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NISSAN FRONTIER

MODEL D22 SERIES

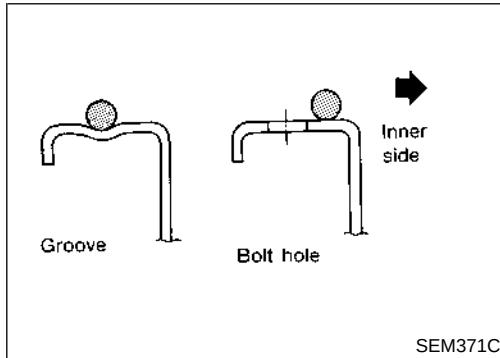
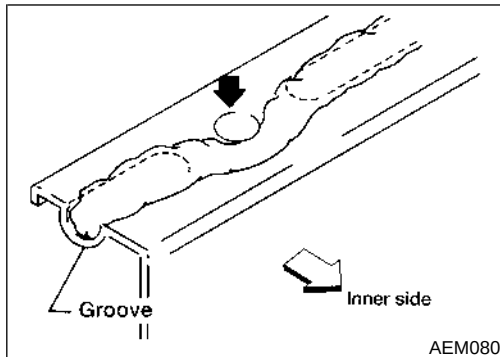
QUICK REFERENCE INDEX

GENERAL INFORMATION	GI
MAINTENANCE	MA
ENGINE MECHANICAL	EM
ENGINE LUBRICATION & COOLING SYSTEMS	LC
ENGINE CONTROL SYSTEM	EC
ACCELERATOR CONTROL, FUEL & EXHAUST SYSTEMS	FE
CLUTCH	CL
MANUAL TRANSMISSION	MT
AUTOMATIC TRANSMISSION	AT
TRANSFER	TF
PROPELLER SHAFT & DIFFERENTIAL CARRIER	PD
FRONT & REAR AXLE	AX
FRONT & REAR SUSPENSION	SU
BRAKE SYSTEM	BR
STEERING SYSTEM	ST
RESTRAINT SYSTEM	RS
BODY & TRIM	BT
HEATER & AIR CONDITIONER	HA
STARTING & CHARGING SYSTEM	SC
ELECTRICAL SYSTEM	EL
ALPHABETICAL INDEX	IDX

Parts Requiring Angular Tightening

NEEM0126

- Use an angle wrench for the final tightening of the following engine parts:
 - a) Cylinder head bolts
 - b) Connecting rod cap nuts
- Do not use a torque value for final tightening.
- The torque value for these parts are for a preliminary step.
- Ensure thread and seat surfaces are clean and coated with engine oil.


SEM371C

AEM080

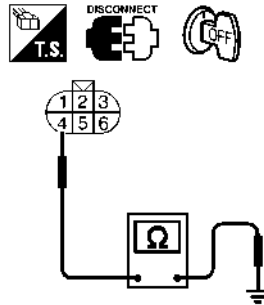
Liquid Gasket Application Procedure

NEEM0127

- 1) Use a scraper to remove all traces of old liquid gasket from mating surfaces and grooves. Also completely clean any oil stains from these portions.
- 2) Apply a continuous bead of liquid gasket to mating surfaces. (Use Genuine RTV Silicone Sealant Part No. 999MP-A7007 or equivalent.)
 - Be sure liquid gasket is 3.5 to 4.5 mm (0.138 to 0.177 in) dia. (for oil pan).
 - Be sure liquid gasket is 2.0 to 3.0 mm (0.079 to 0.118 in) dia. (in areas except oil pan).
- 3) Apply liquid gasket to inner surface around hole perimeter area (unless otherwise specified).
- 4) Assembly should be done within 5 minutes after coating.
- 5) Wait at least 30 minutes before refilling engine oil and engine coolant.

3 CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check harness continuity between terminal 4 and body ground.



Continuity should exist.

SEF851Z

3. Also check harness for short to power.

OK or NG

OK	▶	GO TO 5.
NG	▶	GO TO 4.

4 DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors C1, M67
- Harness for open or short between ECM and body ground

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

VG33ER

Wiring Diagram

NEEC1171

NEEC1171S01

EC-O2S1B1-01

IGNITION SWITCH
ON or START

FUSE BLOCK (J/B)
15A 14
M26

Refer to "EL-POWER".

12P

OR/B

14 M59
F27

OR/B

1

HEATED OXYGEN SENSOR 1 (FRONT) (BANK1)

3 BR/Y

2 B

F41

BR/Y

119 O2HFR

B

50 O2SFR

ECM F29

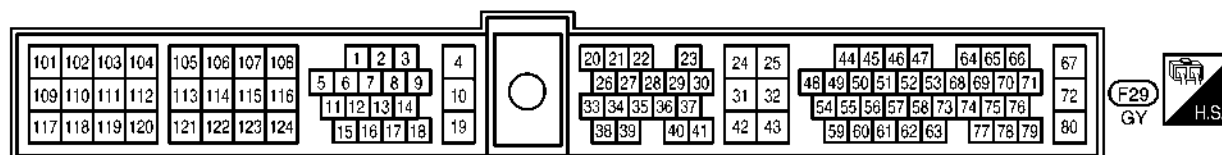
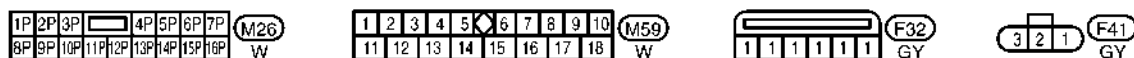
1

JOINT CONNECTOR-2 F32

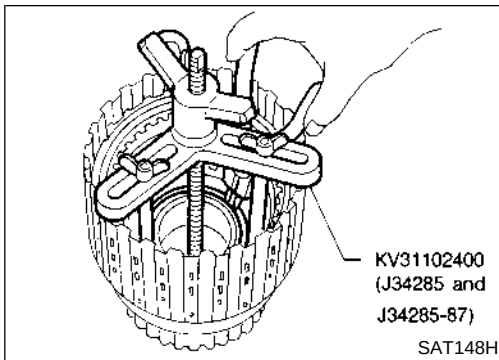
B/Y

F11

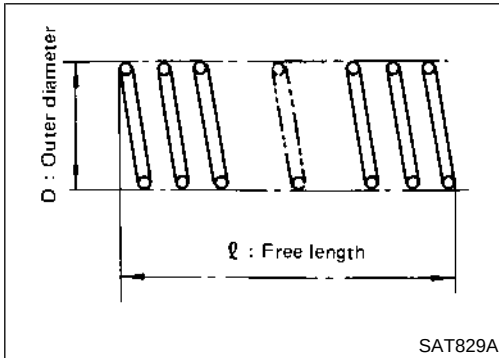
Legend:
 — : Detectable line for DTC
 — : Non-detectable line for DTC



WEC788



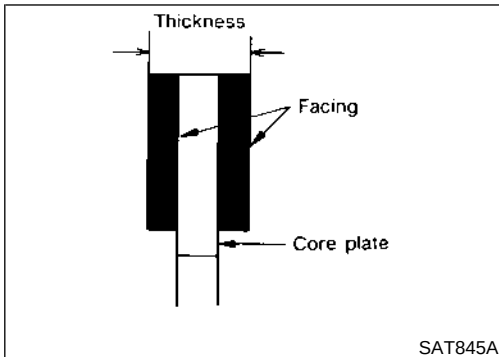
- Removal and installation of return springs



- Inspection of forward clutch and overrun clutch return springs

Inspection standard:

Refer to "Return Springs", AT-142.



- Inspection of forward clutch drive plates

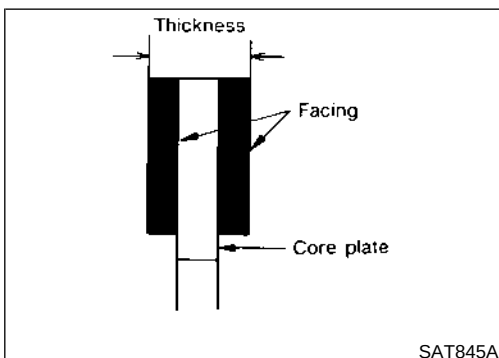
Thickness of drive plate:

Standard

1.52 - 1.67 mm (0.0598 - 0.0657 in)

Wear limit

1.40 mm (0.0551 in)



- Inspection of overrun clutch drive plates

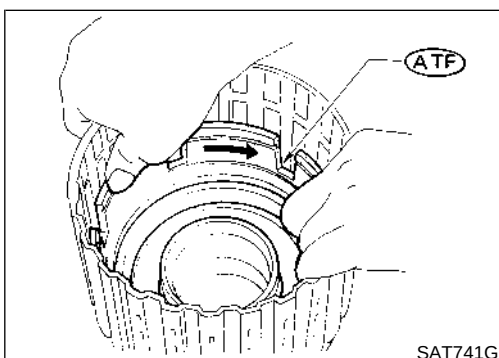
Thickness of drive plate:

Standard

1.90 - 2.05 mm (0.0748 - 0.0807 in)

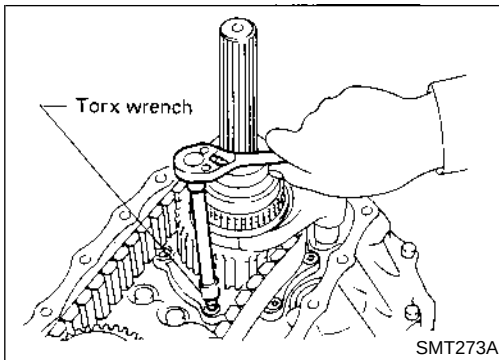
Wear limit

1.80 mm (0.0709 in)

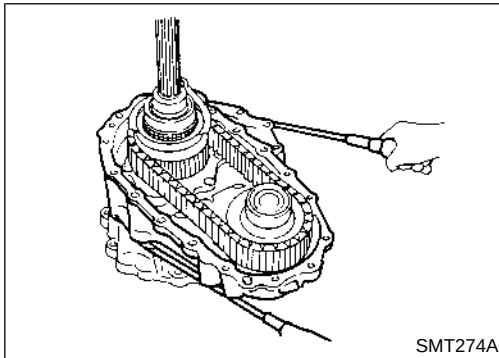


- Installation of forward clutch piston and overrun clutch piston
- a) Install forward clutch piston by turning it slowly and evenly.
- **Apply ATF to inner surface of clutch drum.**

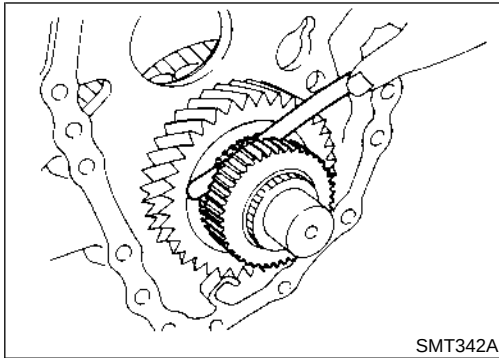
DISASSEMBLY



8. Remove bolts securing bearing retainer.
 - **This step is necessary to remove mainshaft from center case.**



9. Remove bolts securing center case to front case and then separate center case and front case.

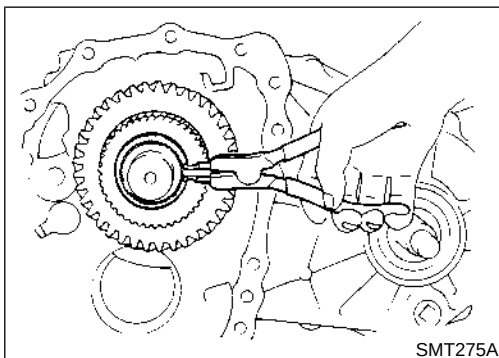


10. Measure low gear end play.

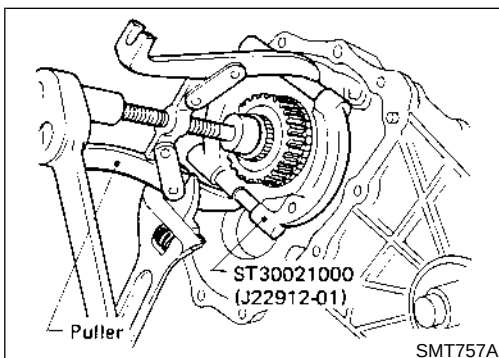
Standard:

0.2 - 0.35 mm (0.0079 - 0.0138 in)

- **If end play is beyond the maximum value, check low gear and L & H hub for wear.**



11. Disassemble center case assembly.
 - a. Remove snap ring from mainshaft.



- b. Pull out low gear with L & H hub.

HOW TO READ WIRING DIAGRAMS

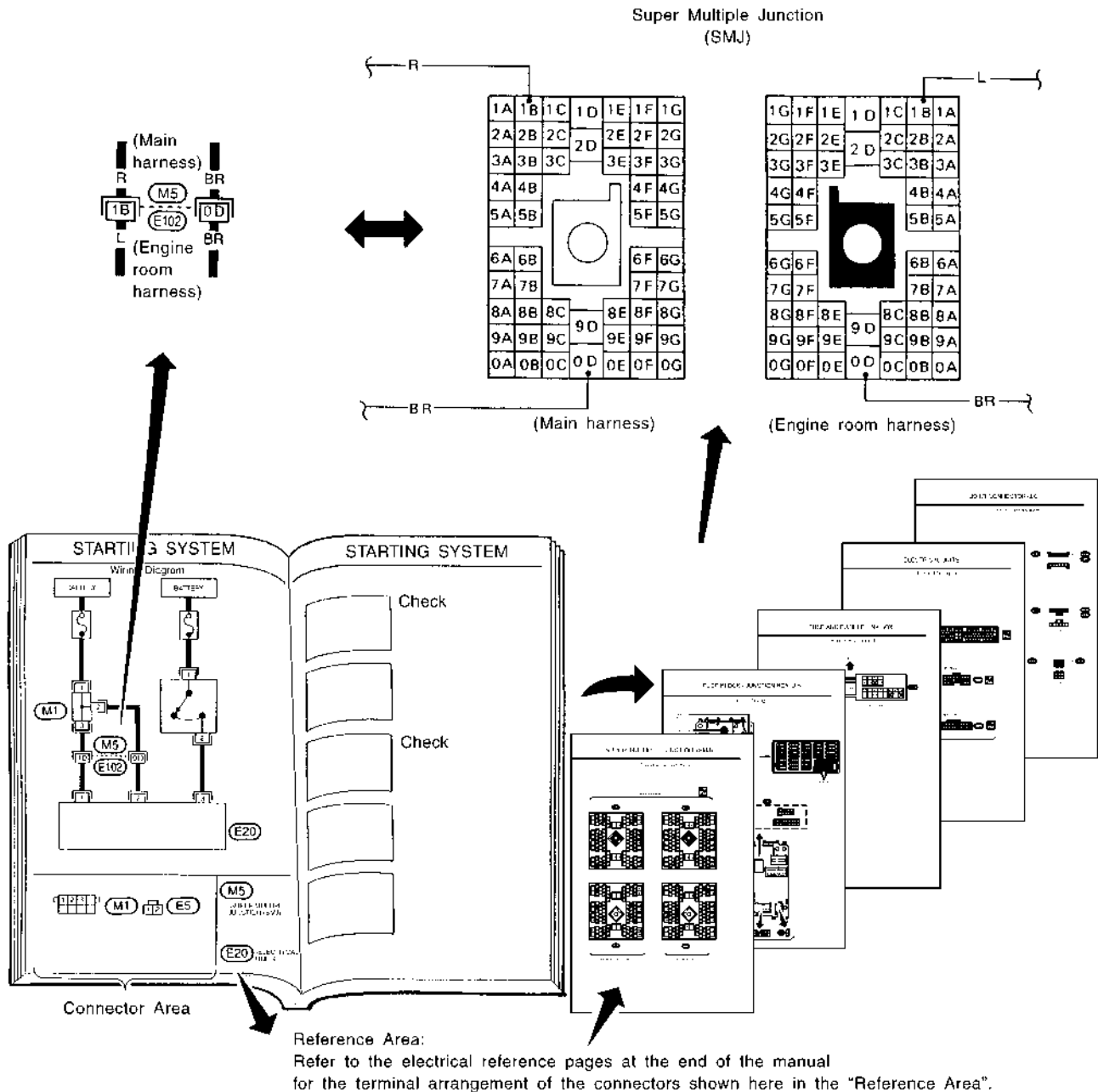
Description (Cont'd)

REFERENCE AREA

=NEG10003S0205

The Reference Area of the wiring diagram contains references to additional electrical reference pages at the end of the manual. If connector numbers and titles are shown in the Reference Area of the wiring diagram, these connectors symbols are not shown in the Connector Area.

Example



SGI092A

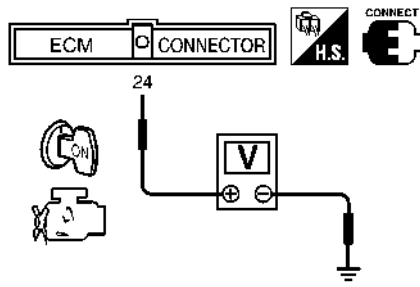
Super Multiple Junction (SMJ)

In a wiring diagram, the SMJ connectors include a letter of the alphabet in the terminal number. SMJ connector numbers are shown in the Reference Area of the wiring diagram. SMJ terminal arrangement can be found on the electrical reference pages at the end of the manual. For terminal arrangement of these connectors, refer to the "SUPER MULTIPLE JUNCTION (SMJ)" electrical reference page at the end of the manual.

TROUBLE DIAGNOSIS FOR POWER SUPPLY

VG33E

Main Power Supply and Ground Circuit (Cont'd)

2	CHECK ECM POWER SUPPLY CIRCUIT-I	
1. Turn ignition switch OFF and then ON. 2. Check voltage between ECM terminal 24 and ground with CONSULT-II or tester.		
 Voltage: Battery voltage SEF674U		
OK or NG		
OK	▶	GO TO 4.
NG	▶	GO TO 3.

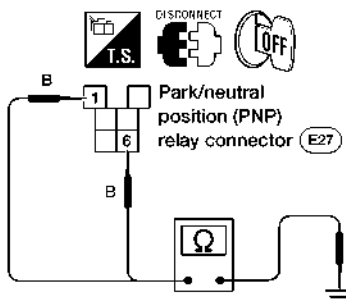
3	DETECT MALFUNCTIONING PART	
Check the following. ● Harness connectors E74, M82 ● Harness connectors M59, F27 ● Fuse block (J/B) connector E49 ● 10A fuse ● Harness for open or short between ECM and fuse		
	▶	Repair harness or connectors.

4	CHECK ECM GROUND CIRCUIT-I FOR OPEN AND SHORT	
1. Turn ignition switch OFF. 2. Disconnect ECM harness connector. 3. Check harness continuity between ECM terminals 10, 19, 25, 32, 116, 124 and engine ground. Refer to WIRING DIAGRAM. Continuity should exist. 4. Also check harness for short to power.		
OK or NG		
OK	▶	GO TO 15.
NG	▶	GO TO 5.

5	DETECT MALFUNCTIONING PART	
Check the following. ● Joint connector-2 (if equipped) ● Harness for open between ECM and engine ground		
	▶	Repair open circuit or short to power in harness or connectors.

6 CHECK BODY GROUND CIRCUIT FOR PNP RELAY

1. Turn ignition switch OFF.
2. Does continuity exist between PNP relay E27 terminals (1, 6) and body ground?
Continuity should exist.



AAT523A

OK or NG

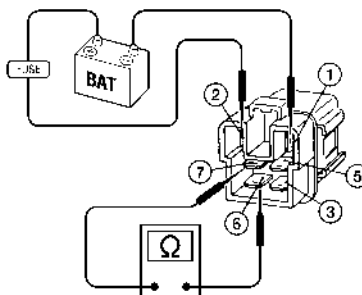
OK	▶	GO TO 7.
NG	▶	Repair harness or connector.

7 CHECK PNP RELAY

Check continuity between terminals 6 and 7.

Condition	Continuity
12V direct current supply between terminals 1 and 2	Yes
No current supply	No

MTBL0198



AAT124A

OK or NG

OK	▶	GO TO 8.
NG	▶	Replace PNP relay.

SERVICE PROCEDURE

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

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

NEHA0094

NEHA0094S01

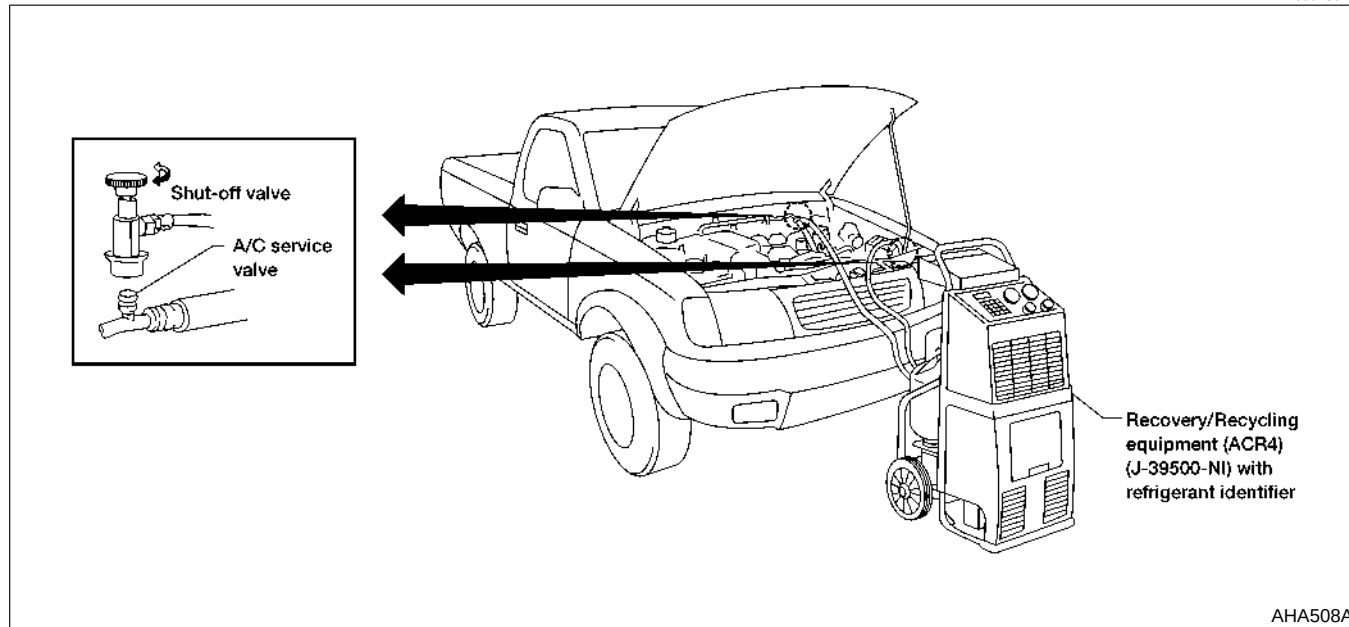
SETTING OF SERVICE TOOLS AND EQUIPMENT

WARNING:

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

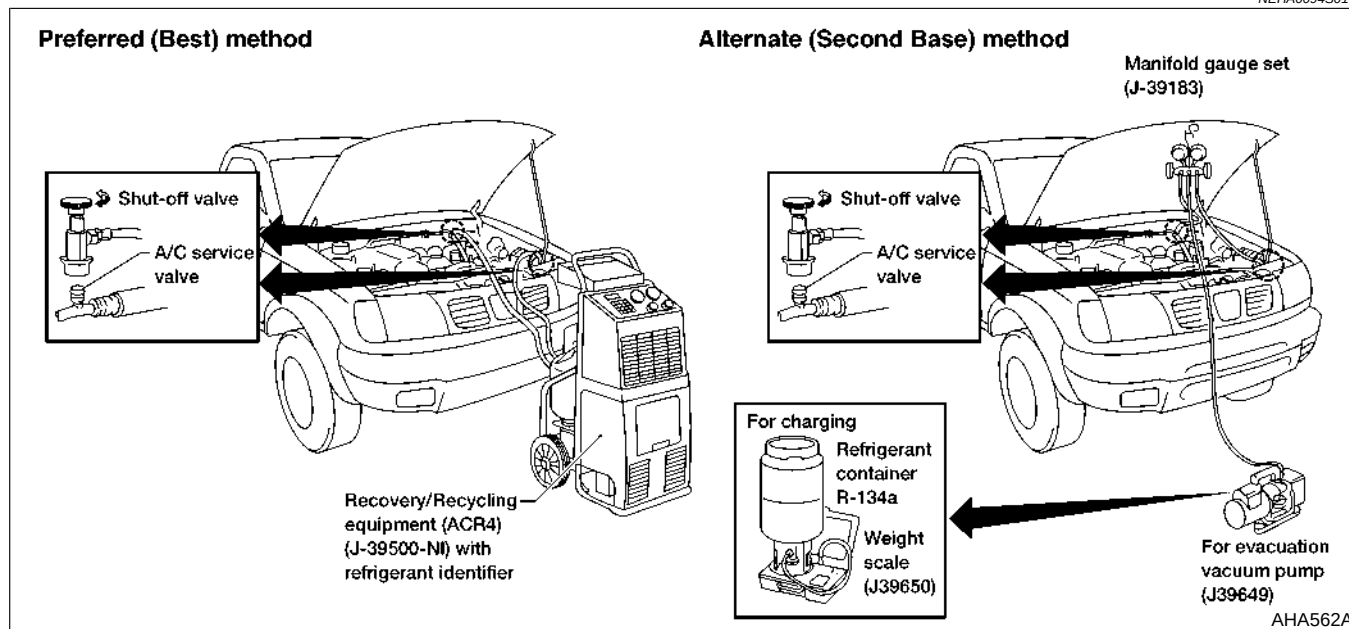
Discharging Refrigerant

NEHA0094S0101



Evacuating System and Charging Refrigerant

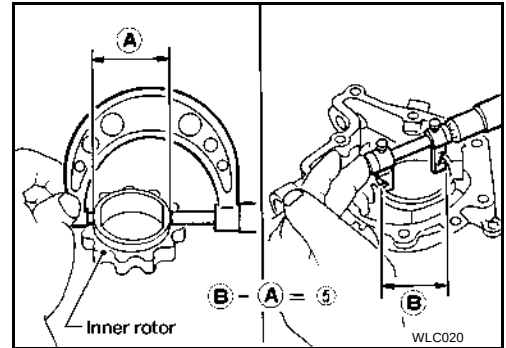
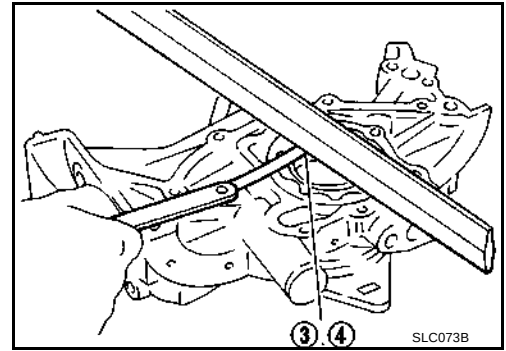
NEHA0094S0103



OIL PUMP

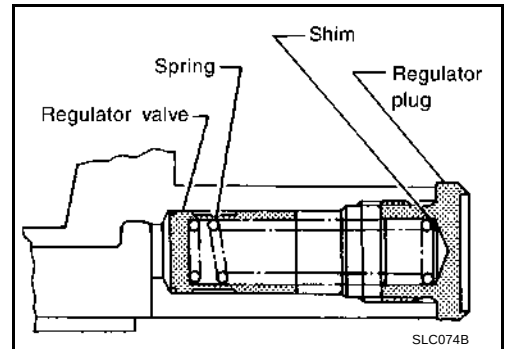
[VG33E and VG33ER]

- If body to rotor clearances (1, 3, 4, 5) exceed the limit, replace oil pump body assembly.



Regulator Valve Inspection

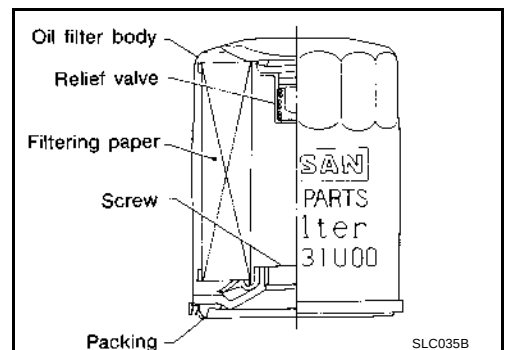
1. Visually inspect components for wear and damage.
2. Check oil pressure regulator valve sliding surface and valve spring.
3. Coat regulator valve with engine oil. Check that it falls smoothly into the valve hole by its own weight.
4. If damaged, replace regulator valve set or oil pump assembly.



Oil Filter

The oil filter is a small, full-flow cartridge type and is provided with a relief valve.

- When changing oil filter. Refer to [MA-31, "Changing Oil Filter"](#).



14. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

Without CONSULT-II

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

Vacuum should exist.

OK or NG

- OK >> GO TO 17.
NG >> GO TO 15.

15. CHECK VACUUM HOSE

Check vacuum hoses for clogging or disconnection. Refer to [EC-1204, "Vacuum Hose Drawing"](#).

OK or NG

- OK (With CONSULT-II) >> GO TO 16.
OK (Without CONSULT-II) >> GO TO 17.
NG >> Repair or reconnect the hose.

16. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

With CONSULT-II

1. Start engine.
2. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-II. Check that engine speed varies according to the valve opening.

OK or NG

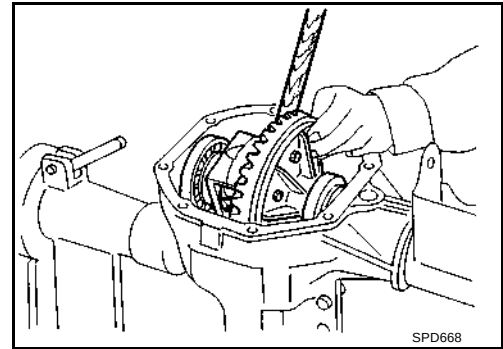
- OK >> GO TO 18.
NG >> GO TO 17.

ACTIVE TEST	
PURG VOL CONT/V	0.0%
MONITOR	
ENG SPEED	XXX rpm
A/F ALPHA-B1	XXX %
A/F ALPHA-B2	XXX %
HO2S1 MNTR (B1)	RICH
HO2S1 MNTR (B2)	RICH
THRTL POS SEN	XXX V

SEF985Y

FRONT FINAL DRIVE ASSEMBLY

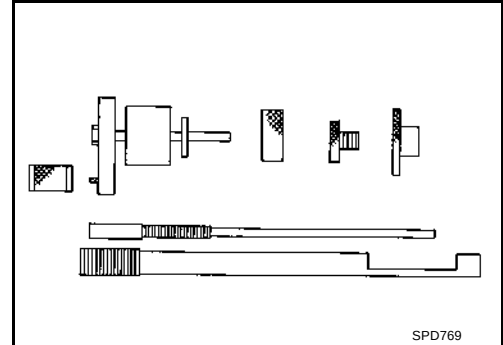
10. Remove the differential case assembly from the final drive housing, saving the selected side bearing adjusting shims for later use during the assembly of the final drive unit.



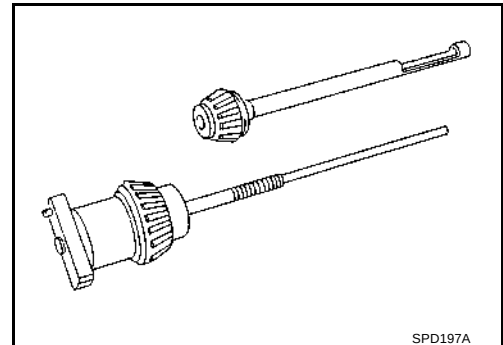
DRIVE PINION GEAR HEIGHT AND PINION BEARING PRELOAD

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

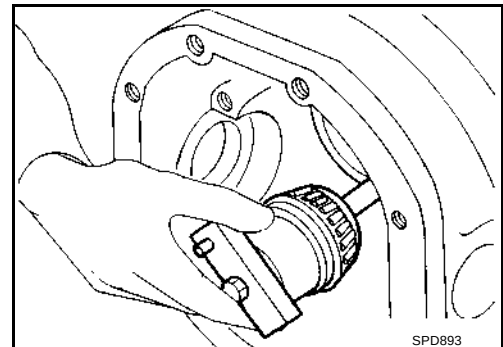
Tool number (J34309)



- **Drive Pinion Front Bearing** — make sure the J34309-3 front pinion bearing seat is secured tightly against the J34309-2 gauge anvil. Then turn the front pinion bearing pilot, J34309-5, to secure the bearing in its proper position.
- **Drive Pinion Rear Bearing** — the rear pinion bearing pilot, J34309-15, is used to center the rear pinion bearing only. The rear pinion bearing locking seat, J34309-4, is used to lock the bearing to the assembly.



3. Place the differential shim selector tool, J34309, gauge screw assembly with the pinion rear bearing inner cone installed into the final drive housing.



SQUEAK AND RATTLE TROUBLE DIAGNOSIS

Tapping or moving the components or pressing on them while driving to duplicate the conditions can isolate many of these incidents. You can usually insulate the areas with felt cloth or insulator foam blocks from the NISSAN Squeak and Rattle Kit (J-43980) to repair the noise.

A

Trunk

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

B

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

C

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

D

Sunroof and Headliner

Noises in the sunroof and headliner area can often be traced to one of the following:

E

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

F

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

G

Seats

When isolating seat noises it's important to note the position the seat in and the load placed on the seat when the noise is present.

H

These conditions should be duplicated when verifying and isolating the cause of the noise.

Causes of seat noise include:

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

IP

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

J

K

Underhood

Some interior noises may be caused by components under the hood or on the engine wall. The noise is then transmitted into the passenger compartment.

L

Causes of transmitted underhood noises include:

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

M

These noises can be difficult to isolate since they can not be reached from the interior of the vehicle. The best method is to secure, move or insulate one component at a time and test drive the vehicle. Also, engine RPM or load can be changed to isolate the noise.

Repair can usually be made by moving, adjusting, securing, or insulating the component causing the noise.

[VG33ER]

UBS00DXR

