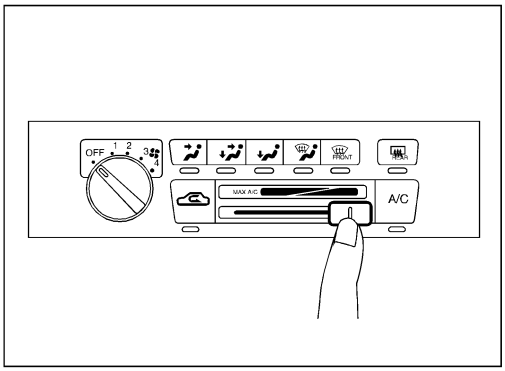
INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Temperature decrease and increase

1. Check Temperature Decrease
a) Slide temperature control lever to full cold.
b) Check for cold air at discharge air outlets.



2. Check Temperature Increase
a) Slide temperature control lever to full hot.
b) Check for hot air at discharge air outlets.

If OK (symptom cannot be duplicated). Perform complete operational check. (*3)
If NG (symptom is confirmed), continue with STEP-2 following.

2. Check for any service bulletins.

3. Check air mix door. (*1)

OK

4. Check air mix door motor circuit. (*2)

OK

If the symptom still exist, perform a complete operational check and check for other symptoms.
[Refer to symptom table.]
Does another symptom exist?

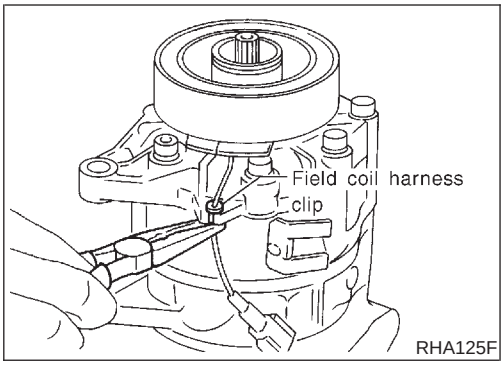
Yes → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

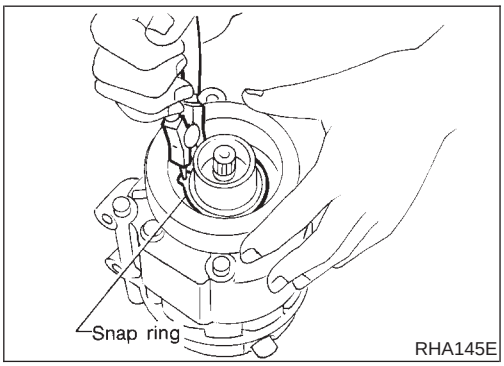
No → INSPECTION END

RHA998H

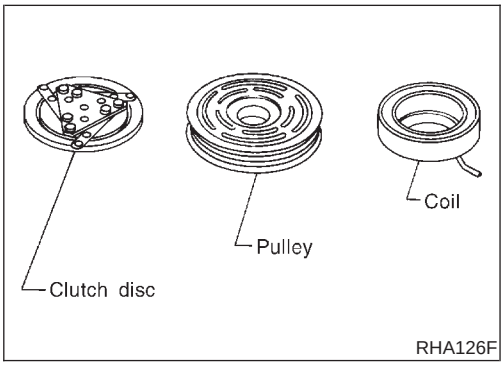
*1: HA-184 *2: HA-183 *3: HA-157



- Remove the field coil harness clip using a pair of pliers.



- Remove the snap ring using external snap ring pliers.



INSPECTION

NFHA0099

Clutch Disc

NFHA0099S01

If the contact surface shows signs of damage due to excessive heat, replace clutch disc and pulley.

Pulley

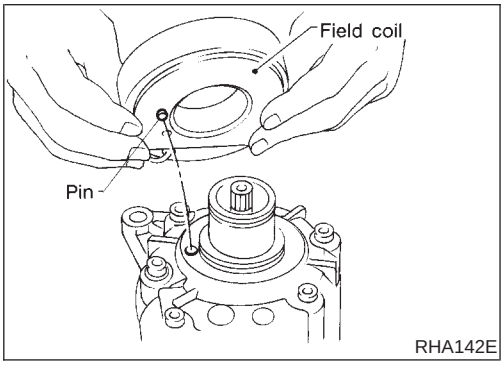
NFHA0099S02

Check the appearance of the pulley assembly. If the contact surface of pulley shows signs of excessive grooving, replace clutch disc and pulley. The contact surfaces of the pulley assembly should be cleaned with a suitable solvent before reinstallation.

Coil

NFHA0099S03

Check coil for loose connection or cracked insulation.



INSTALLATION

NFHA0100

- Install the field coil.
  Be sure to align the coil's pin with the hole in the compressor's front head.
- Install the field coil harness clip using a screwdriver.

ENGINE LUBRICATION & COOLING SYSTEMS

SECTION LC

CONTENTS

NOTES

Fluid capacity (With torque converter):
RE4F04B/RE4F04W
9.4ℓ (10 US qt, 8-1/4 Imp qt)
Drain plug:
: 29 - 39 N·m (3.0 - 4.0 kg-m, 22 - 29 ft-lb)

4. Run engine at idle speed for five minutes.
5. Check fluid level and condition. Refer to "Checking A/T Fluid". If fluid is still dirty, repeat step 2. through 5.

Balancing Wheels (Bonding Weight Type)

NFMA0022

REMOVAL

NFMA0022S01

1. Remove inner and outer balance weights from the road wheel.

CAUTION:
Be careful not to scratch the road wheel during removal procedures.

2. Using releasing agent, remove double-faced adhesive tape from the road wheel.

CAUTION:
- **Be careful not to scratch the road wheel during removal.**
- **After removing double-faced adhesive tape, wipe clean traces of releasing agent from the road wheel.**

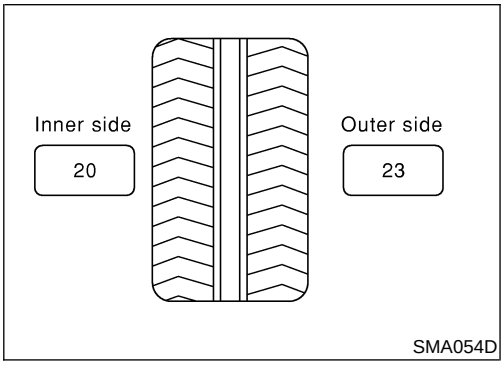
WHEEL BALANCE ADJUSTMENT

NFMA0022S02

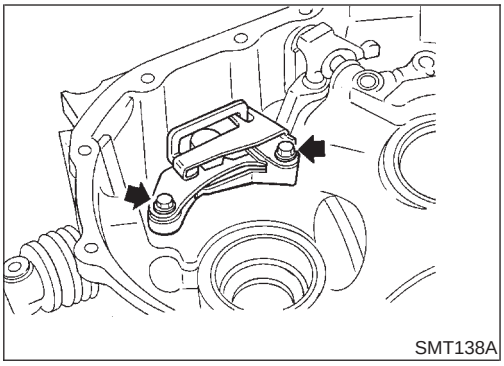
- If a tire balance machine has adhesion balance weight mode settings and drive-in weight mode setting, select and adjust a drive-in weight mode suitable for road wheels.

1. Set road wheel on wheel balancer using the center hole as a guide. Start the tire balance machine.
2. When inner and outer unbalance values are shown on the wheel balancer indicator, multiply outer unbalance value by 1.6 to determine balance weight that should be used. Select the outer balance weight with a value closest to the calculated value above and install it to the designated outer position of, or at the designated angle in relation to the road wheel.

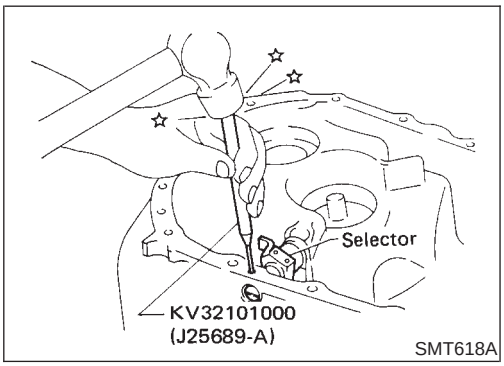
CAUTION:
- **Do not install the inner balance weight before installing the outer balance weight.**
- **Before installing the balance weight, be sure to clean the mating surface of the road wheel.**



Indicated unbalance value × 1.6 = balance weight to be installed
Calculation example:
23 g (0.81 oz) × 1.6 = 38.33 g (1.35 oz) = 40 g (1.41 oz) balance weight (closer to calculated balance weight value)
Note that balance weight value must be closer to the calculated balance weight value.
Example:
37.4 = 35 g (1.23 oz)
37.5 = 40 g (1.41 oz)

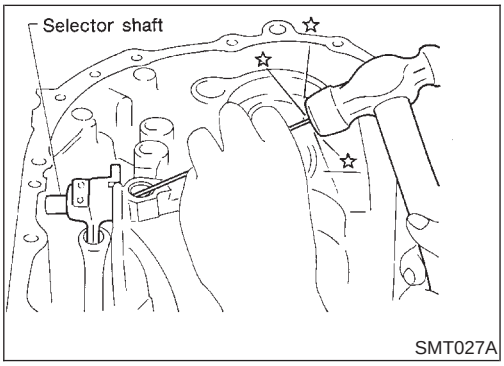

SMT138A

14. Remove reverse check assembly and check ball.
- **Be careful not to lose check ball.**

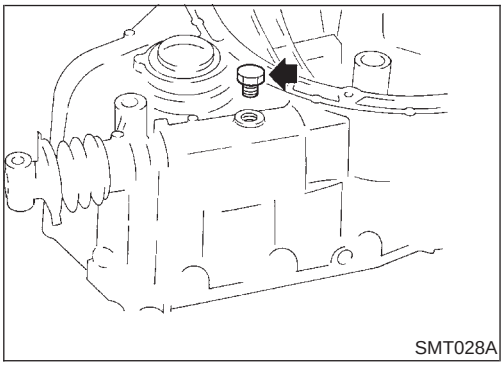


SMT618A

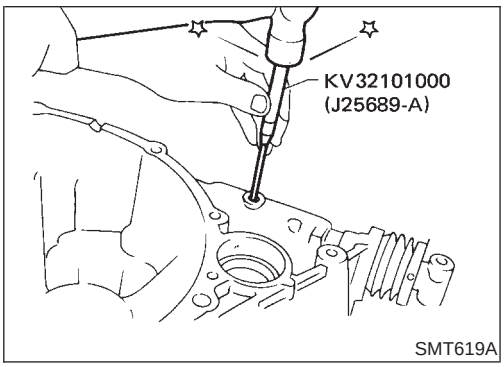
15. Remove retaining pin and detach the selector.



SMT027A

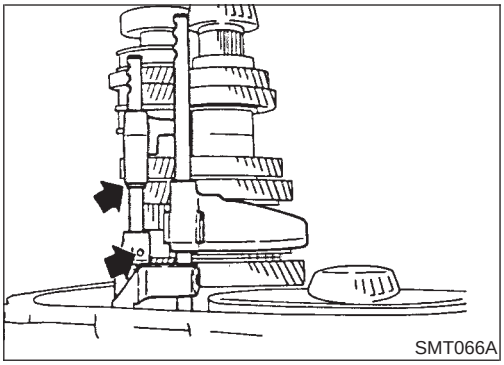

SMT028A

16. Remove drain plug for convenience in removing retaining pin which holds striking lever to striking rod.

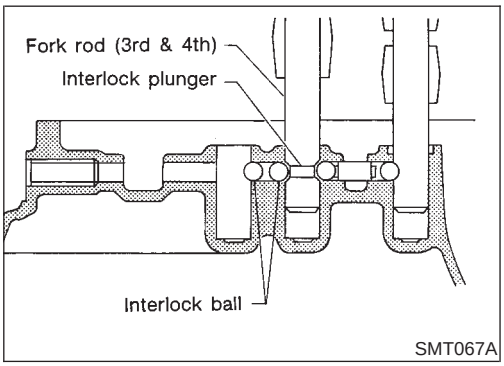


SMT619A

17. Remove retaining pin and then withdraw striking lever and striking rod.

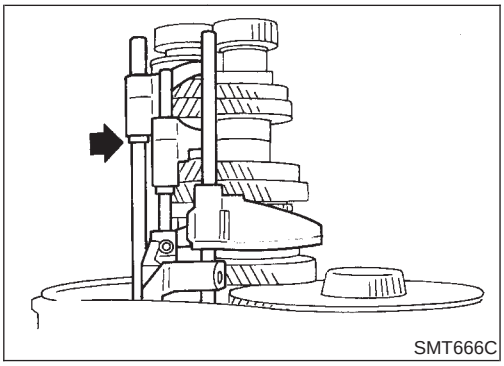

SMT066A

7. Install 3rd & 4th shift fork and bracket, then install 3rd & 4th fork rod, stopper ring and retaining pin.
   When installing stopper rings, use snap ring remover and installer (J34305).

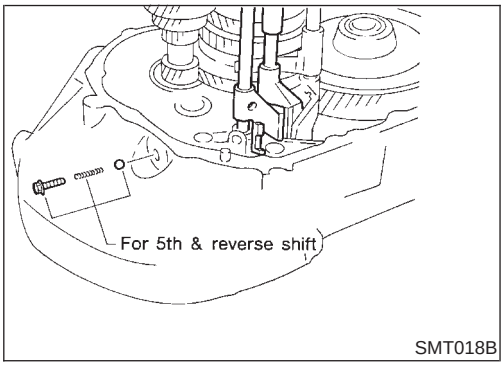


SMT067A

8. Install interlock balls.

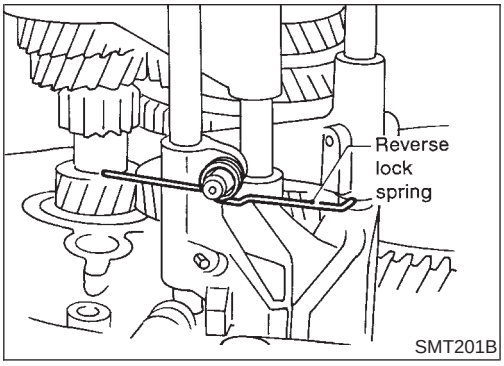

SMT666C

9. Install 5th shift fork, then install fork rod, stopper ring and retaining pin.
   When installing stopper rings, use snap ring remover and installer (J3405).



SMT018B

10. Install 5th & reverse check plug, spring and ball.
- Apply sealant to bolt threads. Refer to “Shift Control Components”, MT-15.



SMT201B

11. Install reverse lock spring on 5th & reverse bracket.
- **Pay attention to its direction.**

SEAT BELT RETRACTOR ON-VEHICLE CHECK

=NFRS0052S03

Emergency Locking Retractors (ELR) and Automatic Locking Retractors (ALR)

NFRS0052S0301

NOTE:

All seat belt retractors are of the Emergency Locking Retractors (ELR) type. In an emergency (sudden stop) the retractor will lock and prevent the belt from extending any further. All 3-point type seat belt retractors except the driver's seat belt also have an Automatic Locking Retractors (ALR) mode. The ALR mode (also called child restraint mode) is used when installing child seats. The ALR mode is activated when the seat belt is fully extended. When the belt is then retracted partially, the ALR mode automatically locks the seat belt in a specific position so the belt cannot be extended any further. To cancel the ALR mode, allow the seat belt to fully wind back into the retractor.

Check the seat belt retractors using the following test(s) to determine if a retractor assembly is operating properly.

ELR Function Stationary Check

NFRS0052S0302

Grasp the shoulder belt and pull forward quickly. The retractor should lock and prevent the belt from extending further.

ALR Function Stationary Check

NFRS0052S0303

1. Pull out entire length of seat belt from retractor until a click is heard.
2. Retract the belt partially. A clicking noise should be heard as the belt retracts indicating that the retractor is in the Automatic Locking Retractors (ALR) mode.
3. Grasp the seat belt and try to pull out the retractor. The belt must lock and not extend any further. If NG, replace the retractor assembly.
4. Allow the entire length of the belt to retract to cancel the automatic locking mode.

ELR Function Moving Check

NFRS0052S0304

WARNING:

Perform the following test in a safe, open area clear of other vehicles and obstructions (for example, a large, empty parking lot). Road surface must be paved and dry. DO NOT perform the following test on wet or gravel roads or on public streets and highways. This could result in an accident and serious personal injury. The driver and passenger must be prepared to brace themselves in the event the retractor does not lock.

1. Fasten driver's seat belt. Buckle a passenger into the seat for the belt that is to be tested.
2. Proceed to the designated safe area.
3. Drive the vehicle at approximately 16 km/h (10 MPH). Notify any passengers of a pending sudden stop and the driver and passenger must be prepared to brace themselves in the event the retractor does not lock, apply brakes firmly and make a very hard stop.

During stop, seat belts should lock and not be extended. If the seat belt retractor assembly does not lock, perform the retractor off-vehicle check.

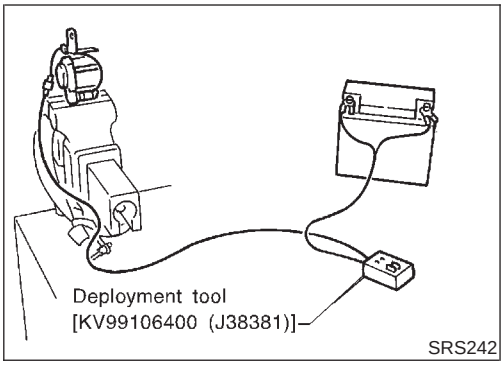
SEAT BELT RETRACTOR OFF-VEHICLE CHECK

NFRS0052S04

1. Remove the seat belt retractor assembly.
2. Slowly pull out belt while tilting the retractor assembly forward from the mounted position without twisting the retractor assembly as shown in the illustration.

15 degrees or less tilt: Belt can be pulled out.

35 degrees or more tilt: Belt locks and cannot be pulled out.



3. Connect red clip of deployment tool to battery positive terminal and black clip to negative terminal.
4. The lamp on the right side of the tool, marked "deployment tool power", should glow green, not red.
5. Press the button on the deployment tool. The left side lamp on the tool, marked "seat belt pre-tensioner connector voltage", will illuminate and the seat belt pre-tensioner will deploy.

CAUTION:
When deploying the seat belt pre-tensioner, stand at least 5 m (16 ft) away from the seat belt pre-tensioner.

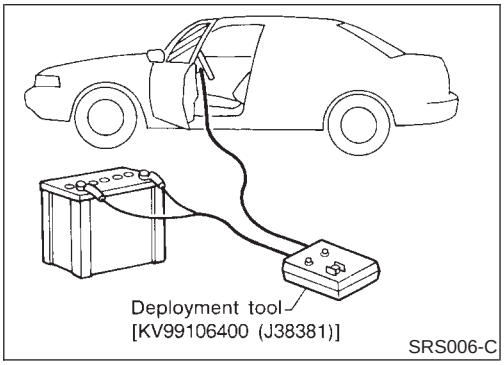
DEPLOYMENT OF AIR BAG MODULE AND SEAT BELT PRE-TENSIONER WHILE MOUNTED IN VEHICLE

NFRS0022S03

When disposing of a vehicle, deploy air bag module and seat belt pre-tensioners while they are mounted in vehicle.

CAUTION:
When deploying air bag module or seat belt pre-tensioner, ensure vehicle is empty.

1. Disconnect both the vehicle battery cables and wait 3 minutes.
2. Disconnect air bag module and seat belt pre-tensioner connector.
3. Connect deployment tool [SST: KV99106400 (J38381)] to air bag module or seat belt pre-tensioner.
   For driver air bag module, attach deployment tool adapter (SST: J38381-70) to the tool connector.
   For front passenger air bag module, attach deployment tool adapter (SST: J38381-65) to the tool connector. For side air bag module, attach deployment tool adapter [SST: KV9910900 (J44230)].
   For seat belt pre-tensioner, attach deployment tool adapter [SST: KV99108200 (J38381-50)] to the tool connector. (with seat belt pre-tensioner sub-harness connector)
   For seat belt pre-tensioner, attach deployment tool adapter [SST: KV99109800 (J38381-75)] to the tool connector. (without seat belt pre-tensioner sub-harness connector)

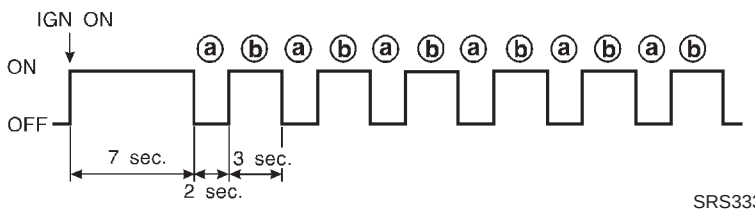


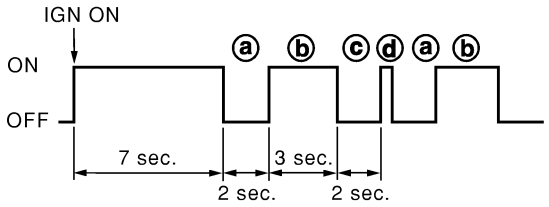
4. Connect red clip of deployment tool to battery positive terminal and black clip to negative terminal.
5. The lamp on the right side of the tool, marked "deployment tool power", should glow green, not red.
6. Press the button on the deployment tool. The left side lamp on the tool, marked "air bag connector voltage", will illuminate and the air bag module or seat belt pre-tensioner will deploy.

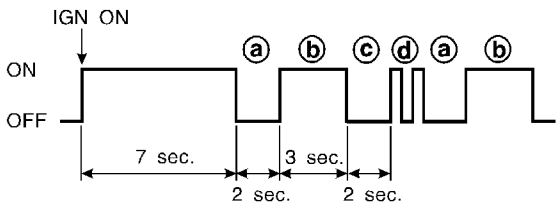
CAUTION:
Activate only one air bag module or seat belt pre-tensioner at a time.

Air Bag Warning Lamp Flash Code Chart (Diagnosis mode)

NFRS0049S0101

<table>
<tr><td rowspan="3">● Diagnosis results (previously stored in the memory) might not be erased after repair.
● Intermittent malfunction has been detected in the past.</td><td>Flash pattern</td><td></td></tr>
<tr><td> 

SRS333</td><td>a through b are repeated.</td></tr>
<tr><td colspan="2">Repair order
● Go to DIAGNOSTIC PROCEDURE 8 (RS-63).</td></tr>
<tr><td rowspan="3">The seat belt pre-tensioner (RH) circuit is malfunctioning.
(d: 1 flash)</td><td>Flash pattern</td><td></td></tr>
<tr><td> 

SRS801</td><td>a through d are repeated.
d — One flash indicates malfunctioning seat belt pre-tensioner (RH) circuit.</td></tr>
<tr><td colspan="2">Repair order (“Recheck SRS at each replacement.”)
1. Visually check the wiring harness connections.
2. Replace the harness if it has visible damage.
3. Replace seat belt pre-tensioner (RH).
(Before disposing, it must be deactivated.)
4. Replace the diagnosis sensor unit.
5. Replace the related harness.</td></tr>
<tr><td rowspan="3">The driver air bag module circuit is malfunctioning.
(d: 2 flashes)</td><td>Flash pattern</td><td></td></tr>
<tr><td> 

SRS334</td><td>a through d are repeated.
d — Two flashes indicate malfunctioning driver air bag module circuit.</td></tr>
<tr><td colspan="2">Repair order (“Recheck SRS at each replacement.”)
1. Visually check the wiring harness connection.
2. Replace the harness if it has visible damage.
3. Replace the spiral cable.
4. Replace driver air bag module.
(Before disposal, it must be deployed.)
5. Replace the diagnosis sensor unit.
6. Replace the related harness.</td></tr>
</table>

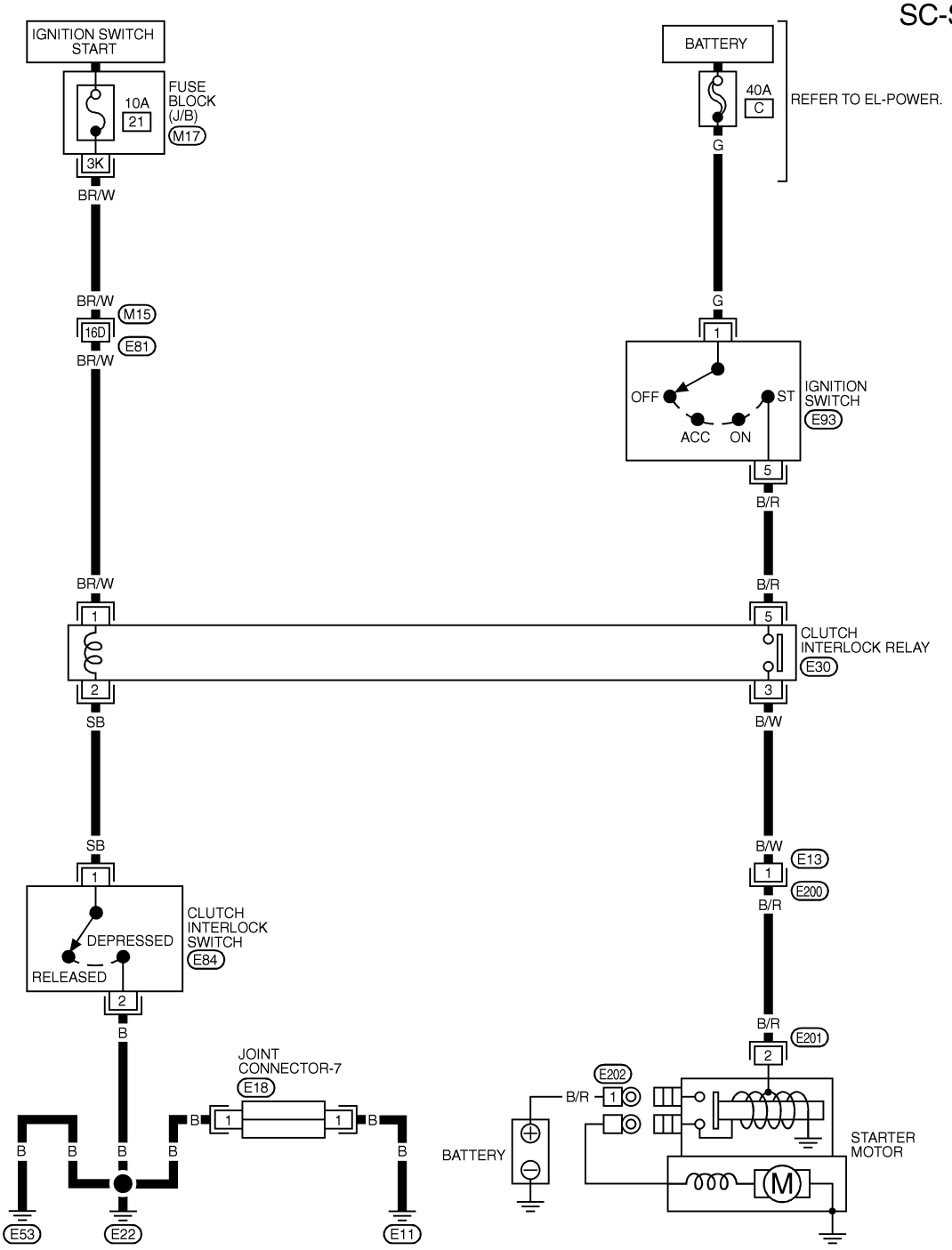
Wiring Diagram — START —

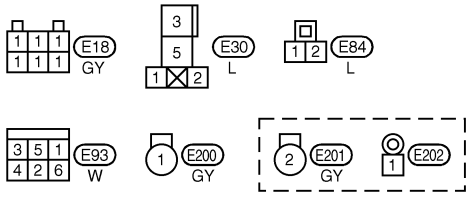
NFSC0005

M/T MODELS

NFSC0005S03

SC-START-01





REFER TO THE FOLLOWING.
M15 , E81 -SUPER MULTIPLE JUNCTION(SMJ)
M17 -FUSE BLOCK-JUNCTION BOX(J/B)

MEL208K

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

NFST0038

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 A33 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, crash zone sensor, warning lamp, wiring harness and spiral cable.
- For a side collision
  The Supplemental Restraint System consists of front 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 should 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. SRS wiring harnesses can be identified with yellow harness connector (and with yellow harness protector or yellow insulation tape before the harness connectors).**

Precautions for Steering System

NFST0003

- **Before disassembly, thoroughly clean the outside of the unit.**
- **Disassembly should be done in a clean work area. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.**
- **Place disassembled parts in order, on a parts rack, for easier and proper assembly.**
- **Use nylon cloths or paper towels to clean the parts; common shop rags can leave lint that might interfere with their operation.**
- **Before inspection or reassembly, carefully clean all parts with a general purpose, non-flammable solvent.**
- **Before assembly, apply a coat of recommended power steering fluid* to hydraulic parts. Vaseline may be applied to O-rings and seals. Do not use any grease.**
- **Replace all gaskets, seals and O-rings. Avoid damaging O-rings, seals and gaskets during installation. Perform functional tests whenever designated.**
  ***: Genuine Nissan PSF II or equivalent. Refer to MA-11, “Fluids and Lubricants”.**