

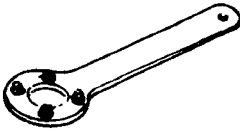
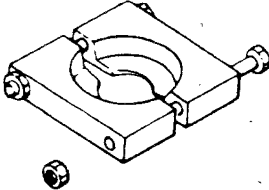
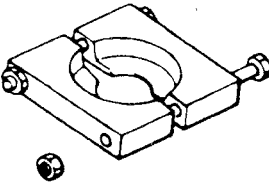

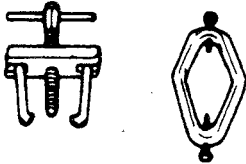
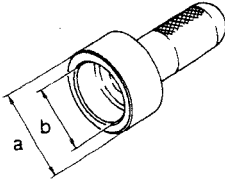
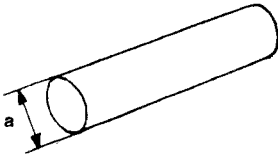

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PREPARATION

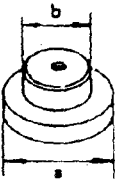
SPECIAL SERVICE TOOLS

*: Special tool or commercial equivalent

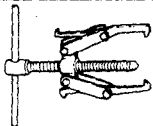
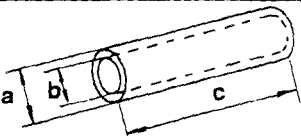
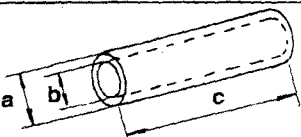
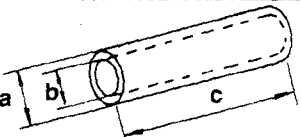
Tool number Tool name	Description
ST38060002* Flange wrench	 <p>Removing companion flange nut Installing companion flange nut</p>
ST30021000* Puller	 <p>Removing counter gear front bearing (Use with ST36710010)</p>
ST30031000* Puller	 <p>Removing counter gear rear bearing (Use with ST36710010)</p>
ST33290001* Puller	 <p>Removing center case oil seal Removing rear oil seal</p>
ST33051001* Puller	 <p>Removing companion flange</p>
ST30720000* Drift	 <p>Installing center case oil seal Installing rear oil seal</p> <p>a : 77 mm (3.03 in) dia. b : 55.5 mm (2.185 in) dia.</p>
ST36710010* Drift	 <p>Removing counter gear front bearing (Use with ST30021000) Removing counter gear rear bearing (Use with ST30031000)</p> <p>a : 34.5 mm (1.358 in) dia.</p>
ST33061000* Drift	 <p>Removing main gear bearing</p> <p>a : 28.5 mm (1.22 in) dia. b : 38 mm (1.50 in) dia.</p>

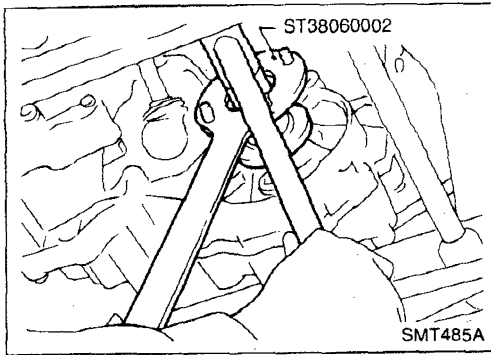
PREPARATION

*: Special tool or commercial equivalent

Tool number Tool name	Description
ST30613000* Drift	 <p>Installing main gear bearing Installing cover oil seal</p> <p>a: 72 mm (2.83 in) dia. b: 48 mm (1.89 in) dia.</p>

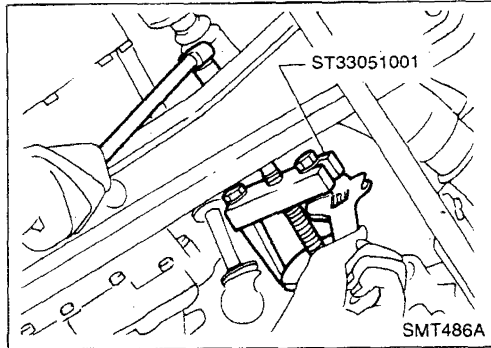
COMMERCIAL SERVICE TOOLS

Tool name	Description
Puller	 <p>Removing front drive shaft front bearing Removing front drive shaft rear bearing Removing main gear bearing</p>
Drift	 <p>Installing shift shaft oil seal</p> <p>a : 26 mm (1.02 in) dia. b : 20 mm (0.79 in) dia. c : 150 mm (5.91 in)</p>
Drift	 <p>Installing mainshaft rear bearing</p> <p>a : 50 mm (1.97 in) dia. b : 42 mm (1.65 in) dia. c : 180 mm (7.09 in)</p>
Drift	 <p>Installing L & H hub</p> <p>a : 60 mm (2.36 in) dia. b : 50 mm (1.97 in) dia. c : 60 mm (2.36 in)</p>

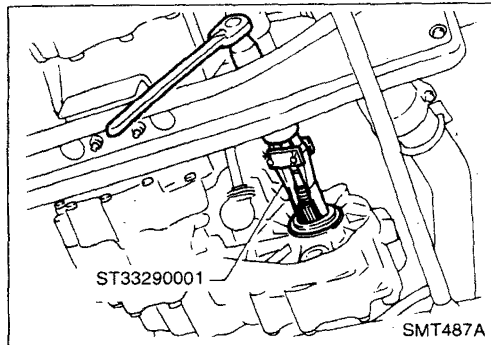


Replacing Oil Seal CENTER CASE OIL SEAL

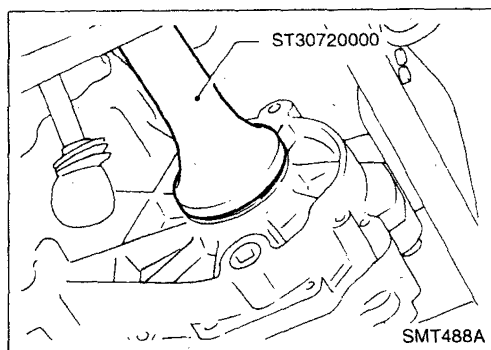
1. Remove front propeller shaft — Refer to PD section.
2. Remove companion flange nut.



3. Remove companion flange.



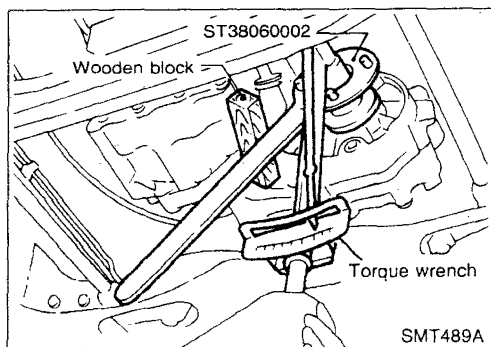
4. Remove center case oil seal.



5. Install center case oil seal.

Before installing, apply multi-purpose grease to seal lip.

6. Install companion flange.



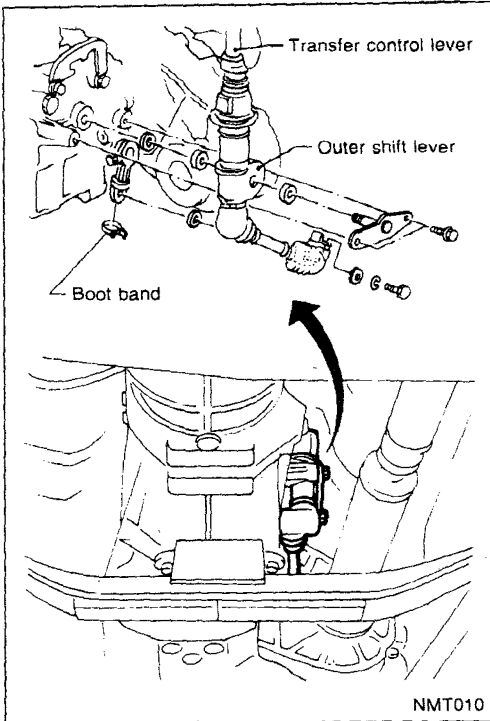
7. Tighten nut to the specified torque.
⌚ : 226 - 324 N·m (23 - 33 kg-m, 166 - 239 ft-lb)
8. Install front propeller shaft.

ON-VEHICLE SERVICE

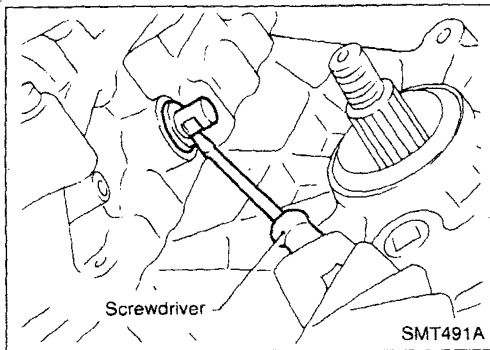
Replacing Oil Seal (Cont'd)

SHIFT SHAFT OIL SEAL

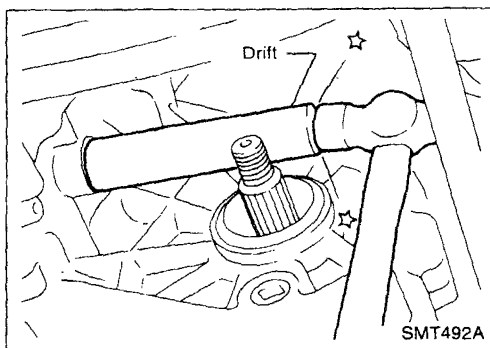
1. Remove front propeller shaft — Refer to PD section.
2. Remove companion flange — Refer to center case oil seal service on previous page.
3. Remove transfer control lever from transfer outer shift lever. Then remove outer shift lever.



4. Remove shift shaft oil seal.
Be careful not to damage cross shaft.

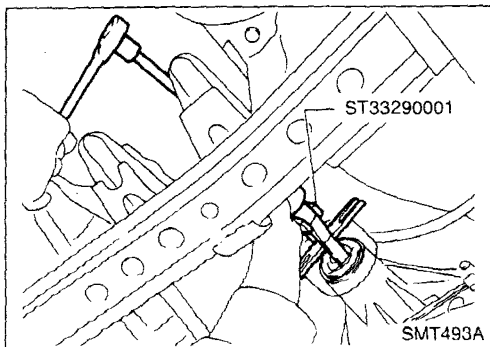


5. Install shift shaft oil seal.
Before installing, apply multi-purpose grease to seal lip.
6. Install transfer control linkage.
7. Install companion flange — Refer to center case oil seal service on previous page.
8. Install front propeller shaft.



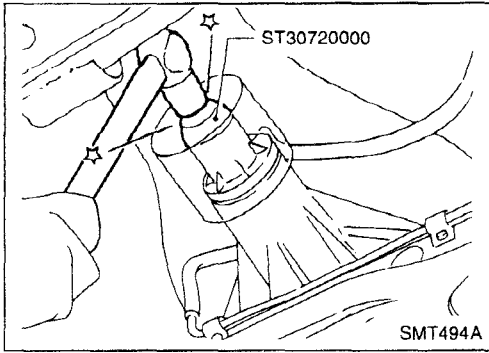
REAR OIL SEAL

1. Remove rear propeller shaft — Refer to PD section.
2. Remove rear oil seal.



ON-VEHICLE SERVICE

Replacing Oil Seal (Cont'd)

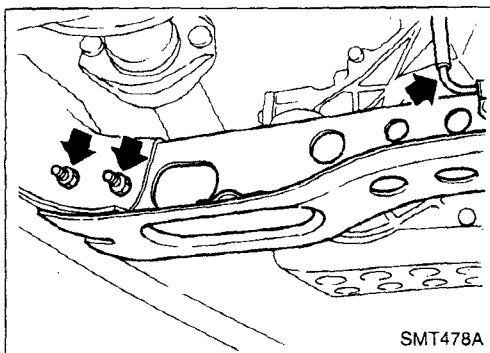


3. Install rear oil seal.

Before installing apply multi-purpose grease to seal lip.

4. Install rear propeller shaft.

REMOVAL AND INSTALLATION



Removal

- Drain oil from transfer and transmission.
- Remove front and rear propeller shafts — Refer to PD section.
- Insert plug into oil seal after removing propeller shaft.

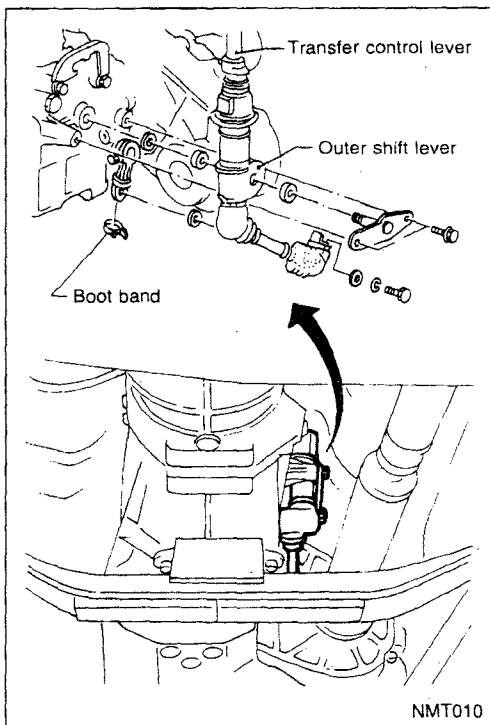
CAUTION:

Be careful not to damage spline, sleeve yoke and rear oil seal, when removing propeller shaft.

- Remove torsion bar spring — Refer to removal and installation of lower link in FA section. Then remove fifth cross-member.
- Remove transfer control lever from transfer outer shift lever.
- Remove transfer from transmission.

WARNING:

Support transfer while removing it.

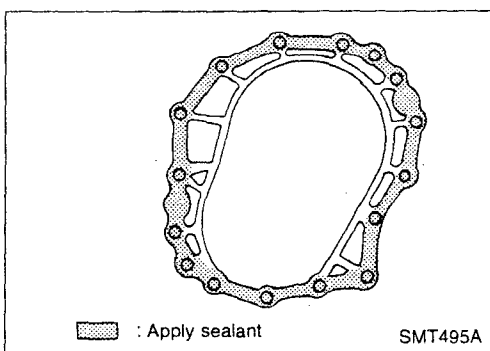


Installation

- Apply recommended sealant to mating surface to transmission.

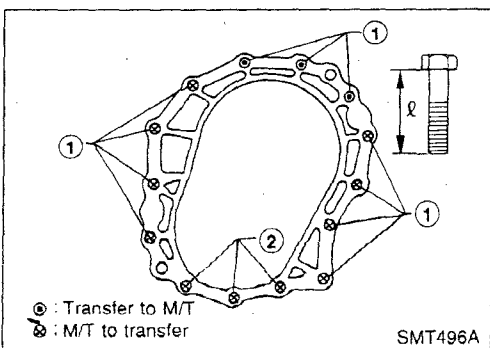
Recommended sealant:

Nissan genuine part (KP610-00250) or equivalent

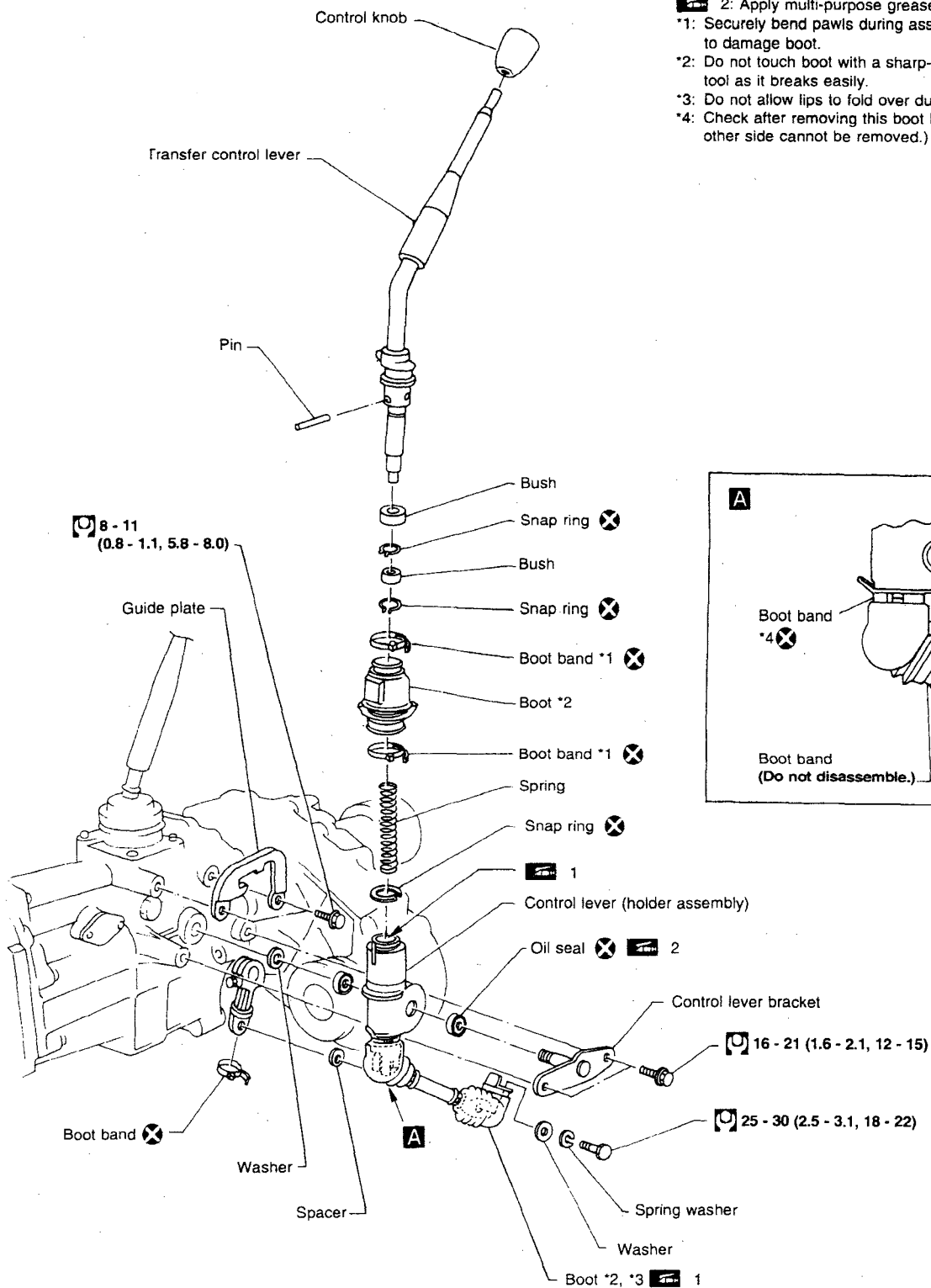


- Tighten bolts securing transfer.

Bolt No.	Tightening torque N·m (kg-m, ft-lb)	ℓ mm (in)
①	31 - 41 (3.2 - 4.2, 23 - 30)	45 (1.77)
②	31 - 41 (3.2 - 4.2, 23 - 30)	60 (2.36)



TRANSFER GEAR CONTROL



N·m (kg·m, ft·lb)



1: Fill multi-purpose grease up.



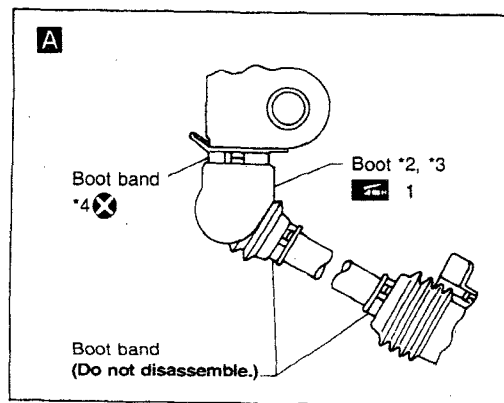
2: Apply multi-purpose grease.

*1: Securely bend pawls during assembly. Be careful not to damage boot.

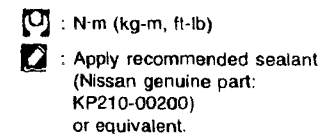
*2: Do not touch boot with a sharp-pointed or a hard tool as it breaks easily.

*3: Do not allow lips to fold over during assembly.

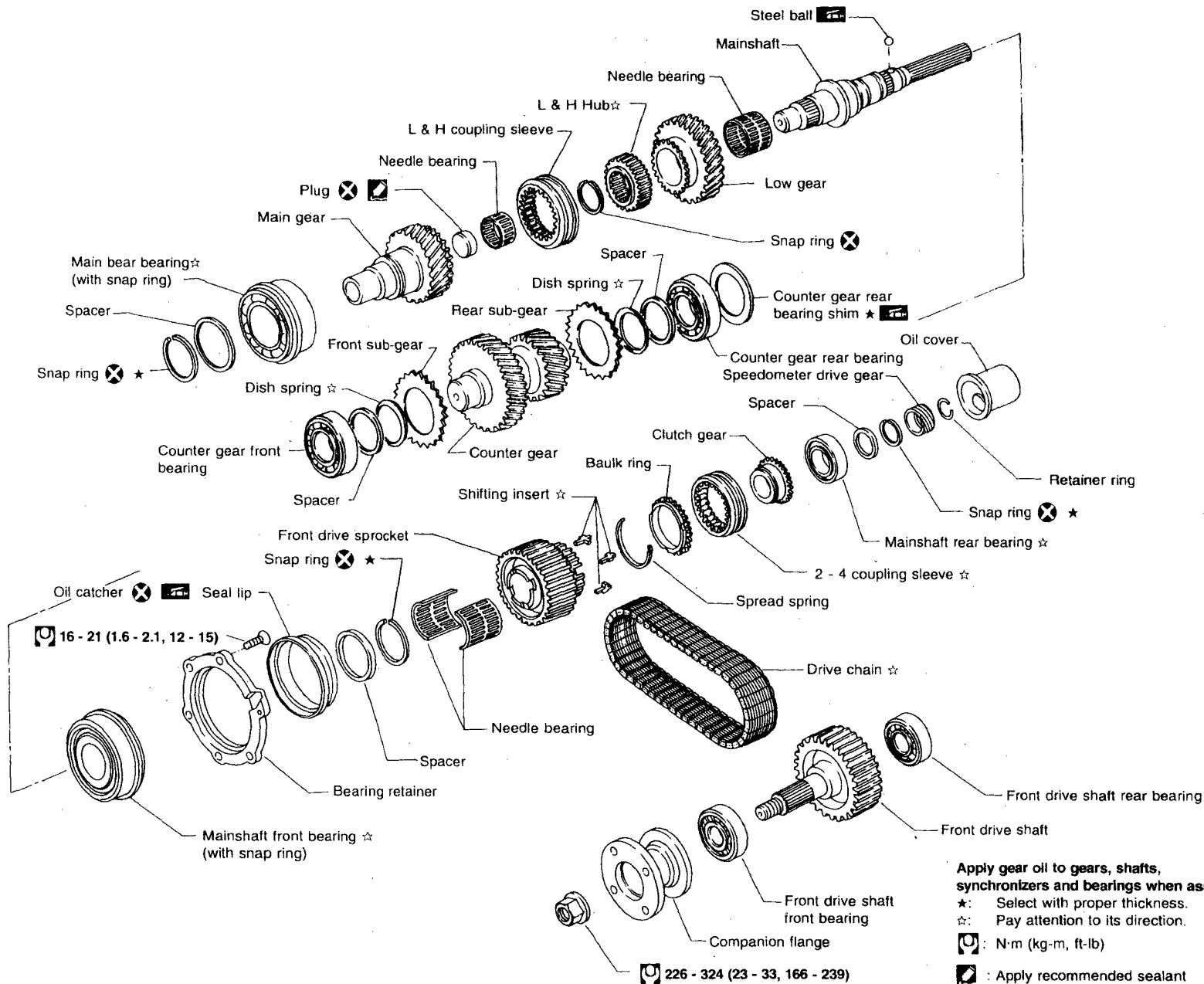
*4: Check after removing this boot band. (Boot on the other side cannot be removed.)



Case Components



Gear Components



Apply gear oil to gears, shafts, synchronizers and bearings when assembling.

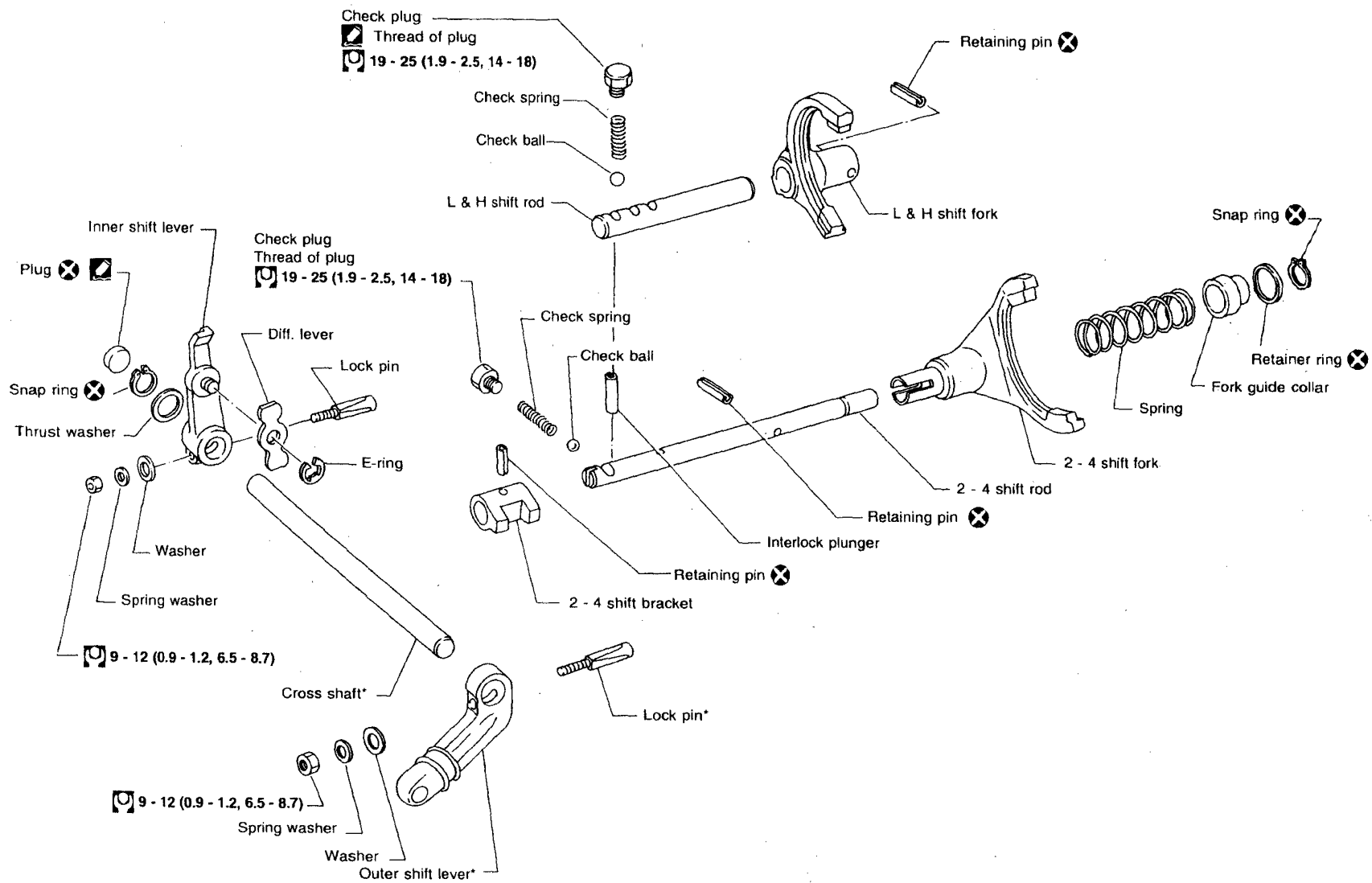
★: Select with proper thickness.

☆: Pay attention to its direction.

Ⓜ: N·m (kg·m, ft·lb)

☑: Apply recommended sealant (Nissan genuine part: KP210-00200) or equivalent.

Shift Control Components

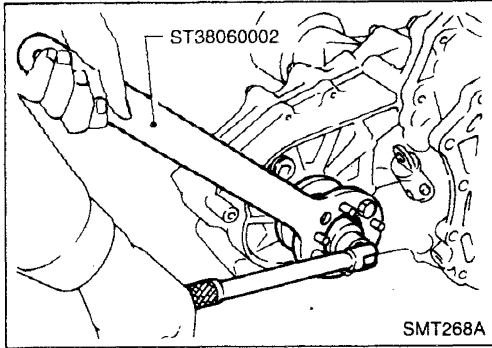


* : If these parts need to be replaced, replace them as a set.

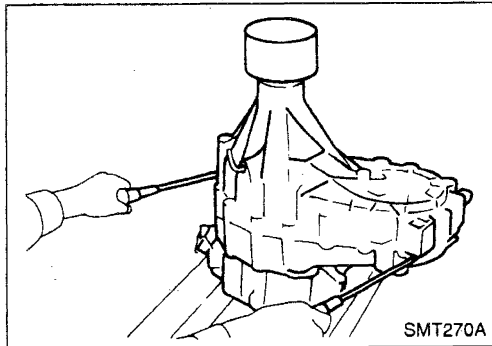
9 : N·m (kg-m, ft-lb)

Apply recommended sealant (Nissan genuine part: KP210-00200) or equivalent.

DISASSEMBLY

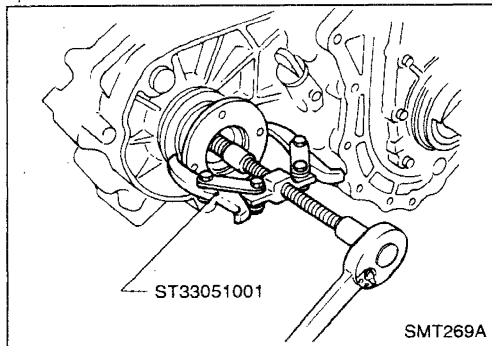


1. Remove nut of companion flange.

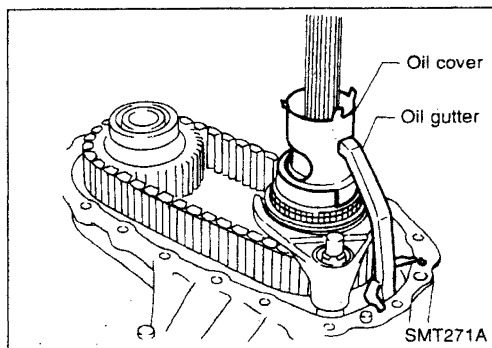


2. Remove rear case.

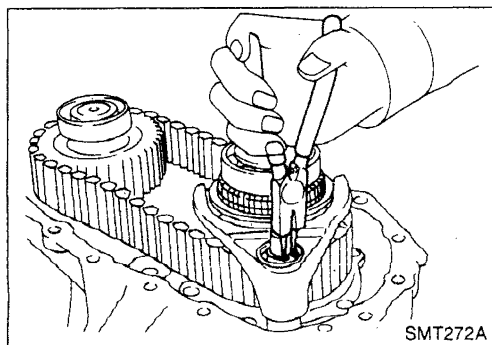
Be careful not to damage the mating surface.



3. Remove companion flange.

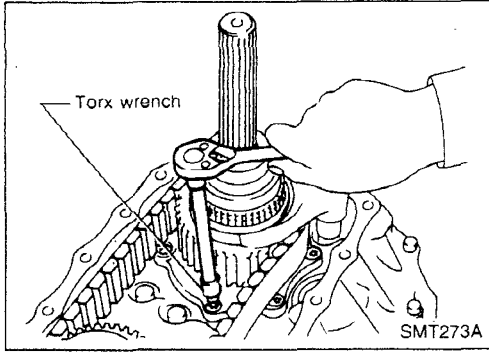


4. Remove oil cover and oil gutter.

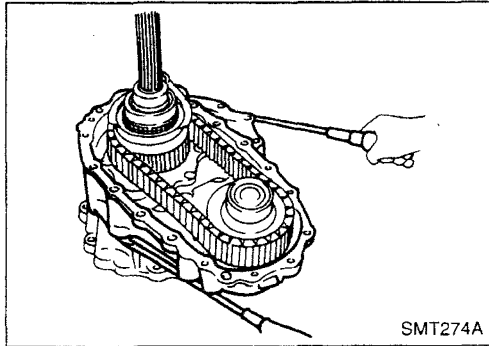


5. Remove snap ring from 2-4 shift rod.

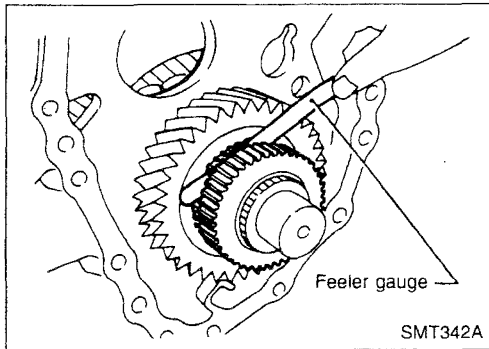
DISASSEMBLY



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



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

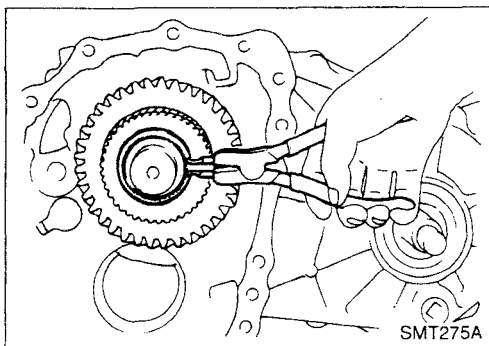


8. Measure end play of low gear.

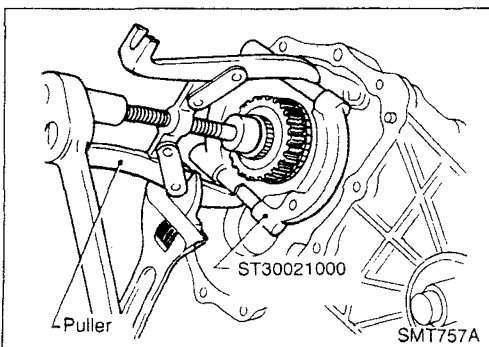
Standard:

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.

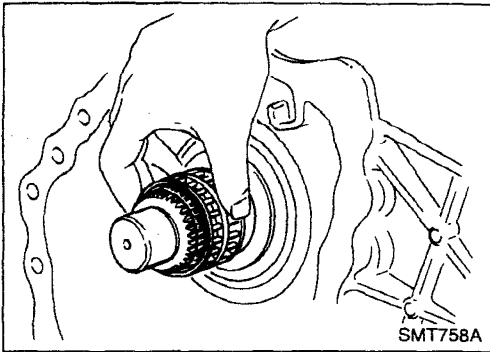


9. Disassemble center case assembly.
a. Remove snap ring from mainshaft.

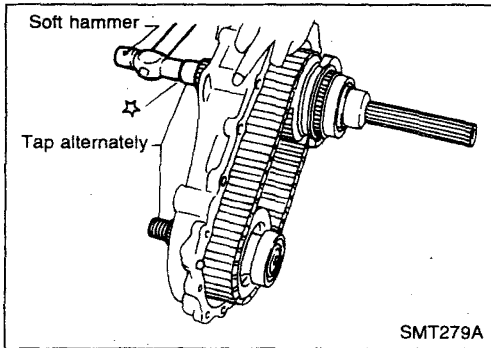


- b. Pull out low gear with L & H hub.

DISASSEMBLY

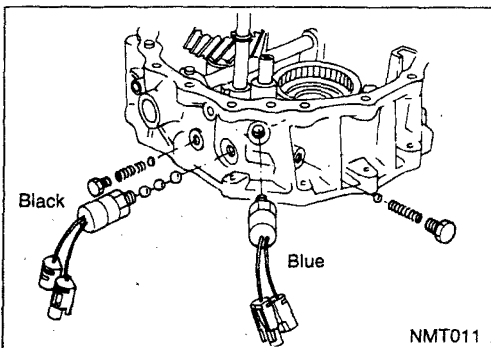


c. Remove needle bearing of low gear.



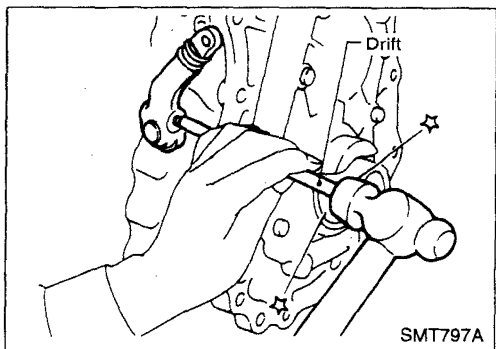
d. Remove mainshaft, front drive and drive chain as a set by tapping front end of mainshaft and front drive shaft alternately.

Be careful not to bend drive chain.

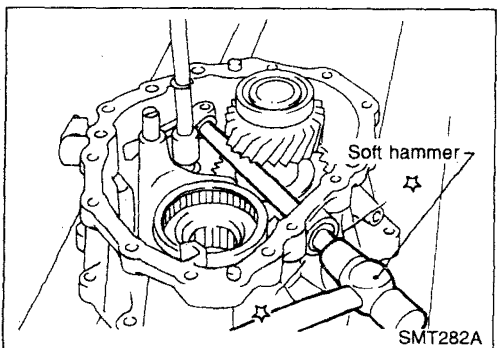


10. Disassemble front case assembly.

a. Remove switches, check plugs, check springs and check balls.

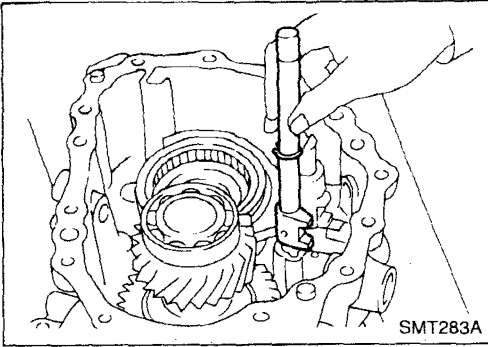


b. Remove outer shift lever.

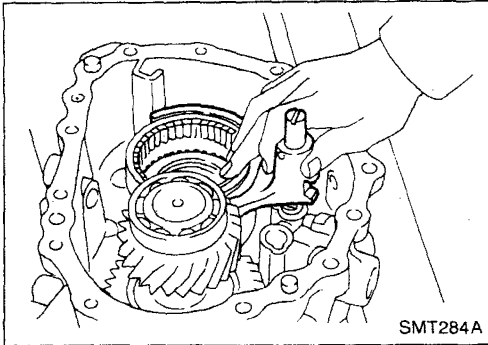


c. Remove lock pin of inner shift lever and drive out cross shaft with plug.

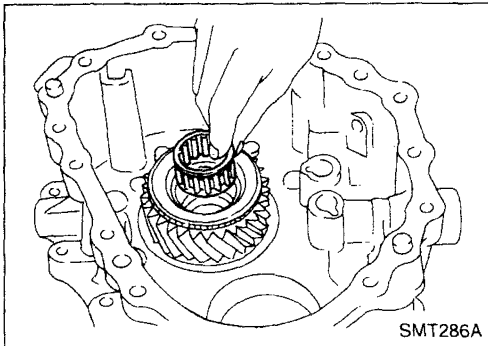
DISASSEMBLY



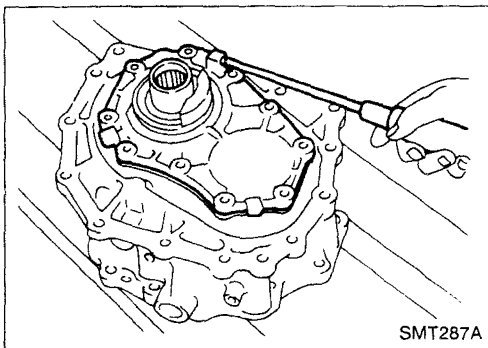
d. Remove 2-4 shift rod.



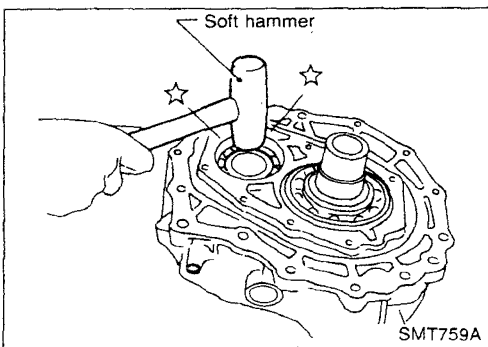
e. Remove L & H shift rod and fork assembly with coupling sleeve.



f. Remove needle bearing from main gear.

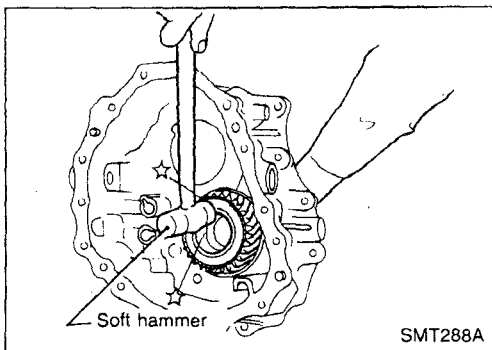


g. Remove bolts securing front case cover and then remove case.



h. Remove counter gear by tapping lightly.

DISASSEMBLY



- i. Remove main gear by tapping lightly.

Mainshaft

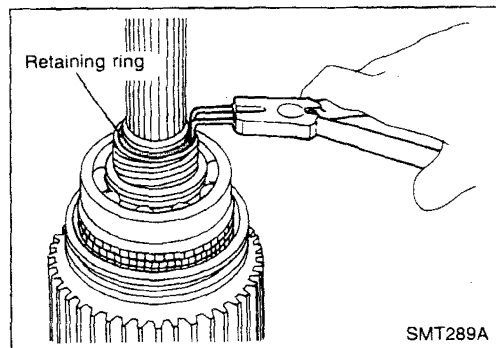
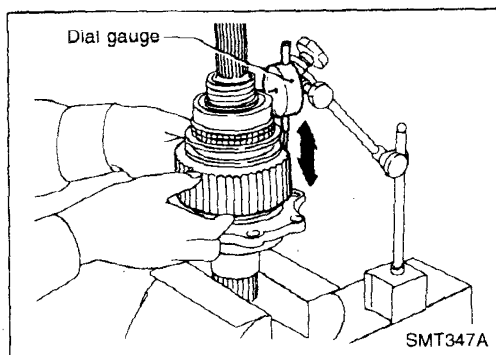
DISASSEMBLY

1. Check end play of front drive sprocket.

Standard:

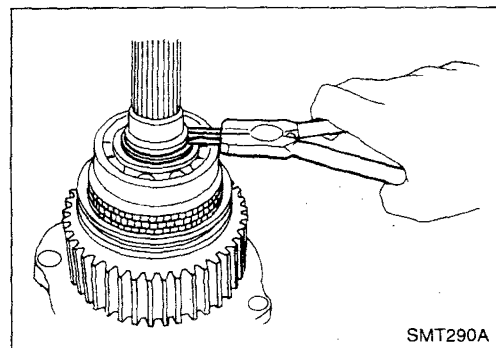
0.2 - 0.35 mm (0.0079 - 0.0138 in)

If end play is beyond the maximum value, check front drive sprocket and clutch gear for wear.

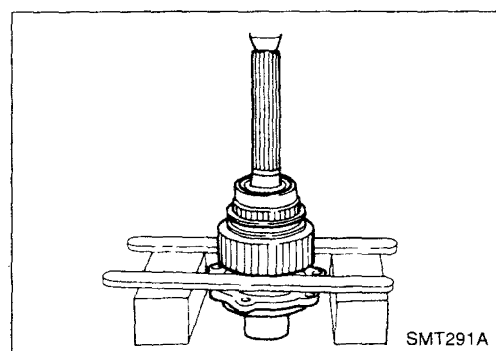


2. Remove retaining ring, speedometer drive gear and steel ball.

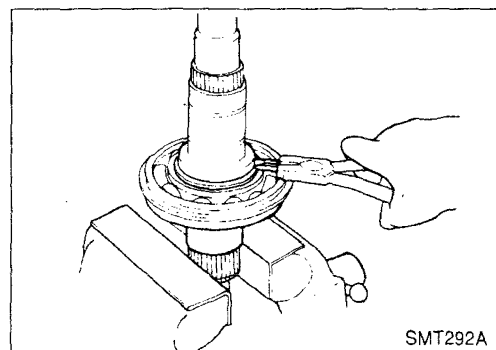
Be careful not to lose the steel ball.



3. Remove snap ring and spacer.



4. Press out front drive sprocket with mainshaft rear bearing and clutch gear together.
5. Remove needle bearing.

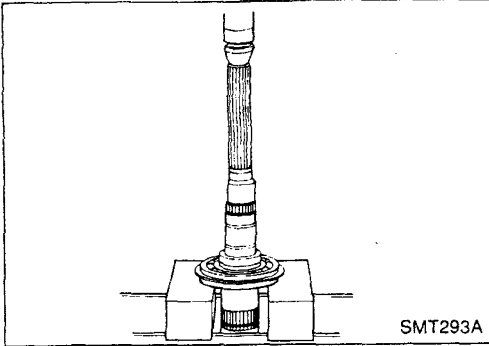


6. Remove bearing retainer and then remove snap ring and spacer.

REPAIR FOR COMPONENT PARTS

Mainshaft (Cont'd)

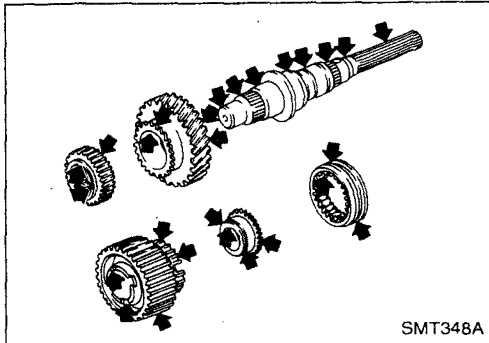
- Press out mainshaft front bearing from mainshaft.



INSPECTION

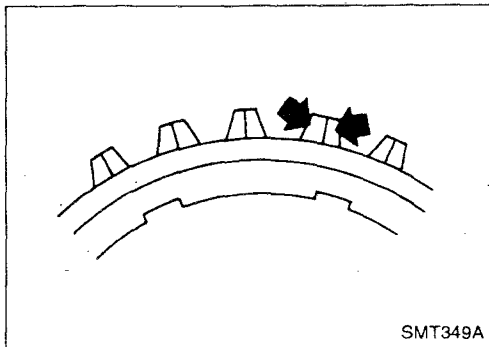
Gear and shaft

- Check gears for excessive wear, chips or cracks.
- Check shaft for cracks, wear or bending.
- Check coupling sleeve for wear or damage.



Baulk ring

- Check baulk ring for cracks or deformation.

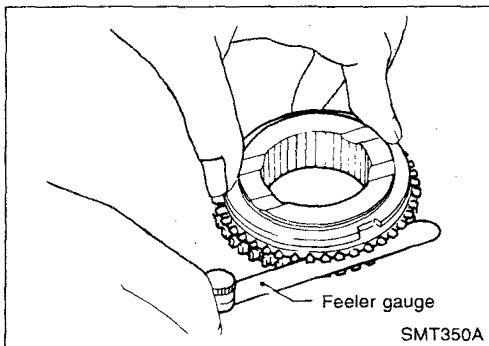


- Measure clearance between baulk ring and gear.

Baulk ring to gear clearance:

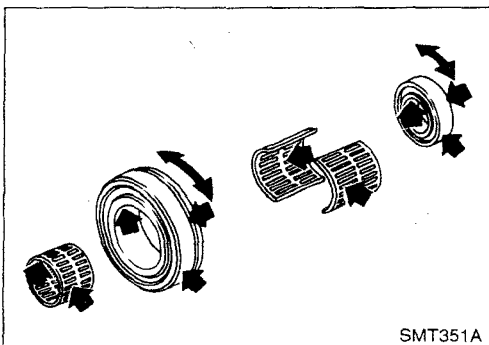
Unit: mm (in)

Standard	Wear limit
1.0 - 1.5 (0.039 - 0.059)	0.5 (0.020)



Bearing

- Make sure bearings roll freely and are free from noise, cracks, pitting or wear.

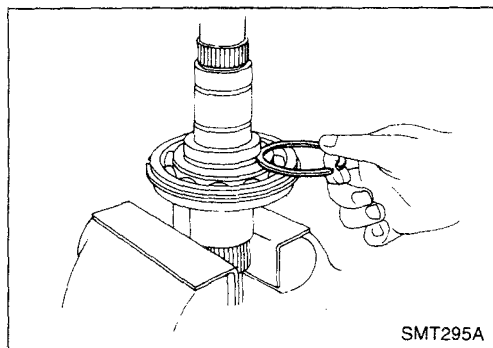
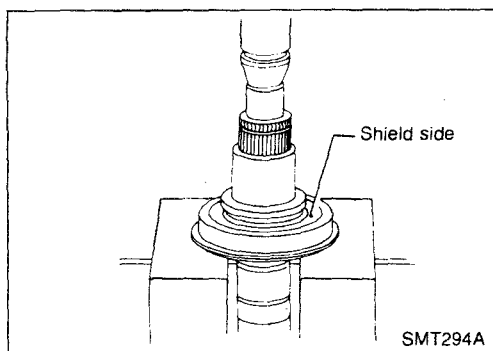


REPAIR FOR COMPONENT PARTS

Mainshaft (Cont'd)

ASSEMBLY

1. Press mainshaft front bearing onto mainshaft.
Pay special attention to its direction.

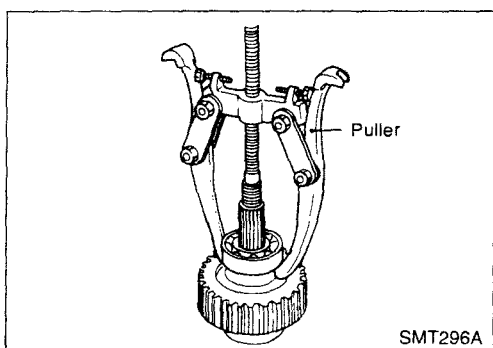


2. Install spacer.
3. Select snap ring with proper thickness and install it.
**Allowable clearance between snap ring and groove:
0 - 0.15 mm (0 - 0.0059 in)**

Available snap ring

Thickness	mm (in)	Part number
3.1	(0.122)	33138-33G10
3.2	(0.126)	33138-33G11
3.3	(0.130)	33138-33G12
3.4	(0.134)	33138-33G13

4. Regarding further procedures, refer to "ASSEMBLY"

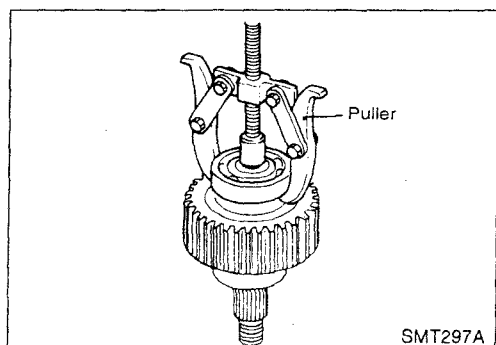


Front Drive Shaft

DISASSEMBLY

- Front drive shaft front bearing

- Front drive shaft rear bearing



REPAIR FOR COMPONENT PARTS

Front Drive Shaft (Cont'd)

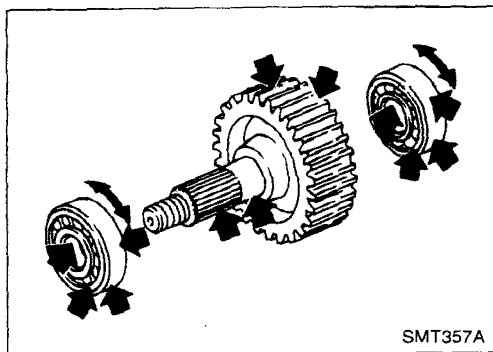
INSPECTION

Sprocket and shaft

- Check sprocket for excessive wear, chips or cracks.
- Check shaft for cracks or wear.

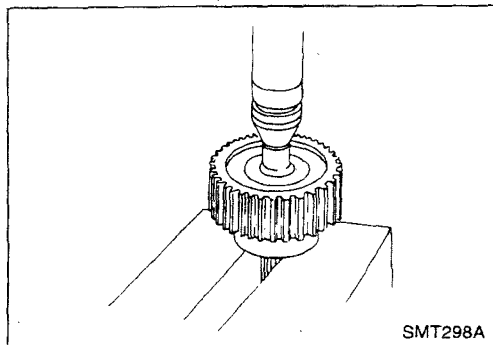
Bearing

- Make sure bearings roll freely and are free from noise, cracks, pitting or wear.

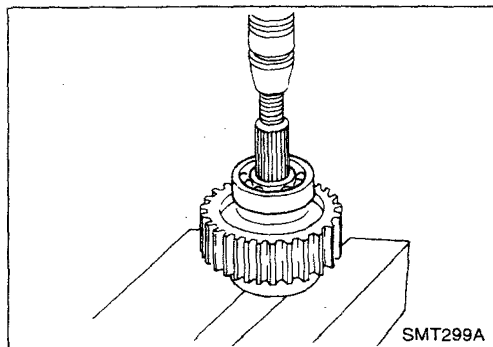


ASSEMBLY

- Front drive shaft front bearing

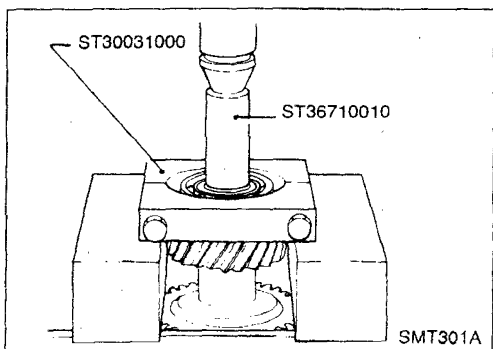
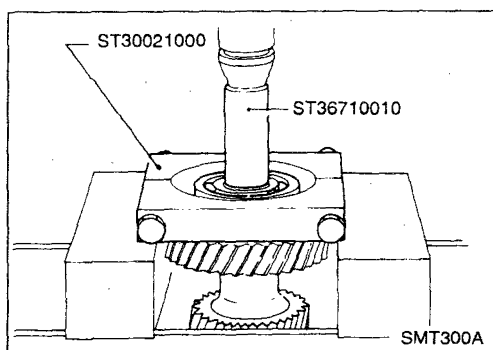


- Rear drive shaft rear bearing



Counter Gear DISASSEMBLY

1. Press out counter gear front bearing and then remove front sub-gear, spacer and dish spring.
2. Press out counter gear rear bearing and then remove rear sub-gear, spacer and dish spring.



REPAIR FOR COMPONENT PARTS

Counter Gear (Cont'd)

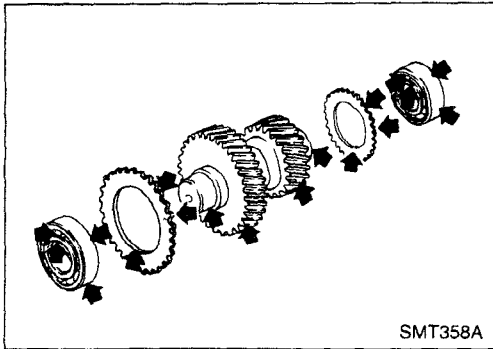
INSPECTION

Gear and shaft

- Check gears for excessive wear, chips or cracks.
- Check shaft for cracks or wear.

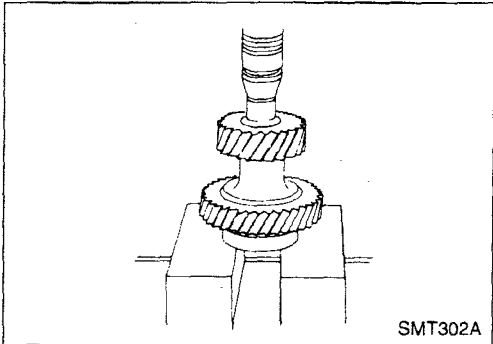
Bearing

- Make sure bearings roll freely and are free from noise, cracks, pitting or wear.

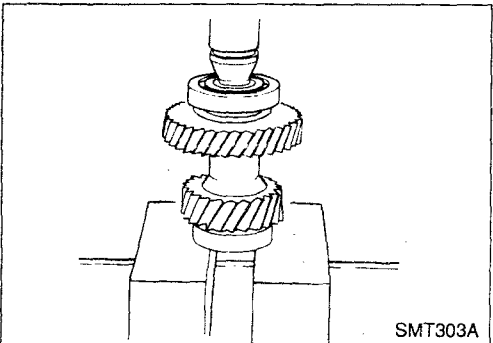


ASSEMBLY

1. Install front sub-gear, dish spring and spacer, and then press on counter gear front bearing.



2. Install rear sub-gear, dish spring and spacer, and then press on counter gear rear bearing.

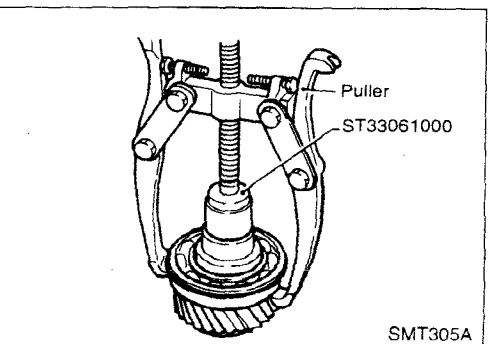
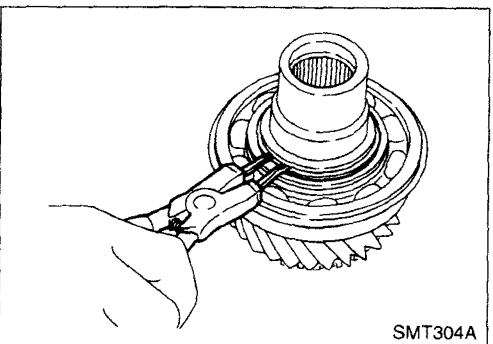


Main Gear

DISASSEMBLY

Main gear bearing

1. Remove snap ring and spacer.
2. Pull out main gear bearing.

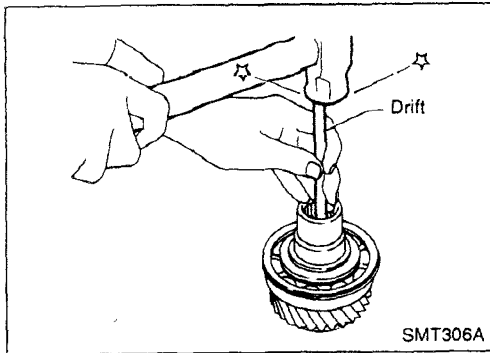


REPAIR FOR COMPONENT PARTS

Main Gear (Cont'd)

Plug

Always replace it with new one whenever it is removed.



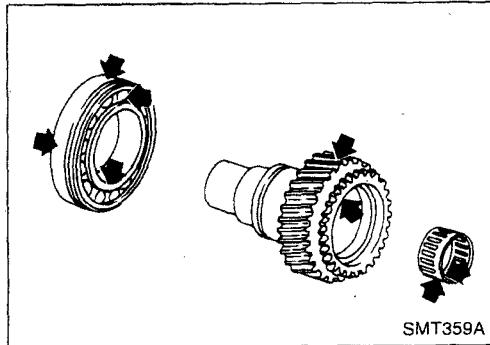
INSPECTION

Gear and shaft

- Check gears for excessive wear, chips or cracks.
- Check shaft for cracks or wear.

Bearing

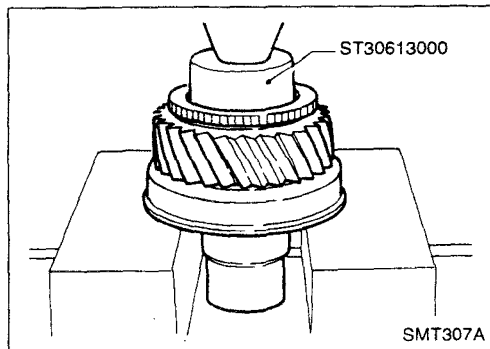
- Make sure bearings roll freely and are free from noise, cracks, pitting or wear.



ASSEMBLY

Main gear bearing

1. Press on main gear bearing.
2. Install spacer.



3. Select snap ring with proper thickness and install it.

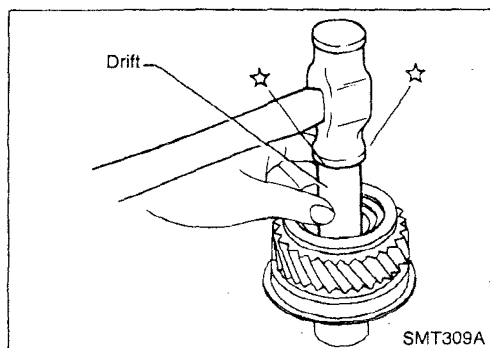
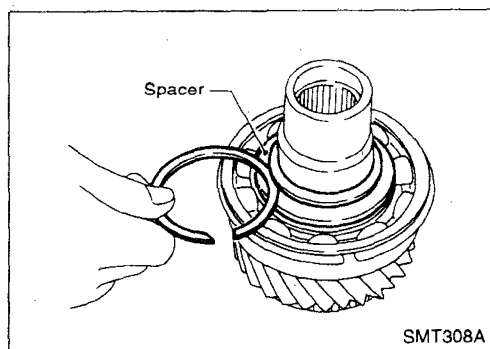
Allowable clearance between snap ring and groove:
0 - 0.15 mm (0 - 0.0059 in)

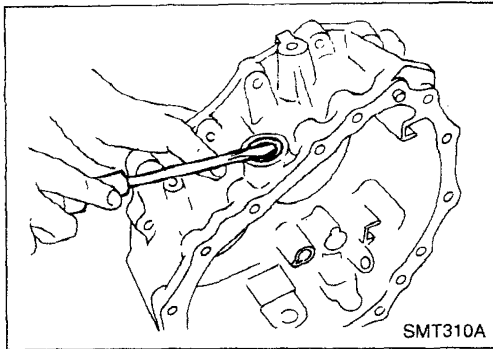
Available snap ring

Thickness	mm (in)	Part number
2.6	(0.102)	33114-33G00
2.7	(0.106)	33114-33G01
2.8	(0.110)	33114-33G02
2.9	(0.114)	33114-33G03

Plug

Apply sealant to plug and install it.



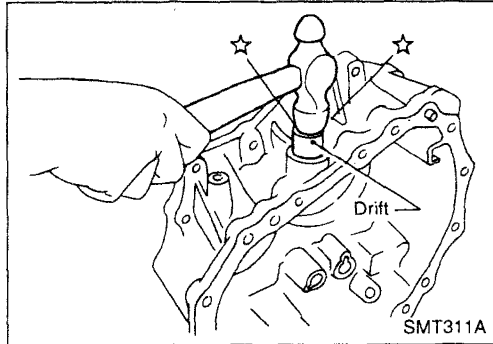


Front Case

SHIFT SHAFT OIL SEAL

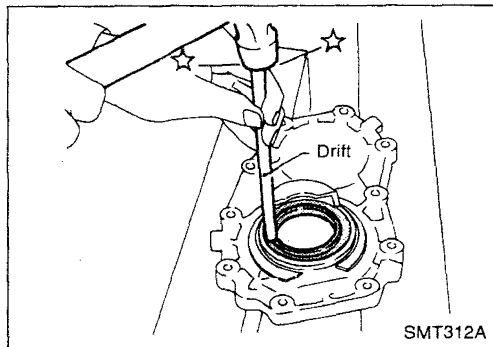
Removal

Remove the oil seal. Be careful not to damage its housing. Always replace after every disassembly.



Installation

Install a new oil seal, using a suitable tool.

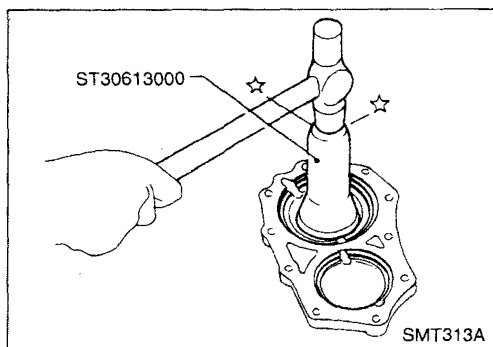


Front Case Cover

COVER OIL SEAL

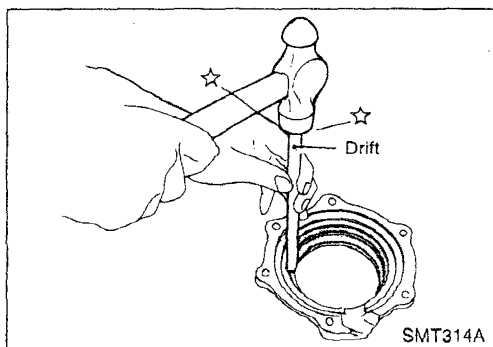
Removal

Remove the oil seal. Be careful not to damage its housing. Always replace after every disassembly.



Installation

Install a new oil seal, using the Special Tool.



Bearing Retainer

OIL CATCHER

Removal

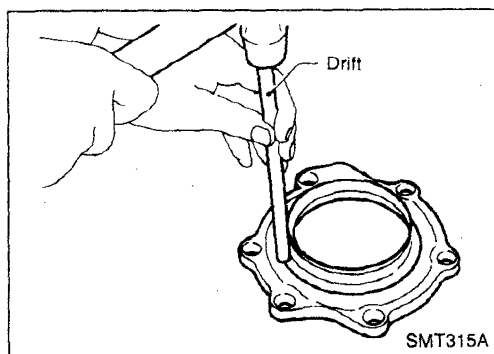
Remove the oil seal. Be careful not to damage its housing. Always replace after every disassembly.

REPAIR FOR COMPONENT PARTS

Bearing Retainer (Cont'd)

Installation

Install a new oil seal, using a suitable tool.

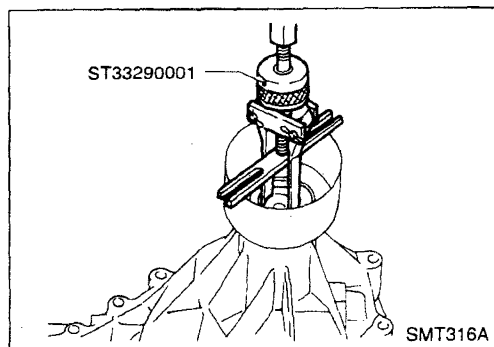


Rear Case

REAR OIL SEAL

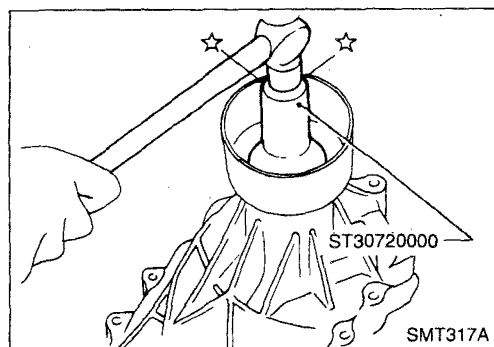
Removal

Remove the oil seal. Be careful not to damage its housing. Always replace after every disassembly.



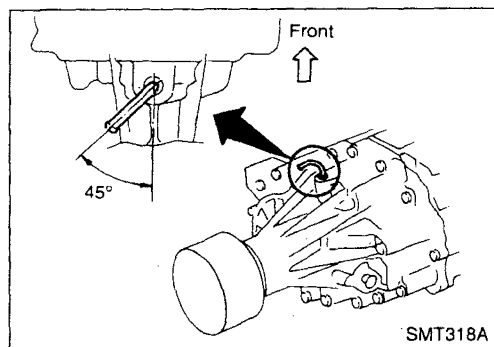
Installation

Install a new oil seal, using the Special Tool.



AIR BREATHER

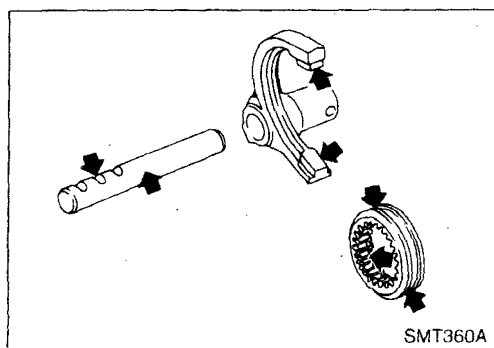
Install as shown in the illustration.



Shift Control Components

INSPECTION

- Check contact surface and sliding surface for wear, scratches, projections or other faulty conditions.

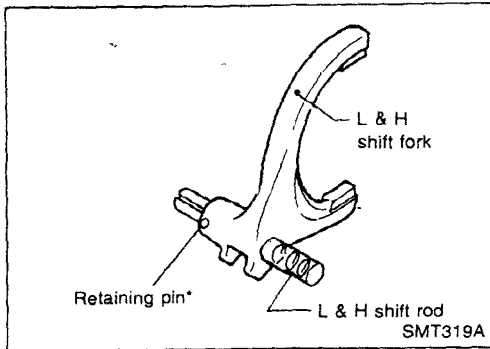


REPAIR FOR COMPONENT PARTS

Shift Control Components (Cont'd)

L & H SHIFT ROD & FORK

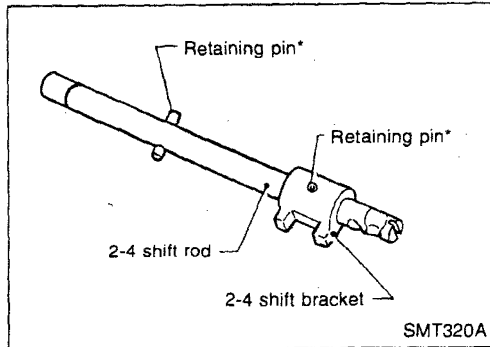
Assemble as shown in the illustration.



* This pin is the same size as the one for 2-4 shift rod.

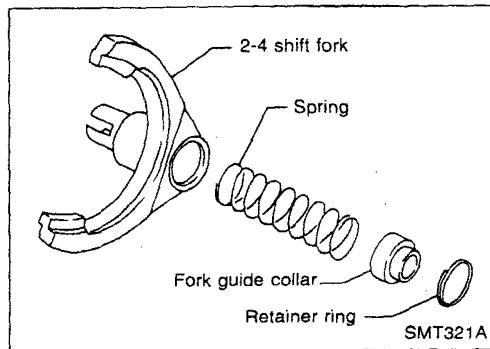
2-4 SHIFT ROD & FORK

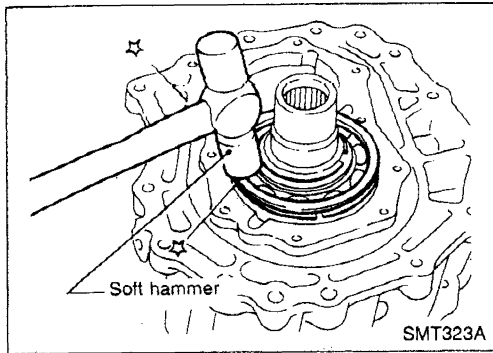
Assemble as shown in the illustration.



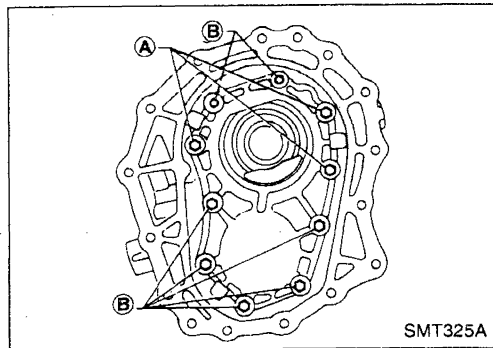
* These pins are the same size.

Pay special attention to the direction of fork guide collar.





1. Assemble front case.
 - a. Install main gear assembly by tapping lightly.

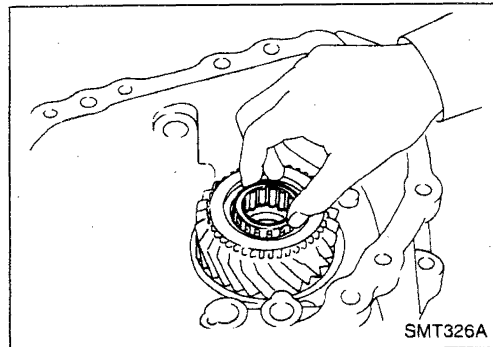


- b. Apply sealant to the mating surface and bolts of front case cover and install it on front case.

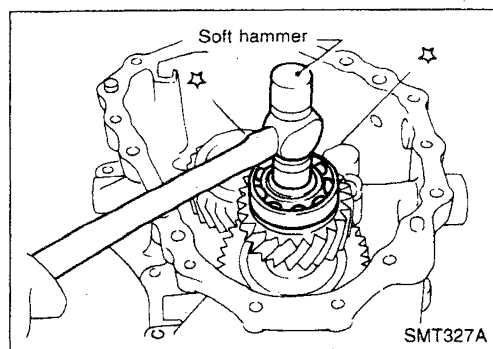
- These ten bolts should be coated with sealant.

Tightening torque

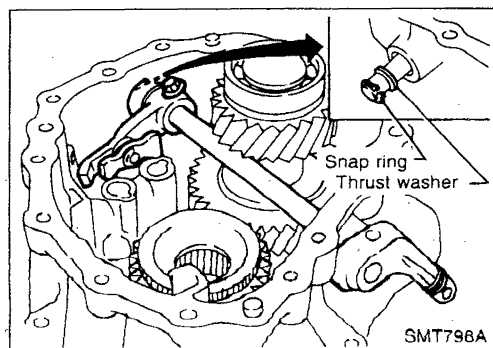
- Ⓐ : 16 - 21 N·m
(1.6 - 2.1 kg-m, 12 - 15 ft-lb)
- Ⓑ : 19 - 24 N·m
(1.9 - 2.4 kg-m, 14 - 17 ft-lb)



- c. Apply gear oil to needle bearing and install it into main gear.

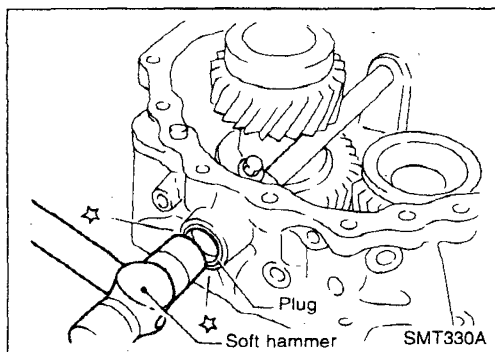


- d. Install counter gear assembly by tapping lightly.

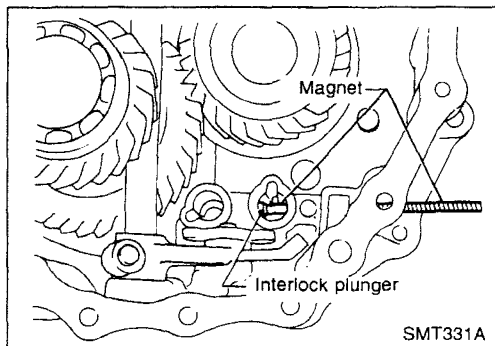


- e. Install cross shaft and inner shift lever.
When replacing cross shaft, outer shift lever of lock pin of outer shift lever, replace them as a set.

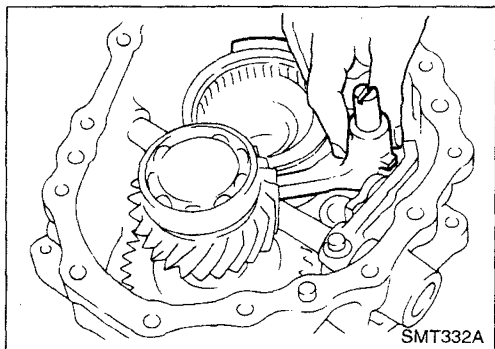
ASSEMBLY



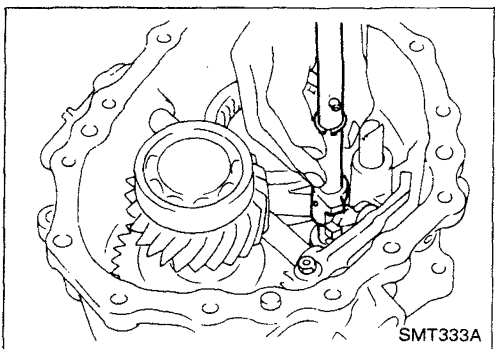
f. Apply sealant to plug and install it into front case.



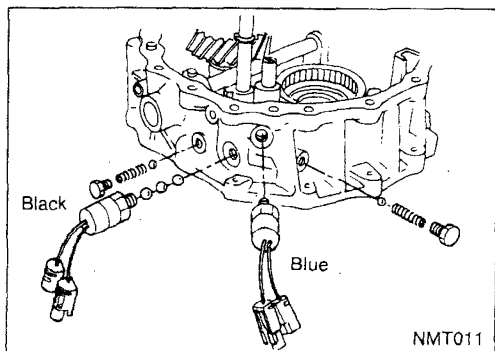
g. Insert interlock plunger into front case.



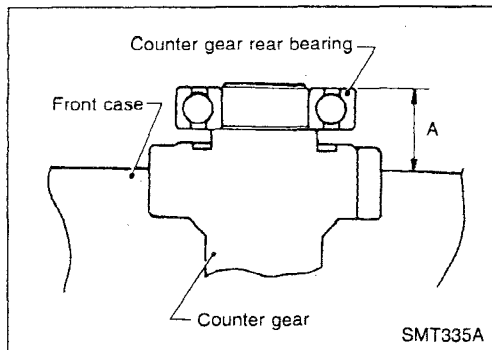
h. Install L & H shift rod and fork assembly with coupling sleeve.



i. Install 2-4 shift rod.



j. Install switches, check balls, check springs and plugs.
Apply sealant to switches and plugs.

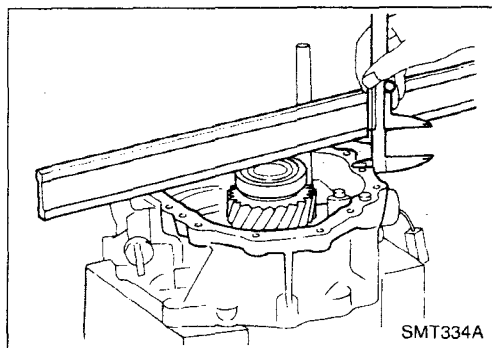


2. Select counter gear rear bearing shim.

Counter gear end play:

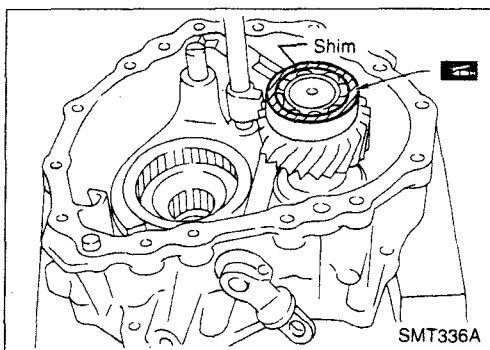
0 - 0.2 mm (0 - 0.008 in)

a. Measure distance "A" between upper surface of counter gear rear bearing and mating surface of front case.



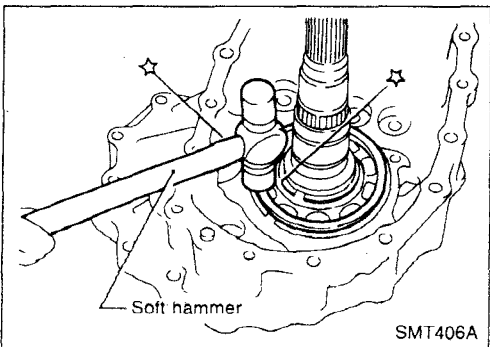
b. Select suitable shim using chart below.

Distance "A" mm (in)	Suitable shim	
	Thickness mm (in)	Part number
32.65 - 32.55 (1.2854 - 1.2815)	Not necessary	
32.55 - 32.45 (1.2815 - 1.2776)	0.1 (0.004)	33112-C6900
32.45 - 32.35 (1.2776 - 1.2736)	0.2 (0.008)	33112-C6901
32.35 - 32.25 (1.2736 - 1.2697)	0.3 (0.012)	33112-C6902
32.25 - 32.15 (1.2697 - 1.2657)	0.4 (0.016)	33112-C6903
32.15 - 32.05 (1.2657 - 1.2618)	0.5 (0.020)	33112-33G00
32.05 - 31.95 (1.2618 - 1.2579)	0.6 (0.024)	33112-33G01



3. Place suitable shim on counter gear rear bearing with grease.

4. Apply gear oil to each part in front case.

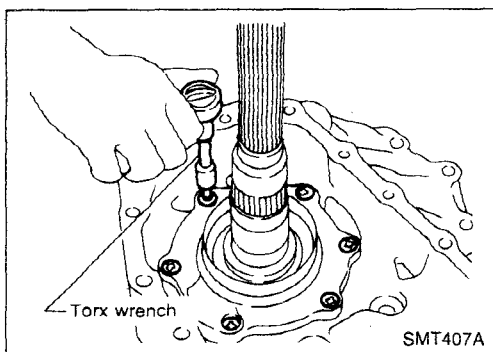


5. Assemble center case assembly.

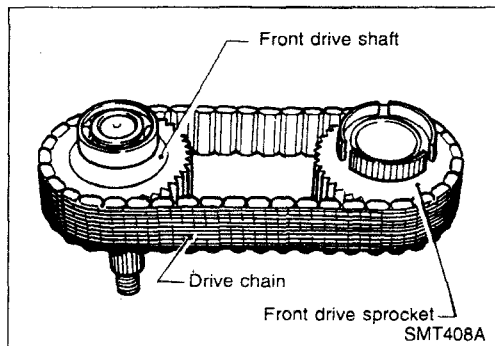
a. Install mainshaft on center case by tapping lightly.

Apply gear oil to mainshaft front bearing.

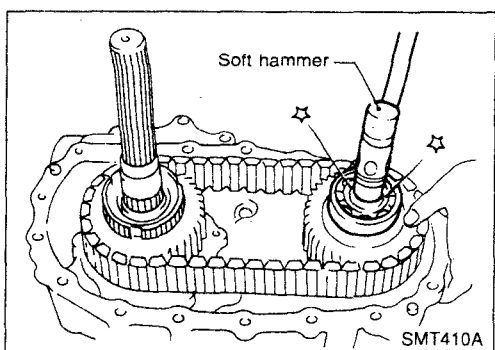
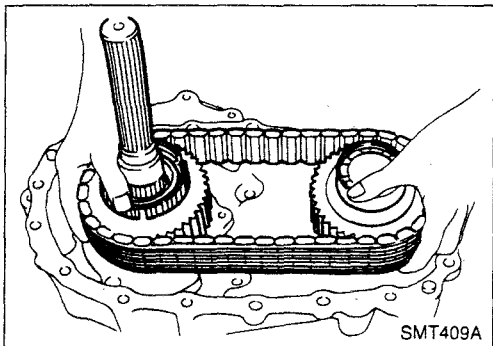
ASSEMBLY



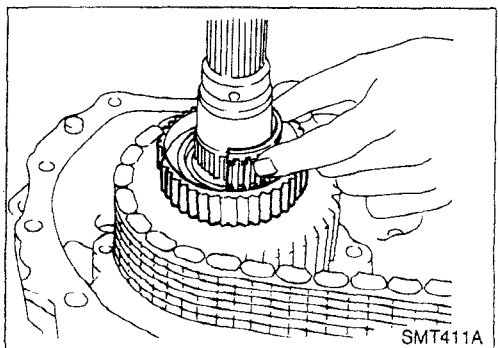
b. Install bearing retainer.



c. Put drive chain onto the front drive sprocket and front drive shaft, and then put them in center case.



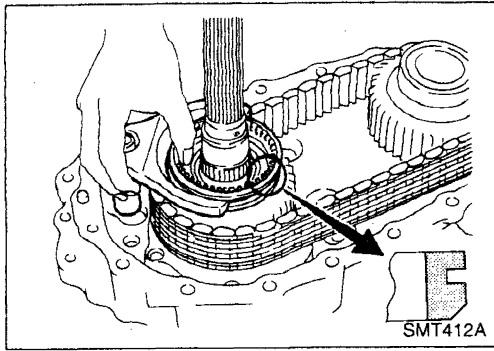
d. Install front drive shaft by tapping lightly.



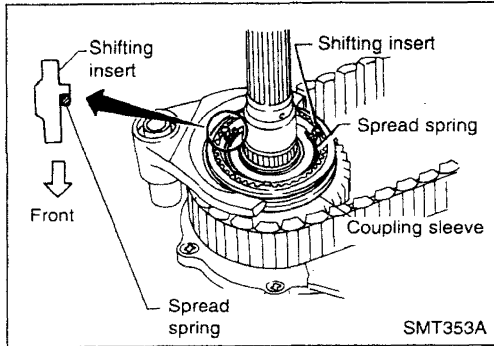
e. Apply gear oil to needle bearings and install them into front drive sprocket.

These needle bearings will be installed more easily if front drive sprocket is rotated while installing them.

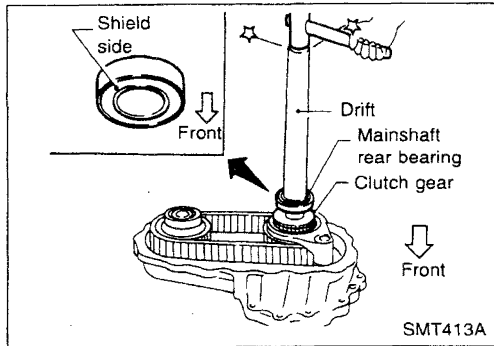
ASSEMBLY



- f. Install 2-4 coupling sleeve with 2-4 shift fork.
Pay special attention to direction of coupling sleeve.

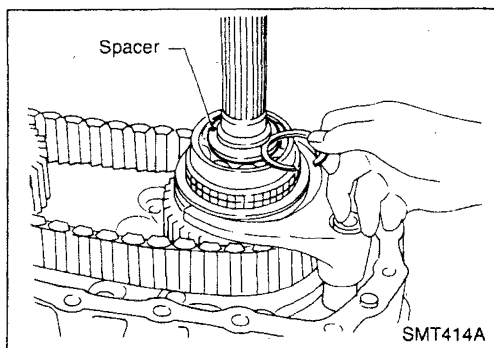


- g. Install shifting inserts and spread spring.
Pay special attention to direction of shifting inserts.



- h. Install baulk ring and then install clutch gear and mainshaft rear bearing.

Place wooden block under mainshaft in order to protect mainshaft front bearing.

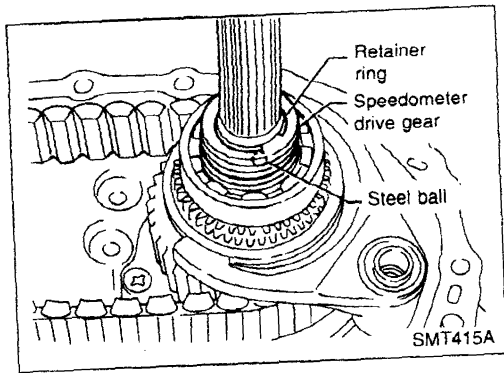


- i. Install spacer.
j. Select snap ring with proper thickness and install it.
**Allowable clearance between snap ring and groove:
0 - 0.15 mm (0 - 0.0059 in)**

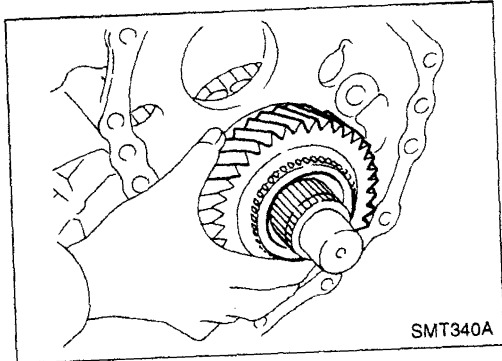
Available snap ring

Thickness mm (in)	Part number
1.8 (0.071)	33138-33G20
1.9 (0.075)	33138-33G21
2.0 (0.079)	33138-33G22
2.1 (0.083)	33138-33G23
2.2 (0.087)	33138-33G24

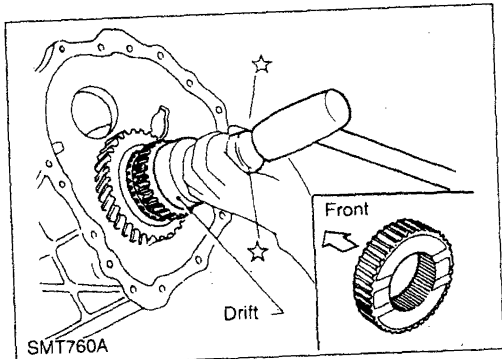
ASSEMBLY



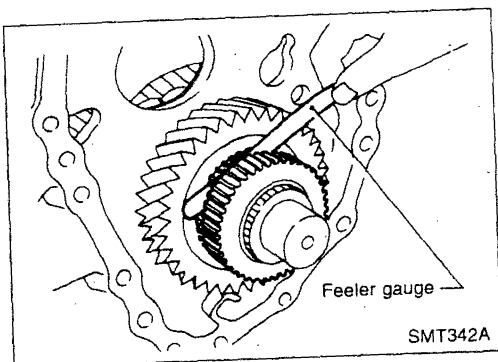
- k. Install steel ball, speedometer drive gear and retainer ring.
Steel ball is the smallest of check balls for this unit.



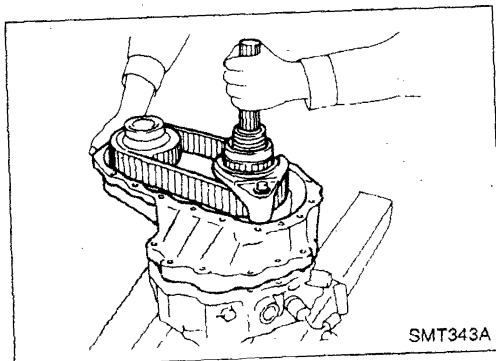
- l. Install low gear and its bearing to mainshaft.
Apply gear oil to needle bearing.



- m. Install L & H hub and snap ring to mainshaft.
Pay special attention to direction of L & H hub.

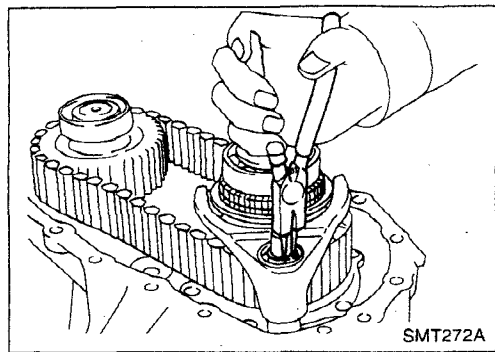


- n. Measure end play of low gear.
Standard:
0.2 - 0.35 mm (0.0079 - 0.0138 in)

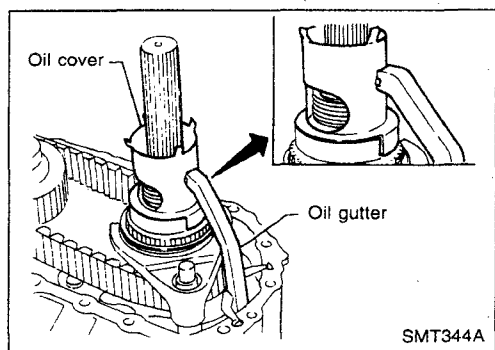


6. Apply sealant to mating surface and put center case assembly onto front case and tighten bolts.

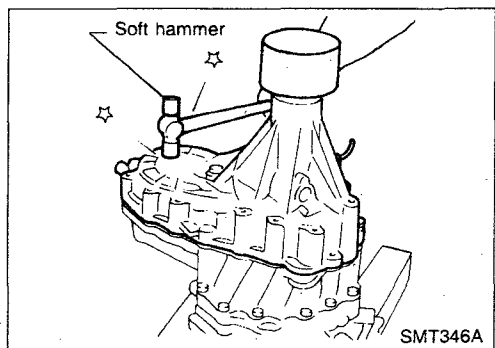
ASSEMBLY



7. Install snap ring to 2-4 shift rod.



8. Install oil gutter and oil cover.
9. Apply gear oil to each part in center case.



10. Apply sealant to mating surface and install rear case on center case.

SERVICE DATA AND SPECIFICATIONS (S.D.S.)

General Specifications

Transfer model			TX10A
Gear ratio	High		1.000
	Low		2.020
Number of teeth	Main gear		29
	Low gear		37
	Counter gear	High	38
		Low	24
	Front drive sprocket		41
	Front drive shaft		41
Oil capacity		ℓ (Imp qt)	2.3 (2)

Inspection and Adjustment

GEAR END PLAY

Unit: mm (in)

Front drive sprocket	0.2 - 0.35 (0.0079 - 0.0138)
Low gear	0.2 - 0.35 (0.0079 - 0.0138)
Counter gear	0 - 0.2 (0 - 0.008)

CLEARANCE BETWEEN BAULK RING AND CLUTCH GEAR

Unit: mm (in)

Standard	Wear limit
1.0 - 1.5 (0.039 - 0.059)	0.5 (0.020)

AVAILABLE SNAP RING

Mainshaft front bearing

Allowable clearance		0 - 0.15 mm (0 - 0.0059 in)
Thickness	mm (in)	Part number
3.1	(0.122)	33138-33G10
3.2	(0.126)	33138-33G11
3.3	(0.130)	33138-33G12
3.4	(0.134)	33138-33G13

Mainshaft rear bearing

Allowable clearance		0 - 0.15 mm (0 - 0.0059 in)
Thickness	mm (in)	Part number
1.8	(0.071)	33138-33G20
1.9	(0.075)	33138-33G21
2.0	(0.079)	33138-33G22
2.1	(0.083)	33138-33G23
2.2	(0.087)	33138-33G24

Main gear bearing

Allowable clearance		0 - 0.15 mm (0.0059 in)
Thickness	mm (in)	Part number
2.6	(0.102)	33114-33G00
2.7	(0.106)	33114-33G01
2.8	(0.110)	33114-33G02
2.9	(0.114)	33114-33G03

SERVICE DATA AND SPECIFICATIONS (S.D.S.)
Inspection and Adjustment (Cont'd)

AVAILABLE SHIM

Counter gear rear bearing

Distance "A" mm (in)	Shim(s)	
	Thickness mm (in)	Part number
32.65 - 32.55 (1.2854 - 1.2815)	Not necessary	
32.55 - 32.45 (1.2815 - 1.2776)	0.1 (0.004)	33112-C6900
32.45 - 32.35 (1.2776 - 1.2736)	0.2 (0.008)	33112-C6901
32.35 - 32.25 (1.2736 - 1.2697)	0.3 (0.012)	33112-C6902
32.25 - 32.15 (1.2697 - 1.2657)	0.4 (0.016)	33112-C6903
32.15 - 32.05 (1.2657 - 1.2618)	0.5 (0.020)	33112-33G00
32.05 - 31.95 (1.2618 - 1.2579)	0.6 (0.024)	33112-33G01

