

<COMBINED EDITION>

NISSAN

MODEL F23 SERIES

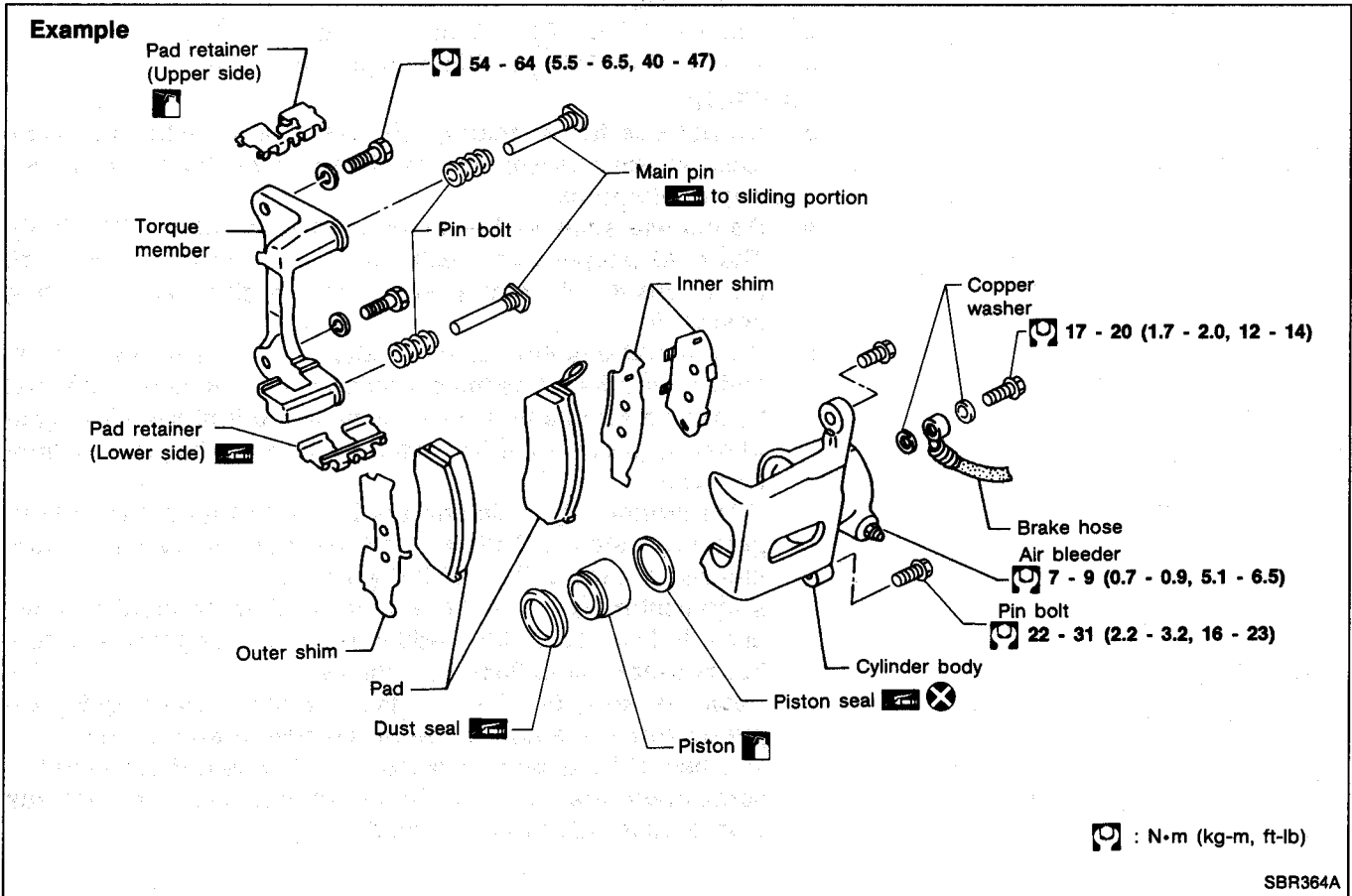
QUICK REFERENCE INDEX

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HOW TO USE THIS MANUAL

1. **A QUICK REFERENCE INDEX**, a black tab (e.g. **BR**) is provided on the first page. You can quickly find the first page of each section by mating it to the section's black tab.
2. **THE CONTENTS** are listed on the first page of each section.
3. **THE TITLE** is indicated on the upper portion of each page and shows the part or system.
4. **THE PAGE NUMBER** of each section consists of two letters, which designate the particular section, and a number (e.g. "BR-5").
5. **THE LARGE ILLUSTRATIONS** are exploded views (See below.) and contain tightening torques, lubrication points and other information necessary to perform repairs. The illustrations should be used in reference to service matters only. When ordering parts, refer to the appropriate **PARTS CATALOG**.



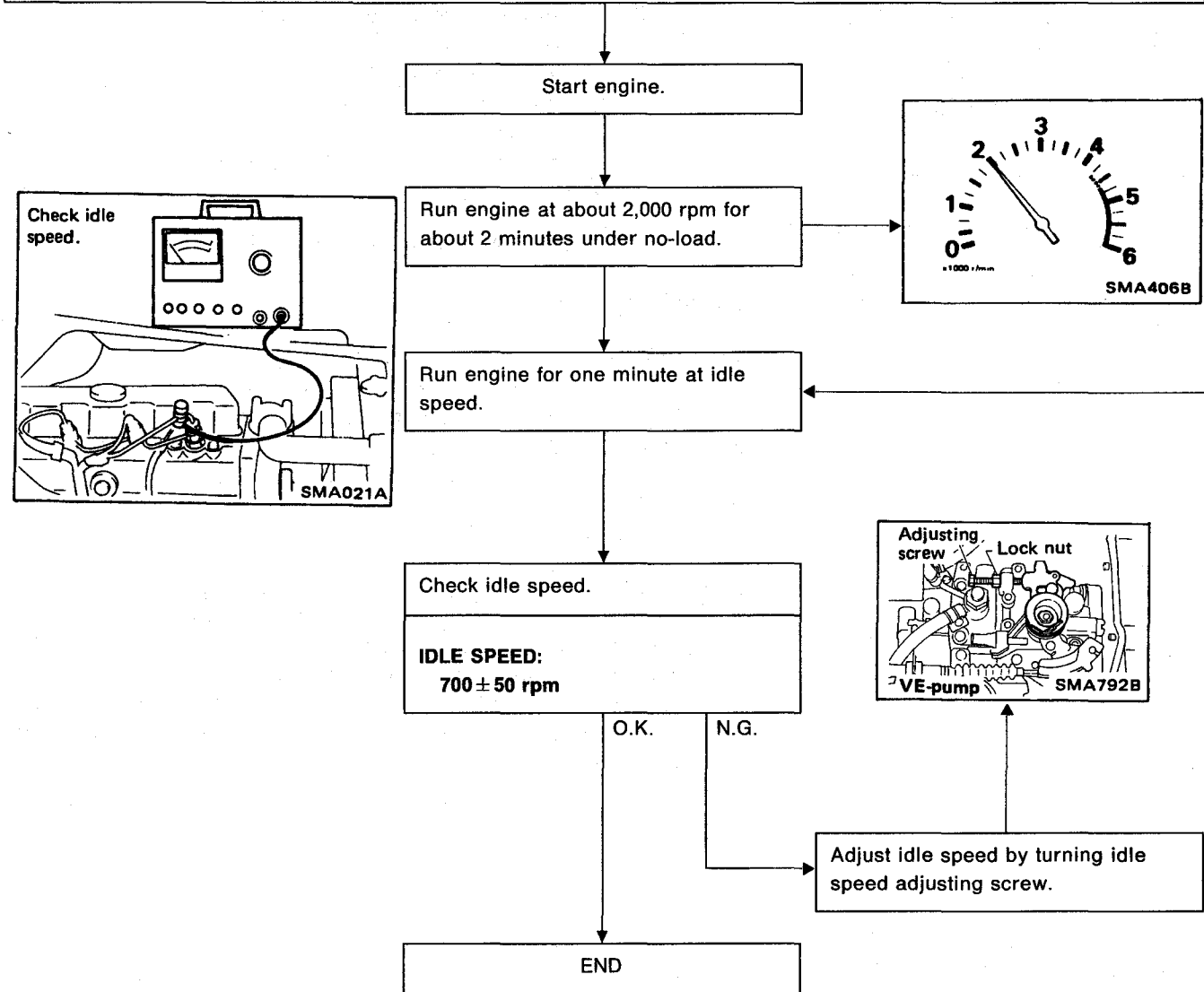
6. **THE SMALL ILLUSTRATIONS** show the important steps such as inspection, use of special tools, knacks of work and hidden or tricky steps which are not shown in the previous large illustrations. Assembly, inspection and adjustment procedures for the complicated units such as the automatic transaxle or transmission, etc. are presented in a step-by-step format where necessary.
7. The following **SYMBOLS AND ABBREVIATIONS** are used:

	: Tightening torque	2WD	: 2-Wheel Drive
	: Should be lubricated with grease. Unless otherwise indicated, use recommended multi-purpose grease.	M/T	: Manual Transaxle/Transmission
	: Should be lubricated with oil.	A/C	: Air Conditioner
	: Sealing point	P/S	: Power Steering
	: Checking point	Tool	: Special Service Tools
	: Always replace after every disassembly.	S.D.S.	: Service Data and Specifications
L.H., R.H.	: Left-Hand, Right-Hand	SAE	: Society of Automotive Engineers, Inc.
FR, RR	: Front, Rear	G.C.C.	: Gulf Cooperation Council
		L.H.D.	: Left-Hand Drive
		R.H.D.	: Right-Hand Drive

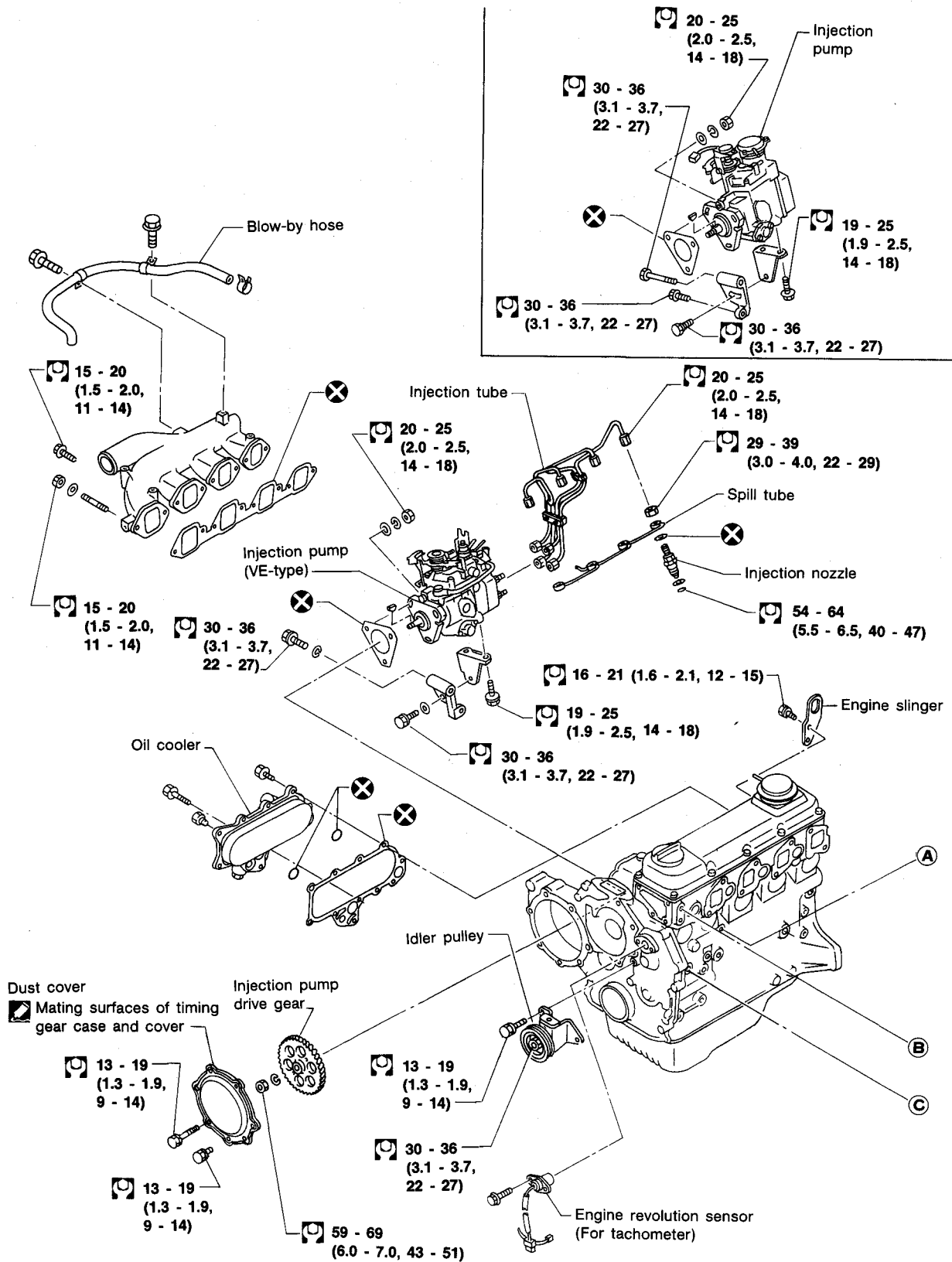
Checking Idle Speed (Cont'd)

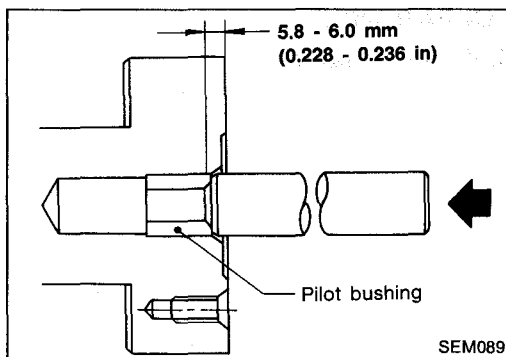
INSPECTION

- Warm up engine until water temperature indicator points to middle of gauge.
 - Attach tachometer's pick-up to No. 1 fuel injection tube.
- In order to take accurate reading of engine rpm, remove clamps that secure No. 1 fuel injection tube.



- Race engine two or three times and allow engine to return to idle speed. If idle speed is not within the specified range, check acceleration linkage for binding and correct it if necessary.

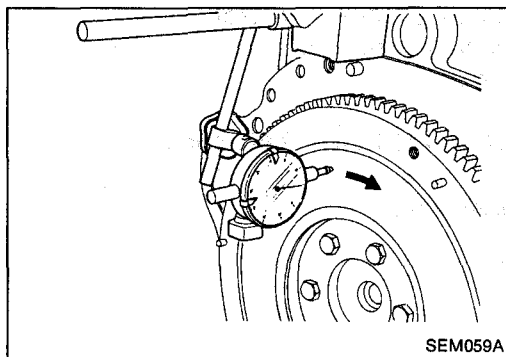




2. Insert pilot bushing until distance between flange end and bushing is specified value.

Distance:

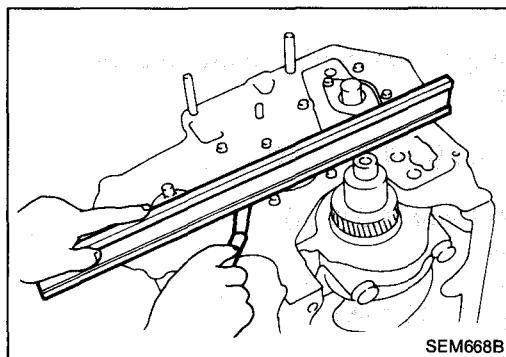
Approx. 5.8 - 6.0 mm (0.228 - 0.236 in)



FLYWHEEL RUNOUT

Runout (Total indicator reading):

Less than 0.1 mm (0.0039 in)

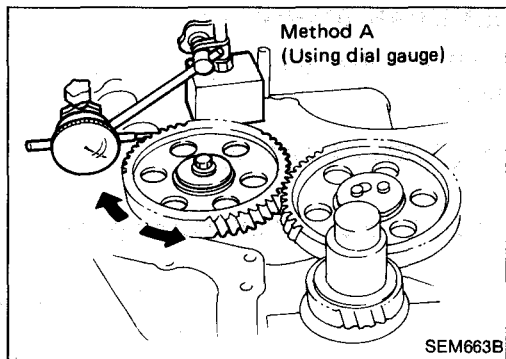


FRONT PLATE

Check front plate for warpage. If not within the limit, make flat or replace front plate.

Warpage limit:

0.2 mm (0.008 in)



GEAR TRAIN

Camshaft drive gear, injection pump drive gear, oil pump gear, idler gear and crankshaft gear

1. If gear tooth and key have scratches or are excessively worn, replace gear and key.
2. Check gear train backlash before disassembling and after assembling.

Method A (Using dial gauge)

Method B (Using fuse wire)

If beyond the limit, replace gear.

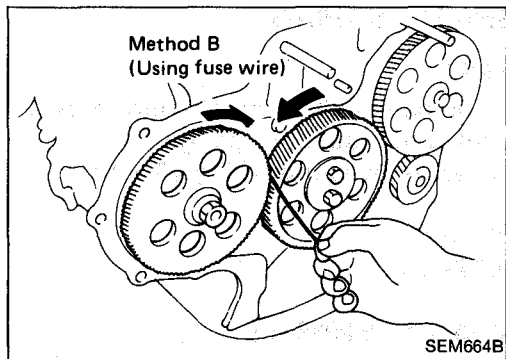
Backlash:

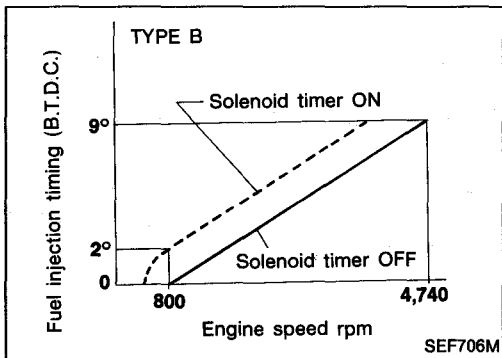
Standard

0.06 - 0.12 mm (0.0024 - 0.0047 in)

Limit

0.20 mm (0.0079 in)





Type of fuel injection timing:

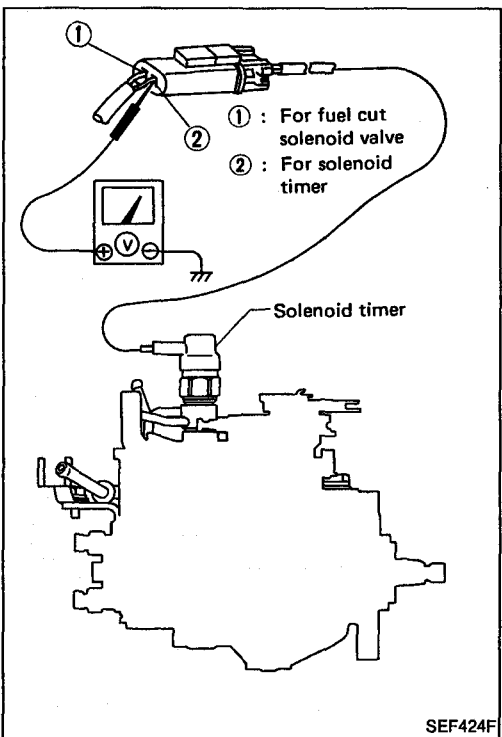
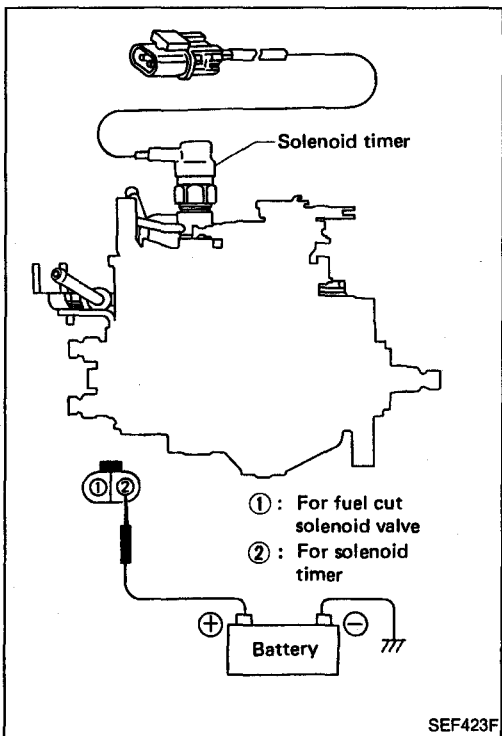
	F23
TD25	Type A
TD27	Type B

INSPECTION

1. Disconnect solenoid timer harness and check for "clicking" sound from solenoid when battery is connected and disconnected.

If solenoid has malfunction, replace it.

After checking, reconnect the connector.



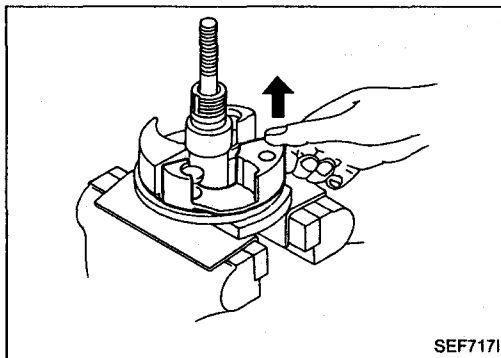
2. Disconnect water temperature sensor harness connector.
3. Start engine and check voltage between terminal ② and ground.

Battery voltage should exist for 30 seconds after starting engine.

If not, check harness and glow control unit.

Timer (Cont'd)

8. Remove flyweights from flyweight holder.



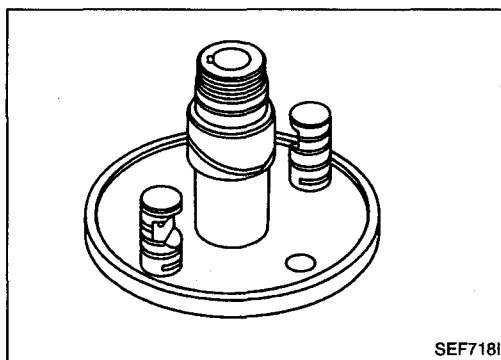
9. Carefully clean disassembled parts to remove all oil and dirt.

INSPECTION**Timing device springs**

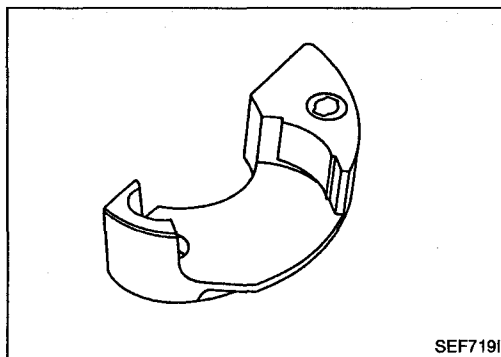
Replace entire set if bent or worn.

Flyweight holder

Replace flyweight holder if tapered parts, key slot or flyweight pins are abnormally worn, or flyweight pin welds are cracked.

**Flyweights**

Replace if pin holes or curved surfaces are worn.

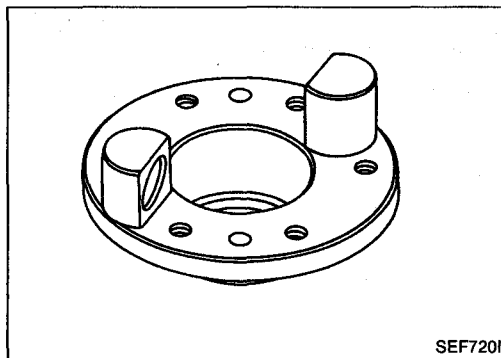
**Timing device flange**

Replace if abnormal pin wear or pin weld cracks are found.

Injection pump drive gear

Replace if abnormal gear tooth wear is found.

Do not reuse the lock washer. Always replace a new one.



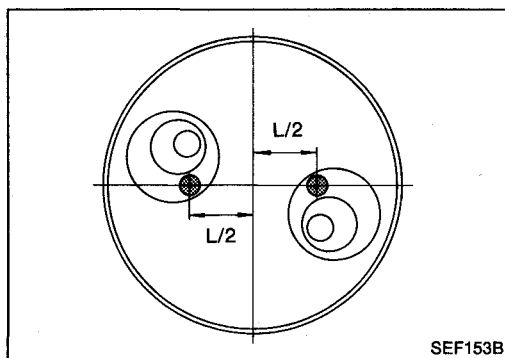
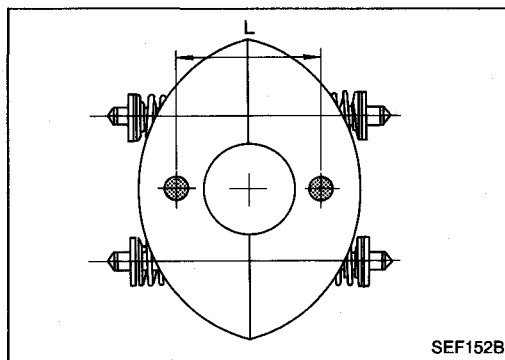
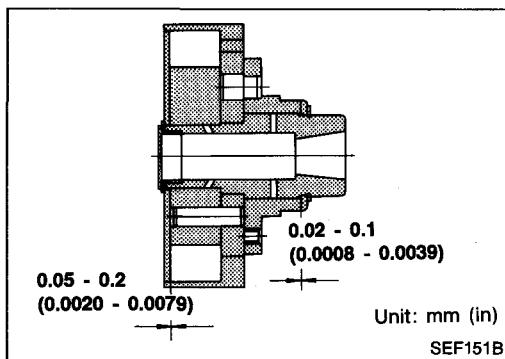
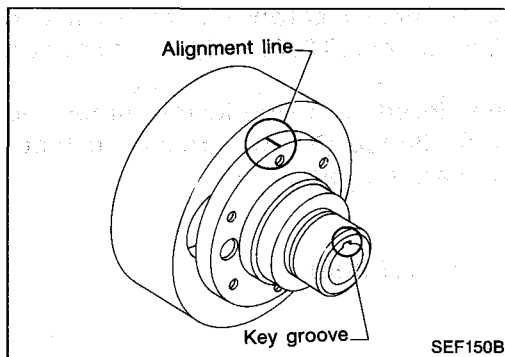
Timer (Cont'd)

Other parts

Replace pilot pin if it is bent or worn on mating surfaces of snap ring.

Discard snap rings and O-rings and install new ones.

Replace affected parts if sealing lips of oil seals are damaged or if there is any oil leakage at or around oil seals.



ASSEMBLY

Assemble in the reverse order of disassembly.

- 1 Attach flanges to timer flange and hold it with washer and snap ring.
Ensure that both the key groove on timer flange and alignment line on outer periphery of flange face in the same direction.

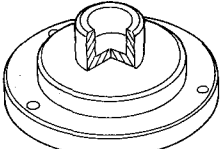
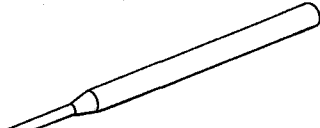
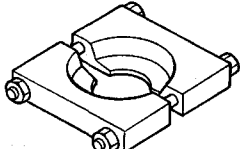
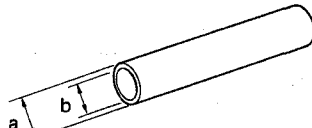
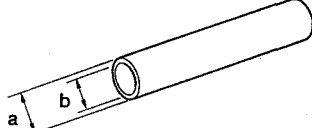
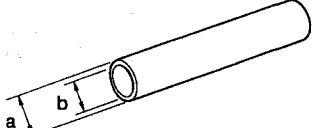
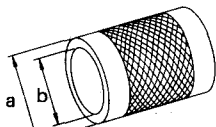
2. With timer flange attached to flange, make sure clearance between flange and washer is within 0.02 to 0.1 mm (0.0008 to 0.0039 in) range.
If it is not within specified range, replace shim with suitable one.

3. Install large and small cams on timer flange while key groove on timer flange and alignment line on flange are aligned with each other.

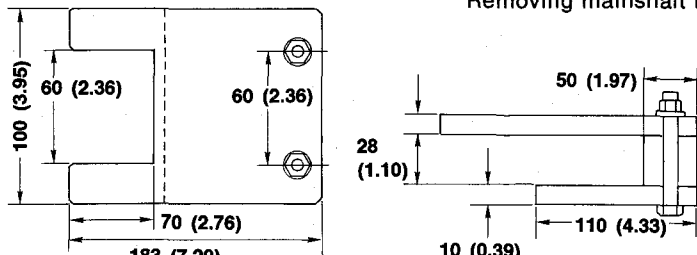
4. Attach spring to flyweight.
Measure distance "L" between center of flyweight pins.
Next, rotate large cam until distances between center of bore in large cam and rotational centers of timer flange are equal on both the left and right sides. Then, install flyweight assembly.

Special Service Tools — For RS5W81A

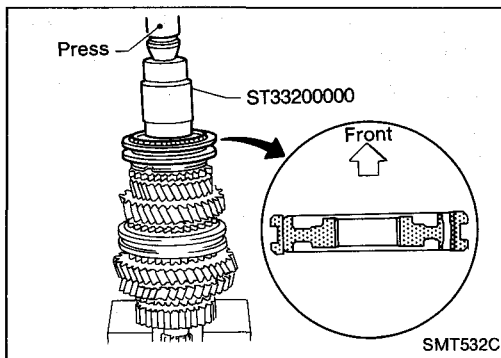
*: Special tools or commercial equivalent

Tool number Tool name	Description
ST22530000* Adapter	 <p data-bbox="949 283 1252 310">Installing mainshaft bearing</p>
KV32101100* Pin punch	 <p data-bbox="949 447 1444 504">Removing and installing retaining pin for shift fork rod</p>
ST30031000* Puller	 <p data-bbox="949 594 1348 621">Removing counter gear front bearing</p>
ST22360002* Drift	 <p data-bbox="949 783 1380 810">Installing counter gear rear end bearing</p> <p data-bbox="949 892 1165 940">a: 29 mm (1.14 in) dia. b: 23 mm (0.91 in) dia.</p>
ST22452000* Drift	 <p data-bbox="949 940 1252 968">Installing mainshaft bearing</p> <p data-bbox="949 1050 1165 1098">a: 45 mm (1.77 in) dia. b: 36 mm (1.42 in) dia.</p>
ST30600000* Drift	 <p data-bbox="949 1098 1252 1125">Installing front cover oil seal</p> <p data-bbox="949 1207 1165 1255">a: 36 mm (1.42 in) dia. b: 31 mm (1.22 in) dia.</p>
ST30720000* Drift	 <p data-bbox="949 1255 1189 1283">Installing rear oil seal</p> <p data-bbox="949 1365 1189 1413">a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia.</p>

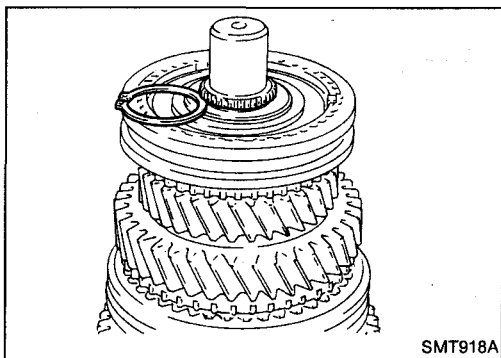
Commercial Service Tool — For RS5W81A

Tool name	Description
Bearing stopper	 <p data-bbox="949 1543 1364 1570">Removing mainshaft rear end bearing</p> <p data-bbox="1204 1795 1332 1822">Unit: mm (in)</p>

Mainshaft and Gears (Cont'd)



10. Press on 3rd & 4th synchronizer assembly.
Pay attention to direction of synchronizer assembly.



11. Select proper 3rd & 4th hub snap ring to minimize clearance of groove.

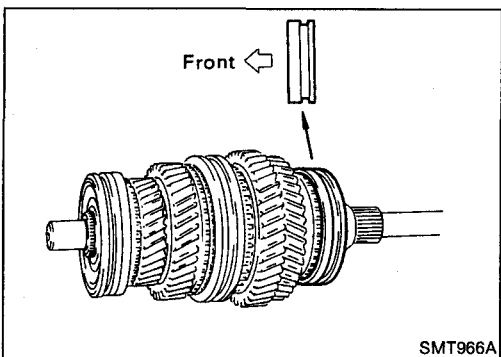
Allowable clearance of groove:

0 - 0.1 mm (0 - 0.004 in)

3rd & 4th hub snap ring:

Refer to S.D.S.

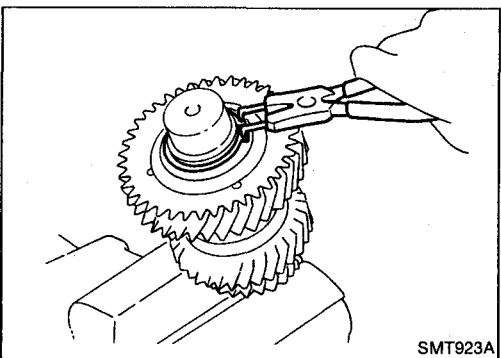
12. Install selected snap ring on mainshaft.



13. Install reverse coupling sleeve.

Pay attention to direction of coupling sleeve.

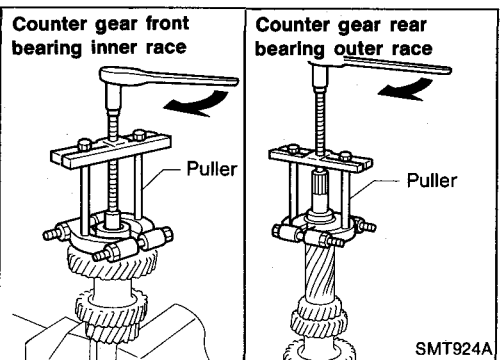
14. Measure 1st, 2nd, 3rd and reverse main gear end plays as the final check — Refer to "Disassembly".



Counter Gear

DISASSEMBLY

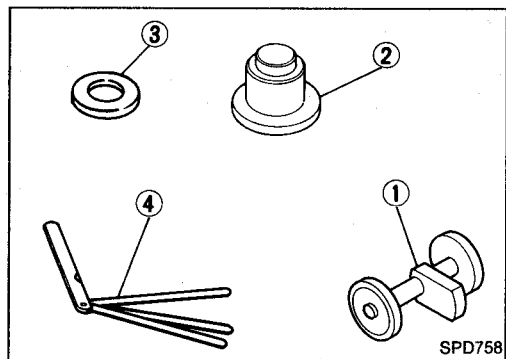
1. Remove sub-gear components.
 - a. Remove sub-gear snap ring.
 - b. Remove sub-gear, sub-gear bracket, sub-gear spring and steel ball.



2. Pull out counter gear front and rear bearing inner race.

ADJUSTMENT (Model H233B and H260)

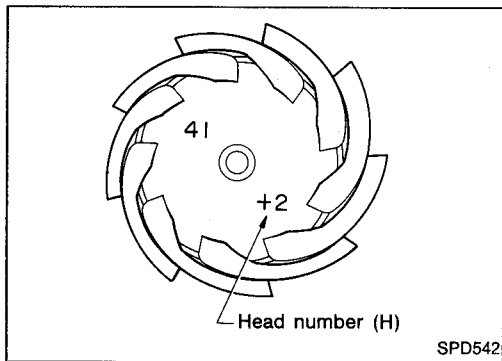
To avoid confusion while calculating bearing shims, it is absolutely necessary to stay with the metric system. If you measure anything in inches, **the results must be converted to the metric system.**



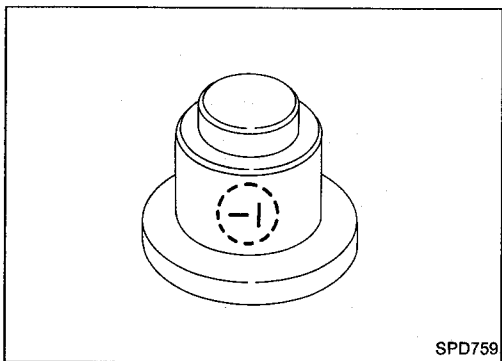
Drive Pinion Height

1. Prepare Tools for pinion height adjustment.
 - ① Height Gauge (H233B ST31251000)
(H260 ST31130000)
 - ② Dummy Shaft (H233B ST31181001)
(H260 ST31241000)
 - ③ Spacer [thickness: 2.50 mm (0.0984 in)]
 - ④ Feeler Gauge
2. To simplify the job, make a chart, like the one below, to organize your calculations.

LETTERS	HUNDREDTHS OF A MILLIMETER
H: Head number	
D': Figure marked on dummy shaft	
S: Figure marked on height gauge	
N: Measuring clearance	



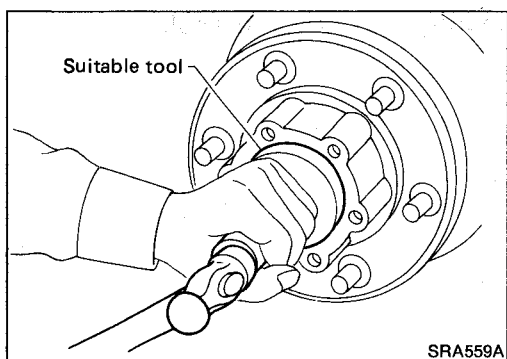
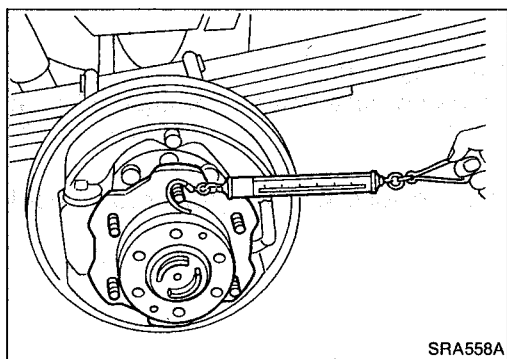
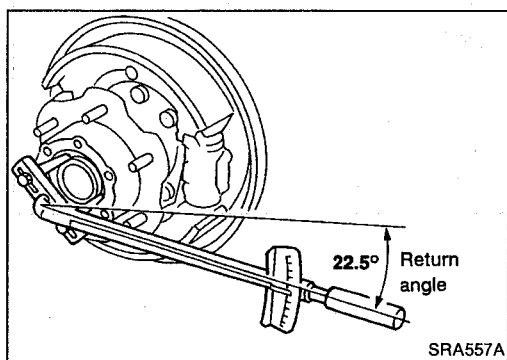
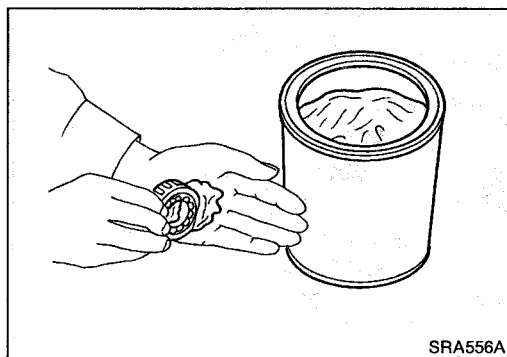
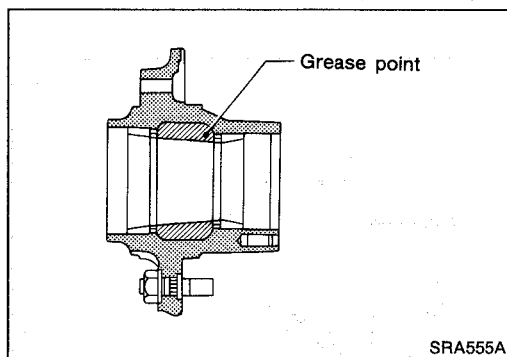
3. Write the following numbers down the chart.
H: Head number



D': Figure marked on dummy shaft

REAR AXLE (F23)

Installation — Double tire models (Cont'd)



4. Pack hub with recommended multi-purpose grease.

5. Coat each roller bearing and inner race with recommended multi-purpose grease.

- Install wheel hub into axle case.
- Install inner race of outer bearing.
- Temporarily tighten lock nut.

6. Using Wheel Bearing Lock Nut Wrench, tighten lock nut to specified torque.

☑: 167 - 196 N·m (17 - 20 kg-m, 123 - 145 ft-lb)

- Turn hub back and forth two or three times to settle down wheel bearing.
- Loosen lock nut so that it can be rotated by hand.
- Tighten wheel bearing lock nut to specified torque.
- Turn hub back and forth again two or three times.
- Loosen wheel bearing nut until its screw hole is aligned with lock washer. (Loosen to a maximum of 22.5°.)

Do not over return angle.

(6) Using a spring scale, measure if hub's rotation starting torque is within specifications. If it is not, loosen wheel bearing nut and adjust rotation starting torque again.

Rotation starting torque:

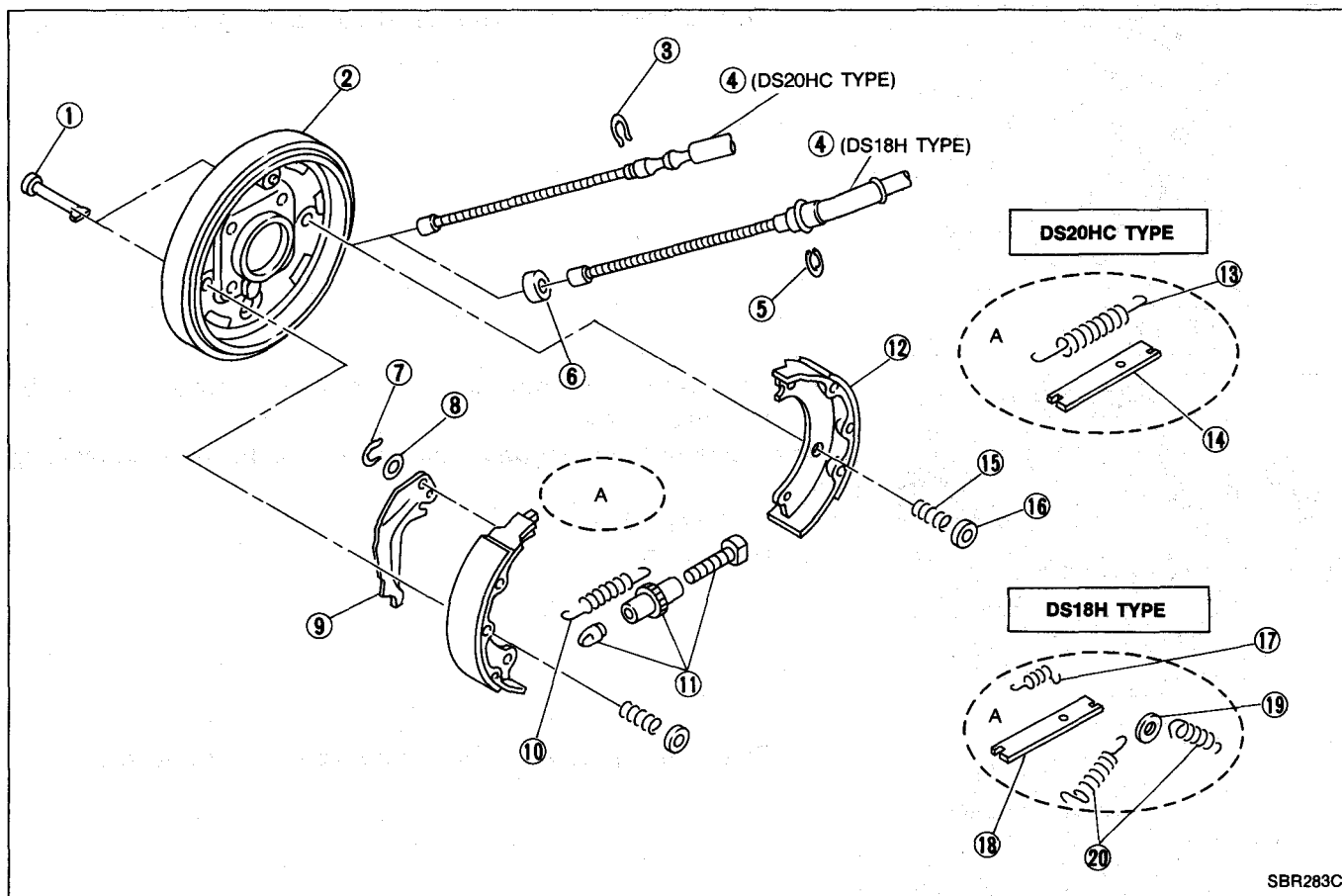
2.1 - 3.4 N·m (0.21 - 0.35 kg-m, 1.5 - 2.5 ft-lb)

Spring scale indication (at hub bolt location):

24.5 - 40.2 N (2.5 - 4.1 kg, 5.5 - 9.0 lb)

7. Coat sealing lips with recommended multi-purpose grease, install a new oil seal.

CENTER BRAKE



SBR283C

- ① Shoe hold pin
- ② Back plate
- ③ Retainer ring
- ④ Parking brake cable
- ⑤ E-ring
- ⑥ Rubber
- ⑦ Retainer ring

- ⑧ Conical washer
- ⑨ Parking lever
- ⑩ Adjuster spring
- ⑪ Adjuster
- ⑫ Brake shoe
- ⑬ Shoe return spring
- ⑭ Strut

- ⑮ Retainer spring
- ⑯ Retainer
- ⑰ Strut return spring
- ⑱ Strut
- ⑲ Shoe guide plate
- ⑳ Shoe return spring

Removal

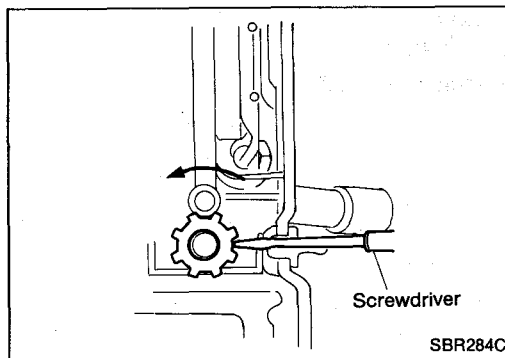
WARNING:

Clean brakes with a vacuum dust collector to minimize the hazard of airborne asbestos or other materials.

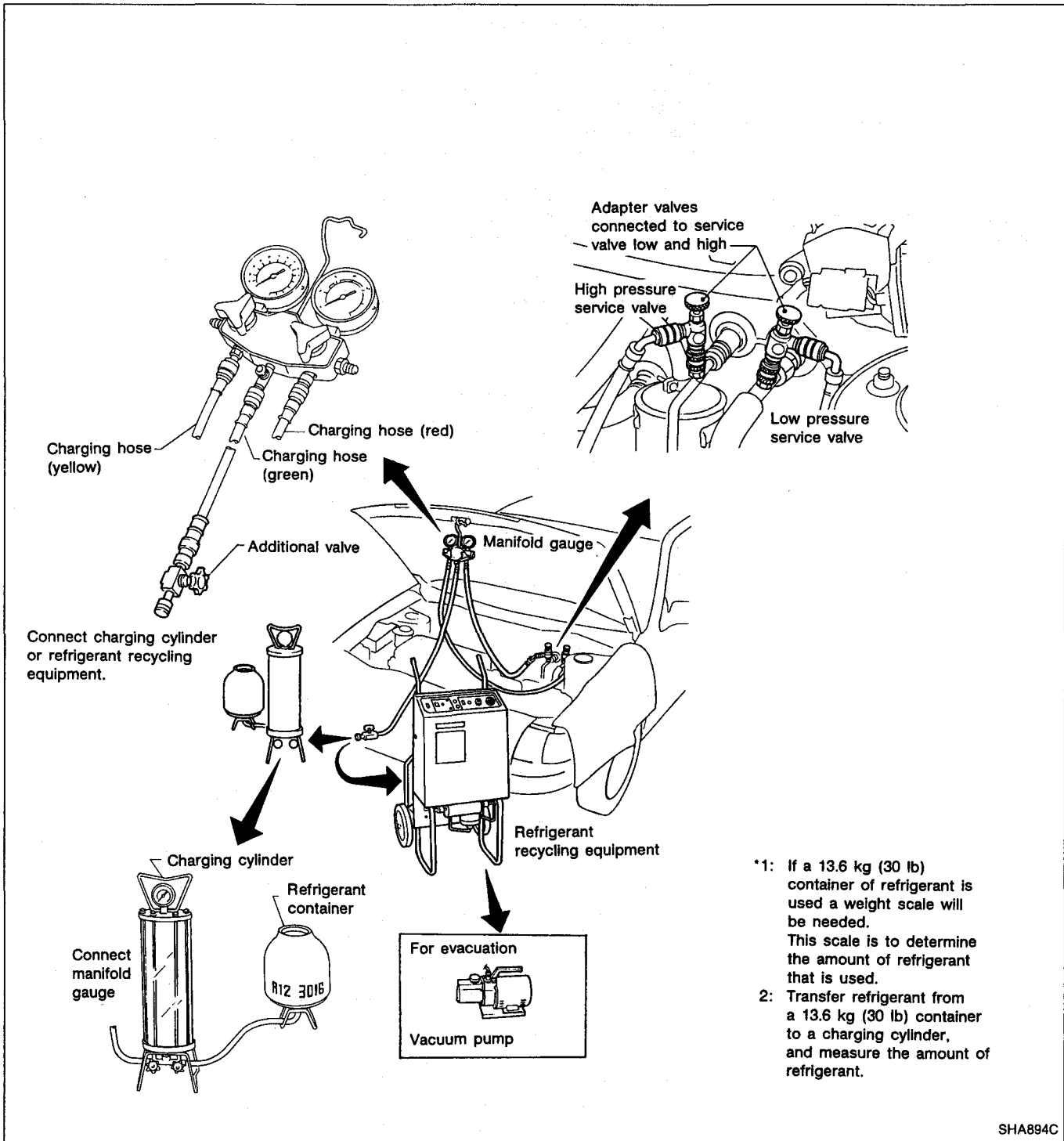
1. Release parking brake lever fully, then remove drum.

If drum is hard to remove, the following procedures should be carried out:

- a. Remove plug.
- b. Insert screwdriver through plug hole.
- c. Turn adjuster to make clearance between brake shoe and drum.



Setting of Commercial Service Tools

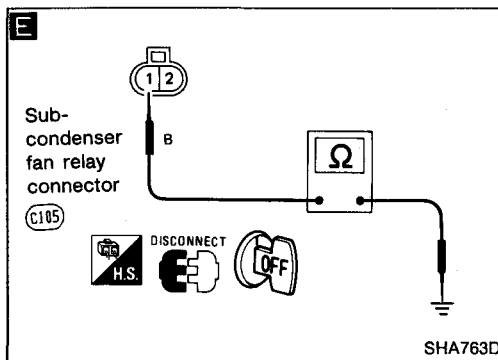
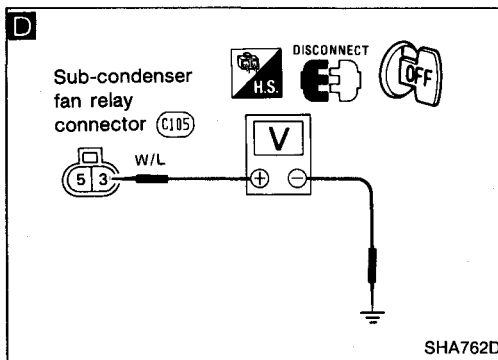
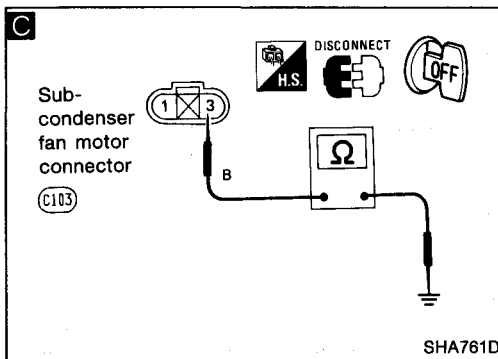
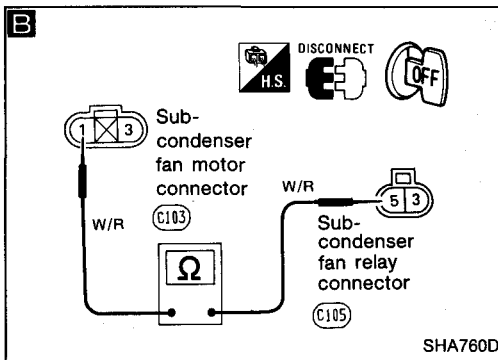
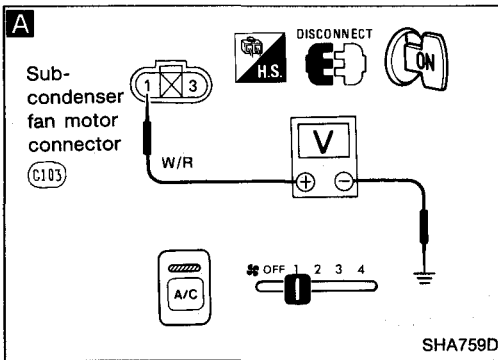


WARNING:
Discharge only into your recycling equipment. Do not release refrigerant into the air.

Diagnostic Procedure 3

SYMPTOM: Sub-condenser fan motor does not rotate.

- Perform **PRELIMINARY CHECK 1** before referring to the following flow chart.



H41 model

A

CHECK POWER SUPPLY FOR SUB-CONDENSER FAN.
Disconnect sub-condenser fan harness connector.
Does battery voltage exist between sub-condenser fan motor harness terminal No. ① and body ground?

B Note

Disconnect sub-condenser fan relay. Check circuit continuity between sub-condenser fan relay harness terminal No. ⑤ and sub-condenser fan motor harness terminal No. ①?

C Note

Check circuit continuity between sub-condenser fan motor harness terminal No. ③ and body ground?

Replace condenser fan.

D

CHECK POWER SUPPLY FOR SUB-CONDENSER FAN RELAY.
Does battery voltage exist sub-condenser fan relay harness terminal No. ③ and body ground?

N.G.

CHECK POWER SUPPLY CIRCUIT, AT FUSIBLE LINK.
(Refer to "POWER SUPPLY ROUTING" in EL section and A/C ELECTRICAL CIRCUIT.)

E Note

Check circuit continuity between sub-condenser fan relay harness terminal No. ① and body ground?

Ⓐ
(Go to next page)

Note:
If the result is N.G. after checking circuit continuity, repair harness or connector.