

## SECTION

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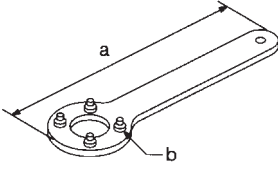
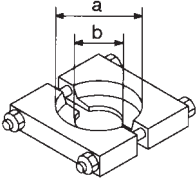
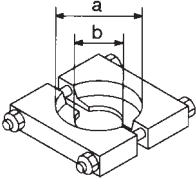
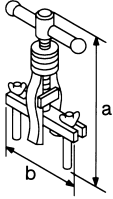
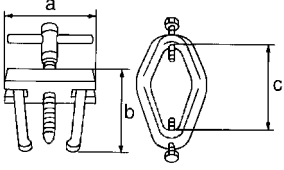
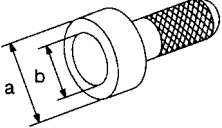
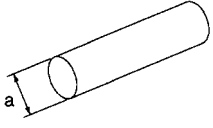
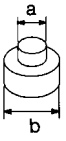
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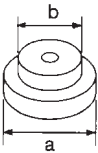
# PREPARATION

## Special Service Tools

Tool number Tool name	Description	
ST38060002 Flange wrench	 <p>NT428</p>	Removing companion flange nut Installing companion flange nut  <b>a: 480 mm (18.90 in)</b> <b>b: Pitch dia.: 75 mm (2.95 in)</b> <b>Pin dia.: 10 mm (0.39 in)</b>
ST30021000 Puller	 <p>NT411</p>	Removing counter gear front bearing (Use with ST36710010) Removing L & H hub  <b>a: 110 mm (4.33 in) dia.</b> <b>b: 68 mm (2.68 in) dia.</b>
ST30031000 Puller	 <p>NT411</p>	Removing counter gear rear bearing (Use with ST36710010)  <b>a: 90 mm (3.54 in) dia.</b> <b>b: 50 mm (1.97 in) dia.</b>
ST33290001 Puller	 <p>NT414</p>	Removing center case oil seal Removing rear oil seal  <b>a: 250 mm (9.84 in)</b> <b>b: 160 mm (6.30 in)</b>
ST33051001 Puller	 <p>NT657</p>	Removing companion flange  <b>a: 135 mm (5.31 in)</b> <b>b: 100 mm (3.94 in)</b> <b>c: 130 mm (5.12 in)</b>
ST30720000 Drift	 <p>NT115</p>	Installing center case oil seal Installing rear oil seal  <b>a: 77 mm (3.03 in) dia.</b> <b>b: 55.5 mm (2.185 in) dia.</b>
ST36710010 Drift	 <p>NT063</p>	Removing counter gear front bearing (Use with ST30021000) Removing counter gear rear bearing (Use with ST30031000)  <b>a: 34.5 mm (1.358 in) dia.</b>
ST33061000 Drift	 <p>NT116</p>	Removing main gear bearing  <b>a: 28.5 mm (1.122 in) dia.</b> <b>b: 38 mm (1.50 in) dia.</b>

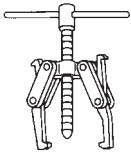
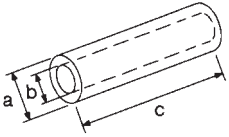
# PREPARATION

## Special Service Tools (Cont'd)

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

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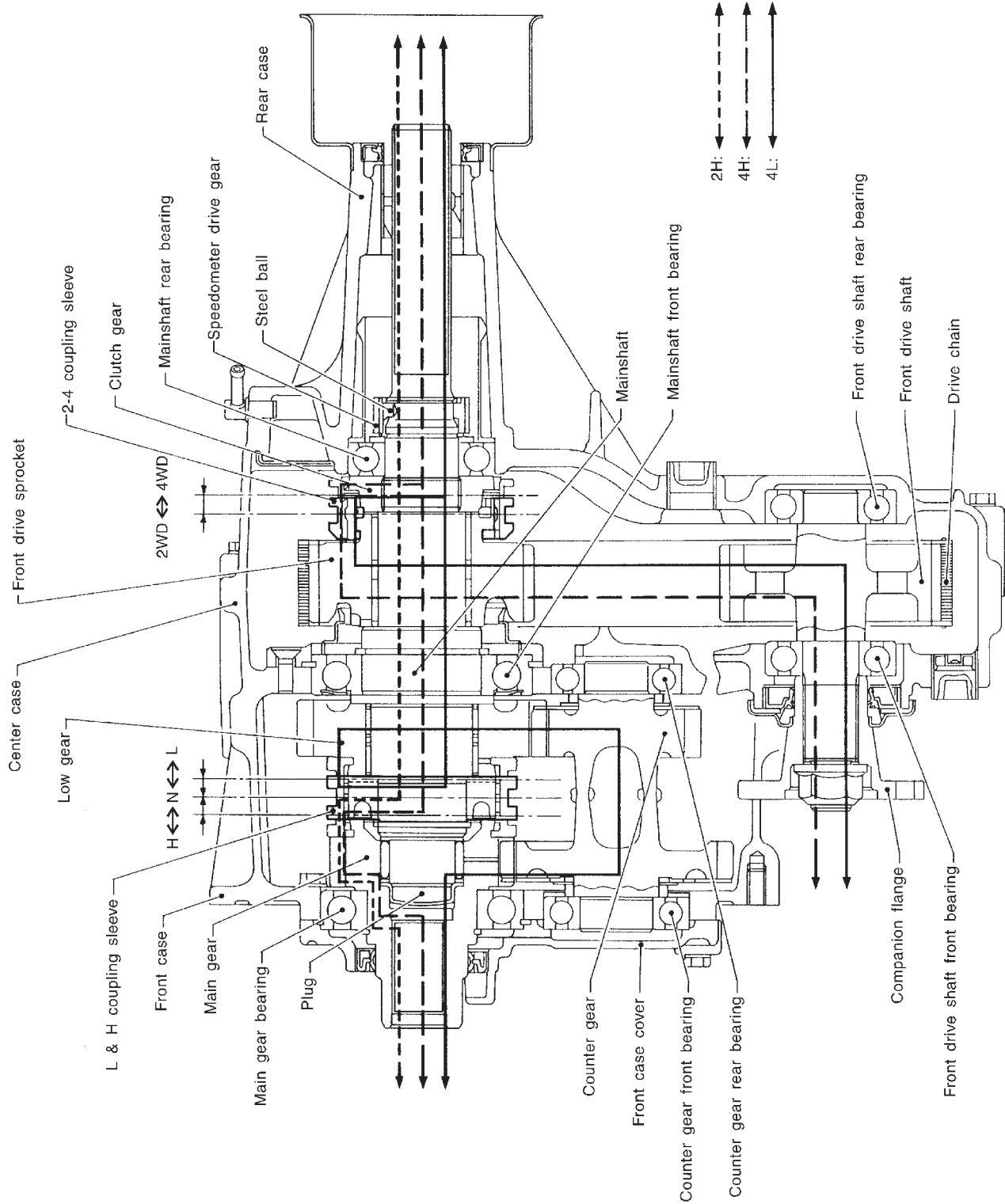
## Commercial Service Tools

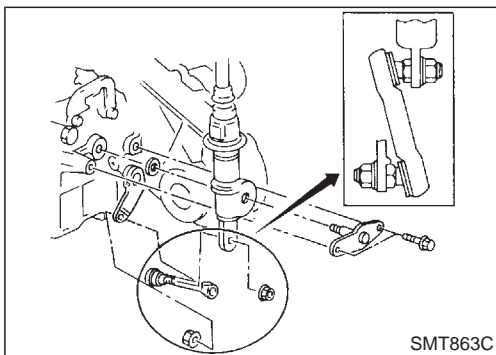
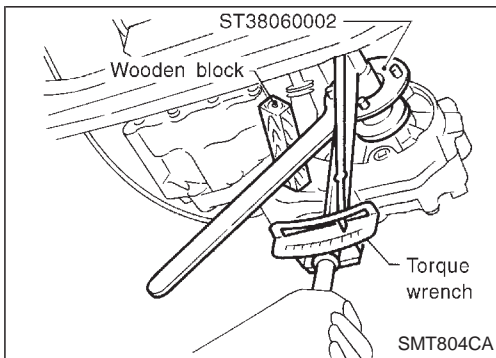
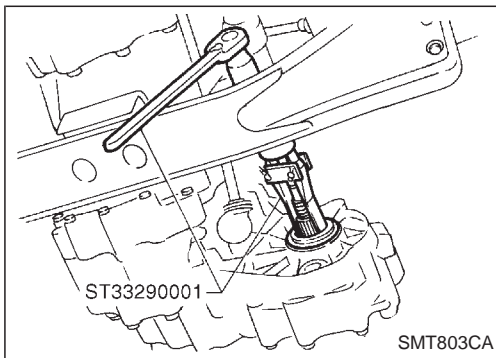
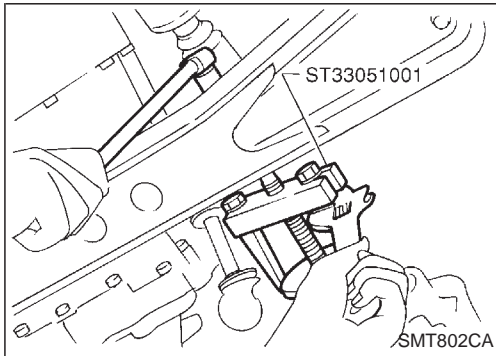
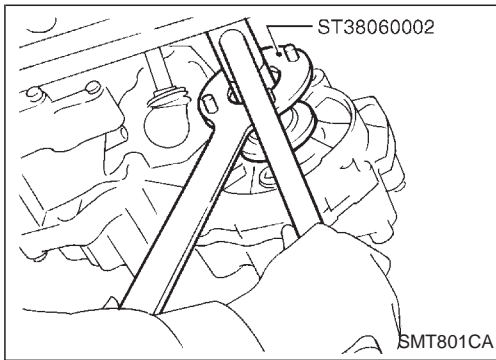
Tool name	Description	
Puller		Removing front drive shaft front bearing Removing front drive shaft rear bearing Removing main gear bearing
Drift		① Installing mainshaft rear bearing ② Installing L & H hub ③ Installing shift shaft oil seal  ① <b>a: 50 mm (1.97 in) dia.</b> <b>b: 42 mm (1.65 in) dia.</b> <b>c: 180 mm (7.09 in)</b>  ② <b>a: 60 mm (2.36 in) dia.</b> <b>b: 50 mm (1.97 in) dia.</b> <b>c: 60 mm (2.36 in)</b>  ③ <b>a: 26 mm (1.02 in) dia.</b> <b>b: 20 mm (0.79 in) dia.</b> <b>c: 150 mm (5.91 in)</b>

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# DESCRIPTION

## Cross-sectional View





## Replacing Oil Seal

### CENTER CASE OIL SEAL

1. Remove exhaust front tube and heat insulator. Refer to "Removal", TF-7.
2. Remove front propeller shaft. Refer to PD section ("Removal and Installation", "PROPELLER SHAFT").
3. Remove companion flange nut.

4. Remove companion flange.

5. Remove center case oil seal.
6. Install center case oil seal.
  - **Before installing, apply multi-purpose grease to seal lip.**
7. Install companion flange.

8. Tighten nut to the specified torque.
9. Install front propeller shaft.

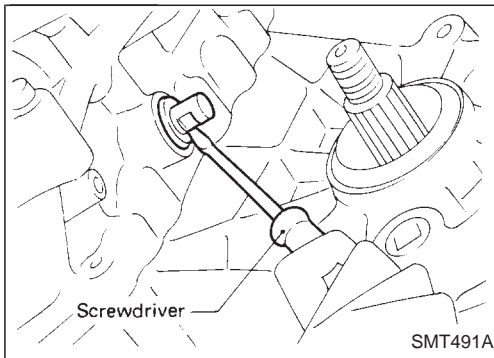
### SHIFT SHAFT OIL SEAL

1. Remove front propeller shaft. Refer to PD section ("Removal and Installation", "PROPELLER SHAFT").
2. Remove companion flange. Refer to center case oil seal, TF-5.
3. Remove transfer control lever from transfer outer shift lever. Then remove outer shift lever.

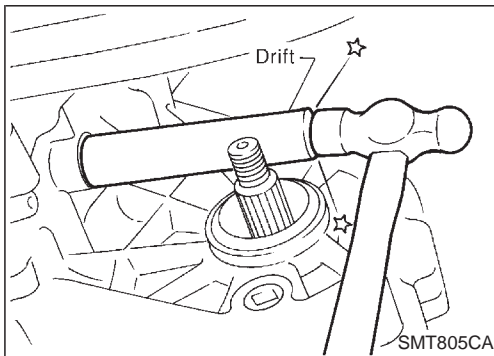
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## ON-VEHICLE SERVICE

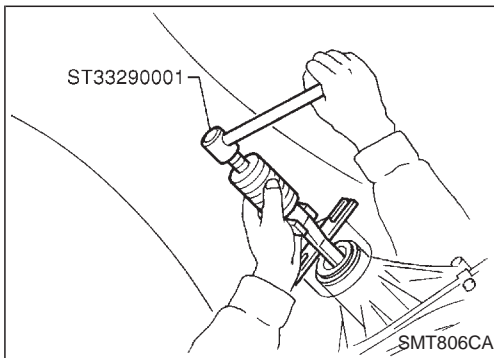
### Replacing Oil Seal (Cont'd)



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

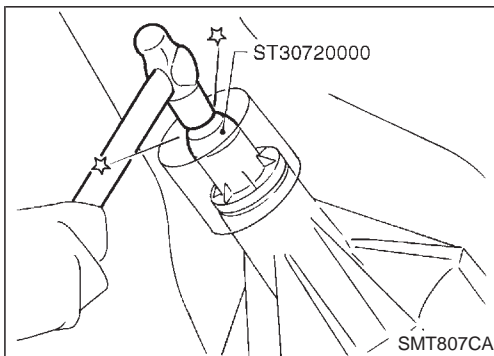


5. Install shift shaft oil seal.
  - Before installing, apply multi-purpose grease to seal lip.
6. Install transfer control linkage.
7. Install companion flange. Refer to center case oil seal, TF-5.
8. Install front propeller shaft.

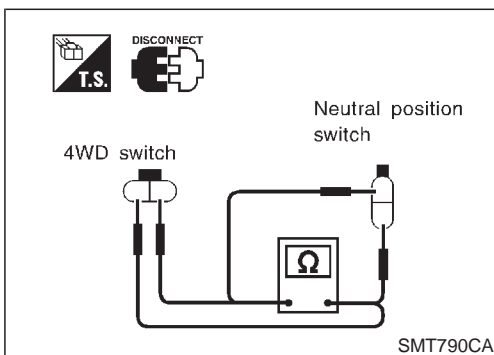


### REAR OIL SEAL

1. Remove rear propeller shaft. Refer to PD section ("Removal and Installation", "PROPELLER SHAFT").
2. Remove rear oil seal.



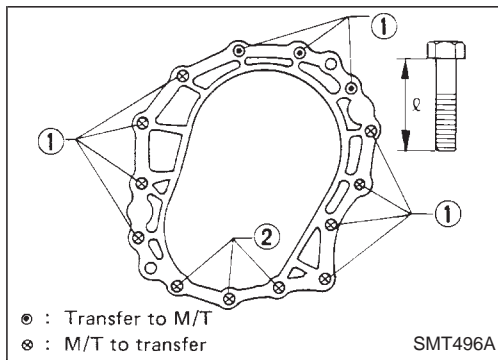
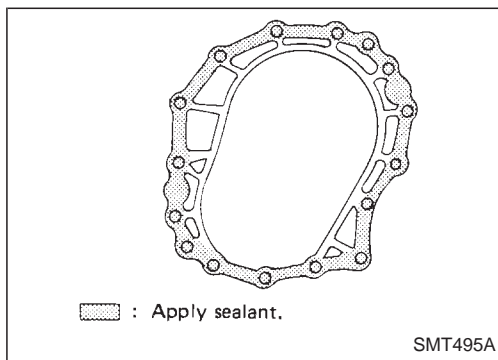
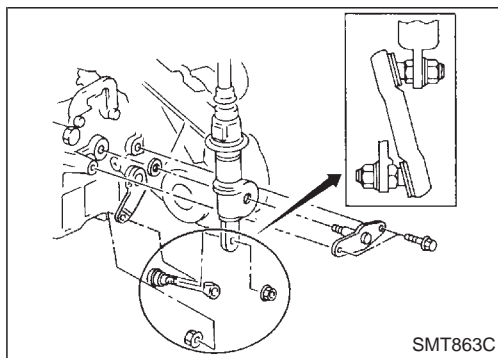
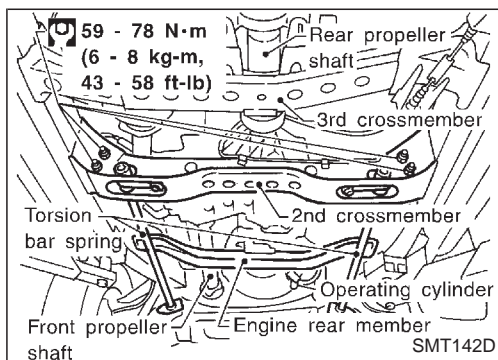
3. Install rear oil seal.
  - Before installing apply multi-purpose grease to seal lip.
4. Install rear propeller shaft.



### Position Switch Check

Switch	Gear position	Continuity
4WD switch	4WD	Yes
	Except 4WD	No
Neutral position switch	Neutral	Yes
	Except neutral	No

# REMOVAL AND INSTALLATION



## Removal

1. Drain oil from transfer and transmission.
2. Remove front and rear propeller shaft. Refer to PD section ("Removal and Installation", "PROPELLER SHAFT"). Insert plug into rear oil seal after removing propeller shaft.
3. Remove torsion bar spring. Refer to FA section ("Torsion Bar Spring", "FRONT SUSPENSION"). Then remove second crossmember.
4. Disconnect 4WD and neutral position switches.
5. Remove transfer control lever from transfer outer shift lever.
6. Separate 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)

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# TRANSFER GEAR CONTROL

SEC. 333

: N·m (kg-m, in-lb)

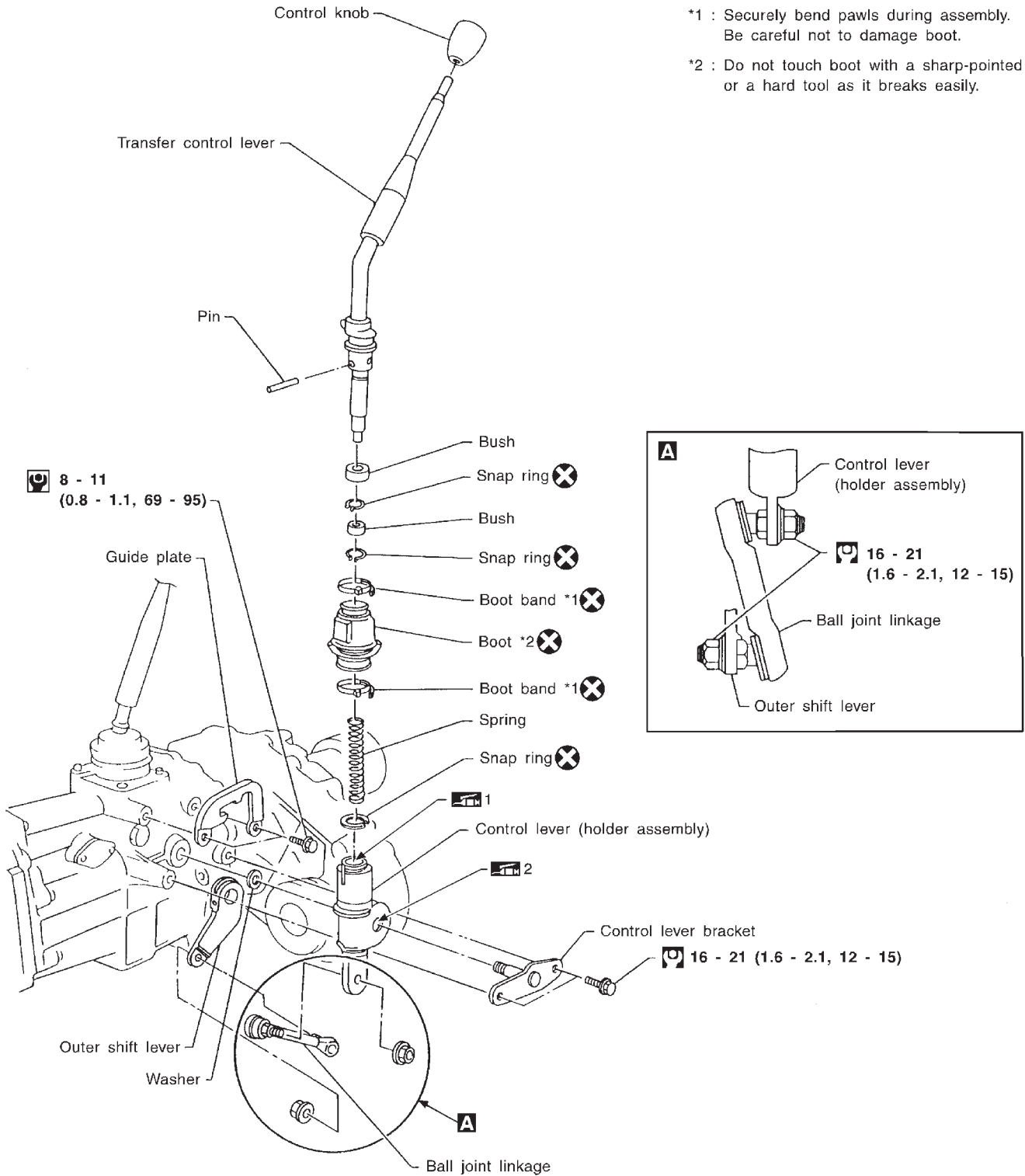
: N·m (kg-m, ft-lb)

1 : Fill multi-purpose grease up.

2 : Apply multi-purpose grease.

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

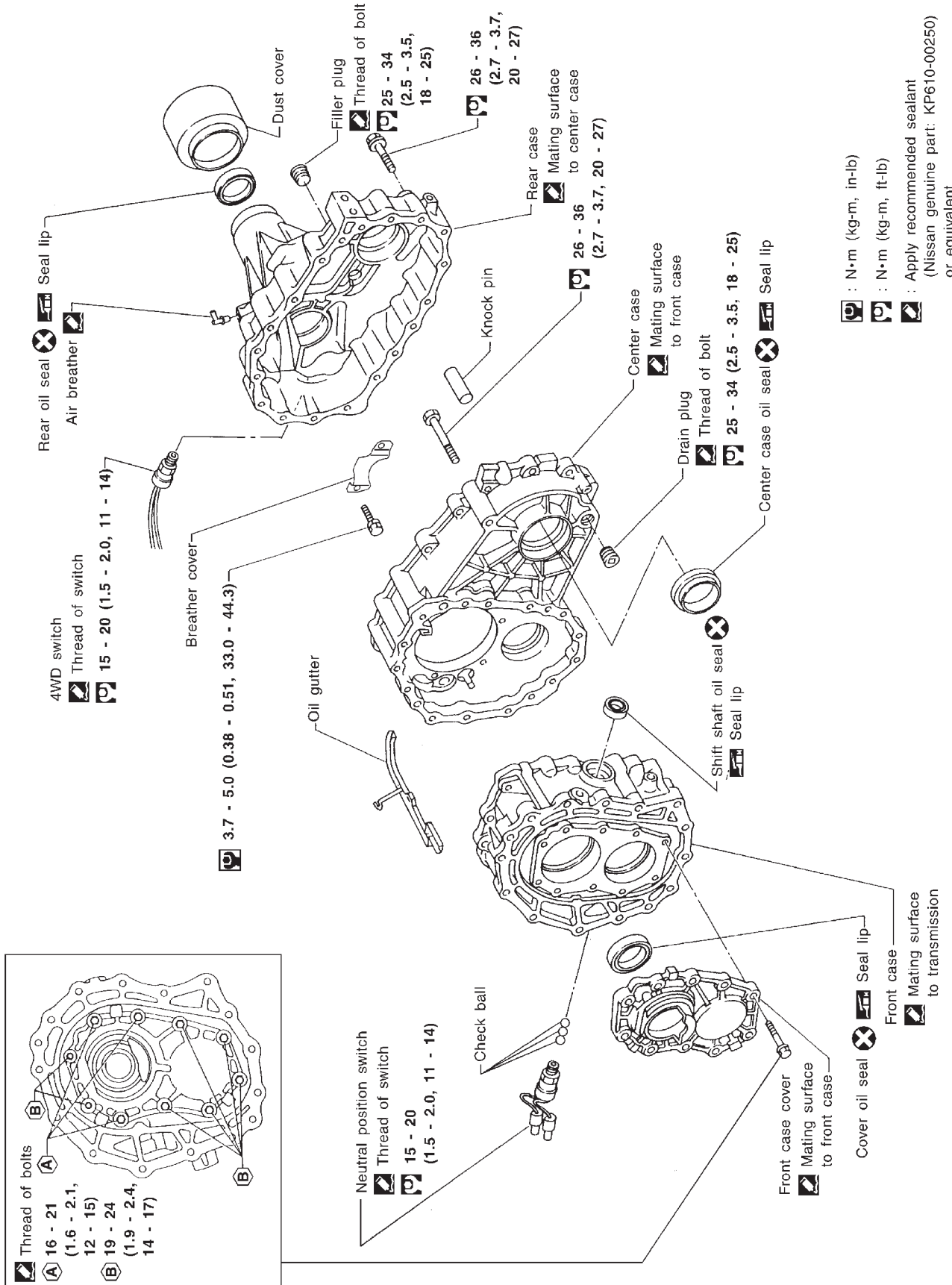
\*2 : Do not touch boot with a sharp-pointed  
or a hard tool as it breaks easily.





## Case Components

### SEC. 331



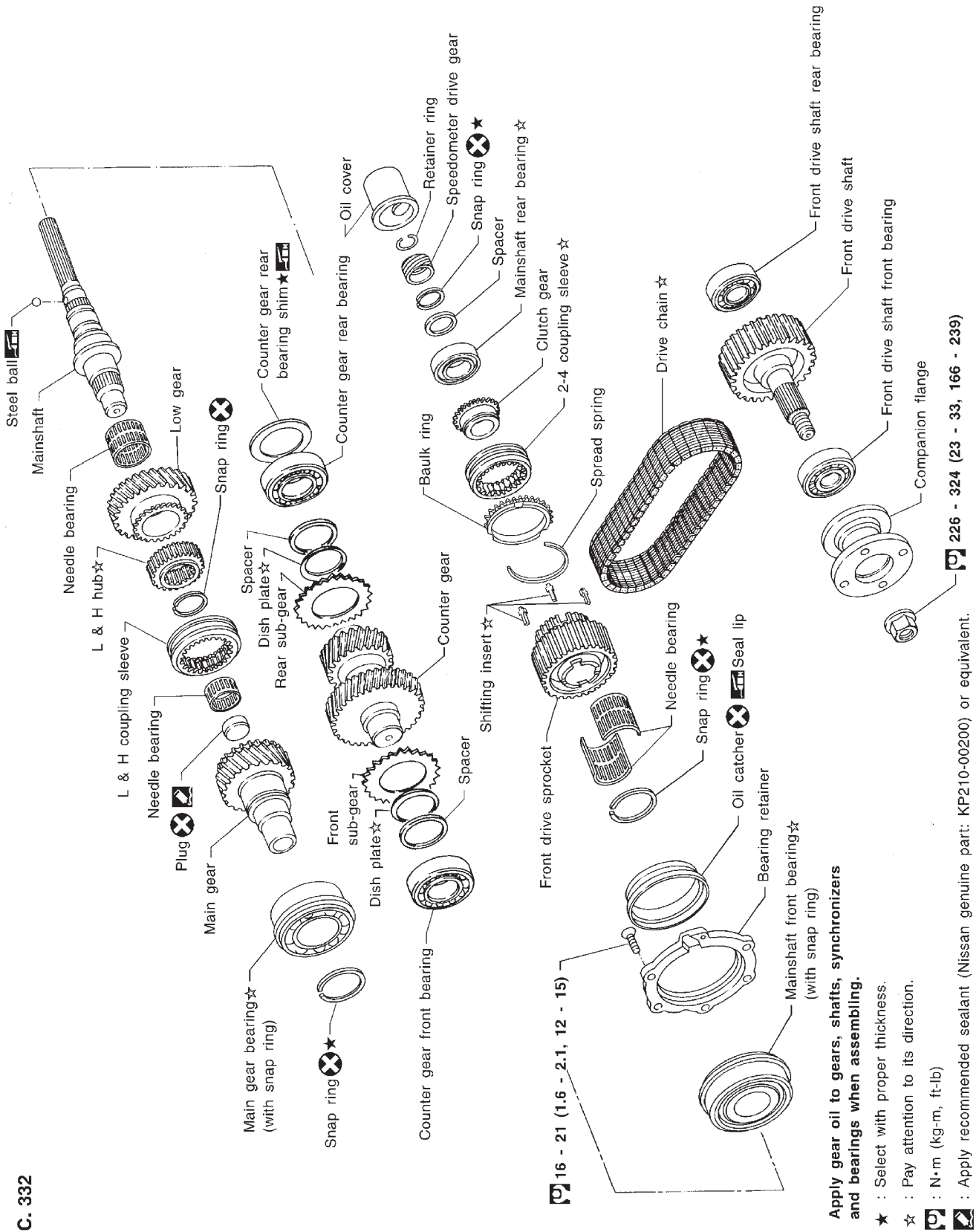
⊗ : N•m (kg-m, in-lb)

⊞ : N•m (kg-m, ft-lb)

⊠ : Apply recommended sealant (Nissan genuine part: KP610-00250) or equivalent.

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Gear Components



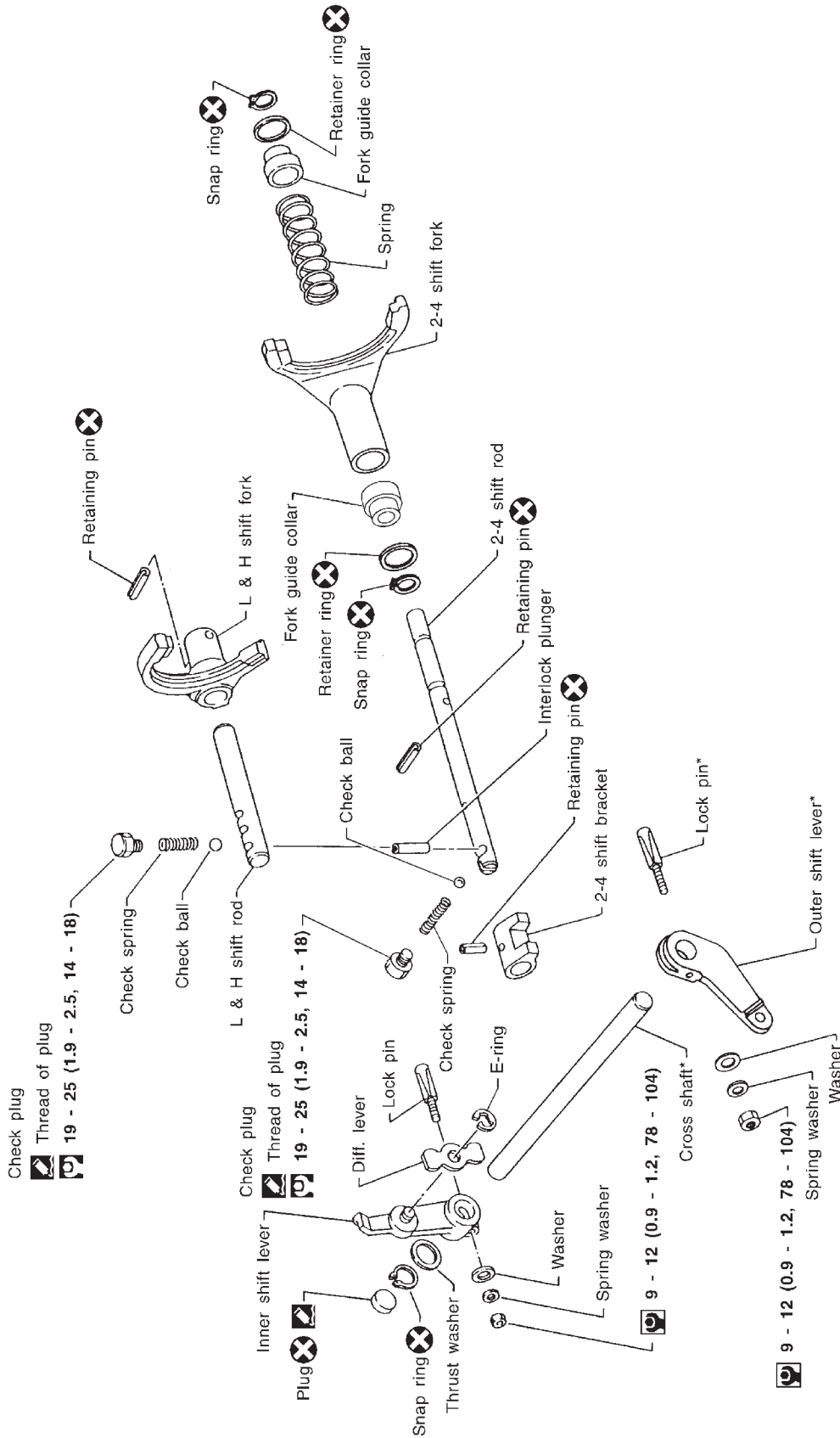
SEC. 332

16 - 21 (1.6 - 2.1, 12 - 15)

- 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.

226 - 324 (23 - 33, 166 - 239)

Shift Control Components



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

☐ : N•m (kg-m, in-lb)

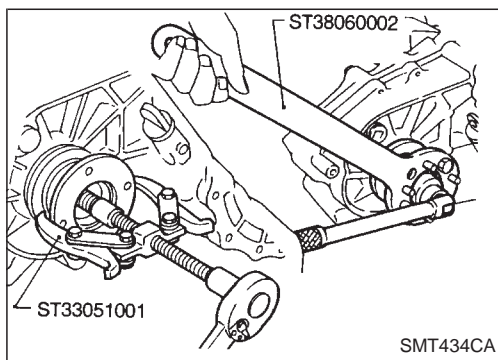
☐ : N•m (kg-m, ft-lb)

☐ : Apply recommended sealant (Nissan genuine part: KP610-00250) or equivalent.

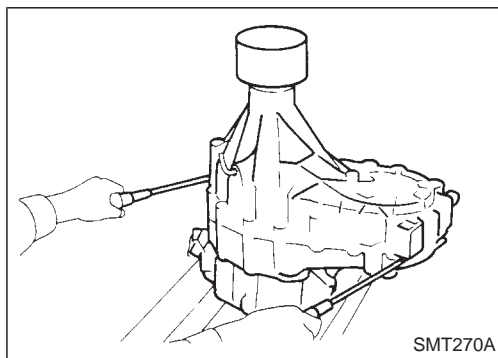
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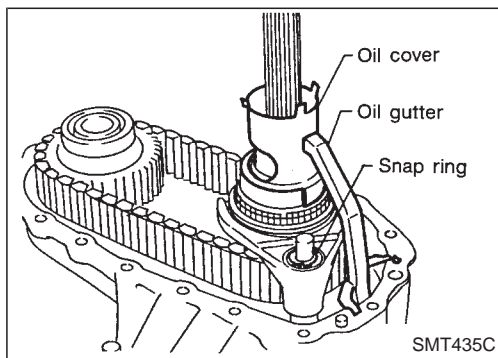
# DISASSEMBLY



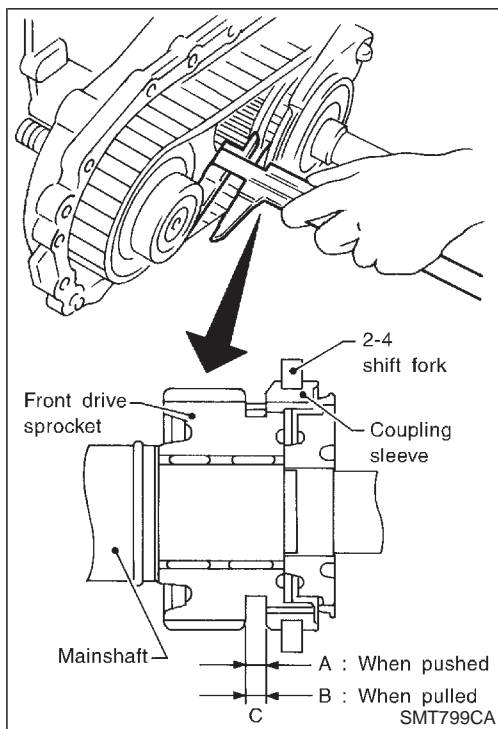
1. Remove nut of companion flange.
2. Remove companion flange.



3. Remove 4WD switch.
4. Remove rear case.
  - Be careful not to damage the mating surface.



5. Remove oil cover and oil gutter.
6. Remove snap ring and retainer ring from 2-4 shift rod.



7. Using calipers, measure the difference between front drive sprocket and 2-4 coupling sleeve as outlined under Measuring method below. If it is outside specifications, check front drive sprocket, 2-4 coupling sleeve, clutch gear, 2-4 shift fork and 2-4 fork rod for abnormalities. Replace faulty part(s) as required.

### Measuring method

- a. Move coupling sleeve until it is in contact with sprocket, then measure dimension A. Move coupling sleeve until it is in contact with clutch gear, then measure dimension B. Obtain dimensional difference C between two measurements A and B.

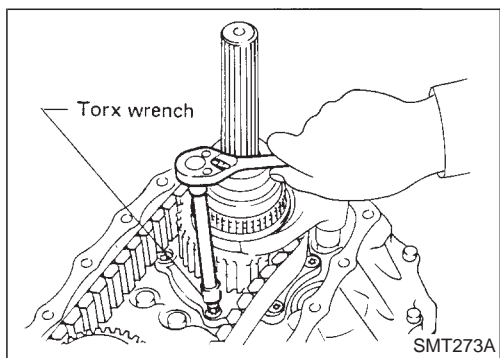
$$C = A - B$$

- b. To determine dimension A, measure at 3 or 4 different points by rotating sprocket and obtain average value of 3 or 4 measurements.

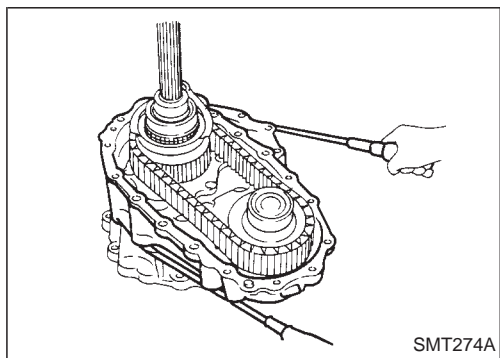
### Specification C:

Refer to TF-31.

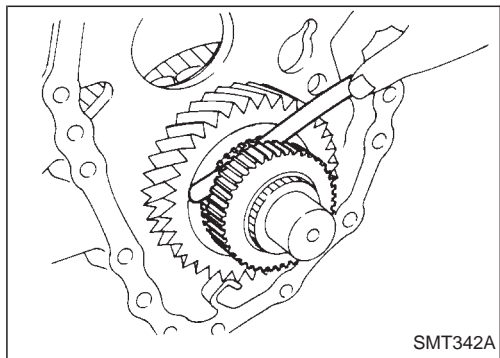
# DISASSEMBLY



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.

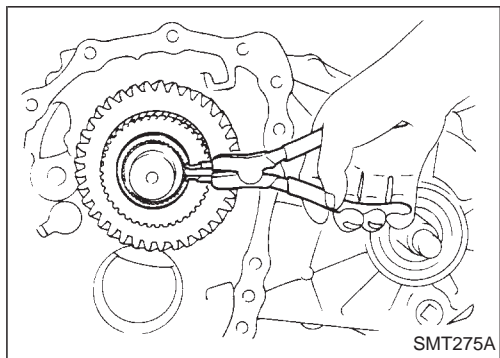


10. Measure end play of low gear.

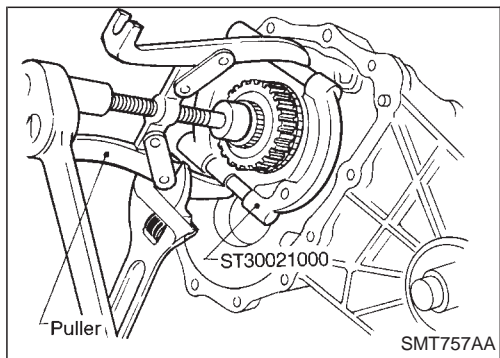
**Standard:**

**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.



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



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

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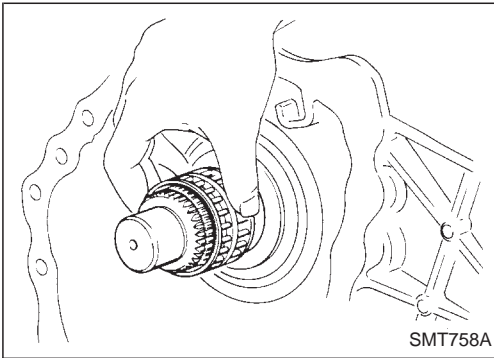
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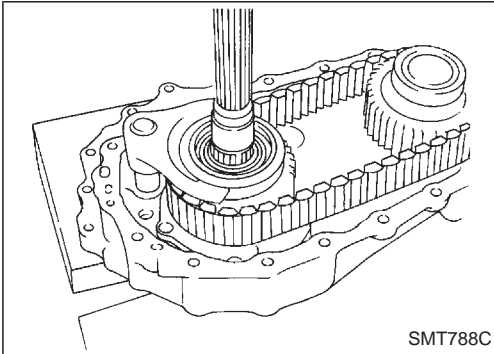
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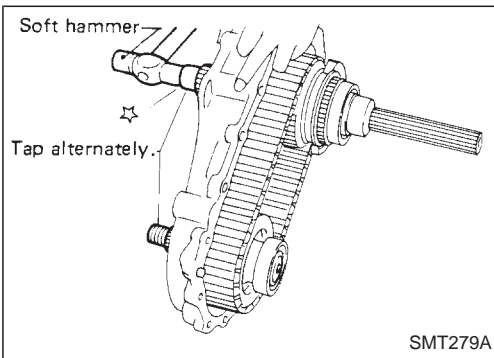
# DISASSEMBLY



c. Remove needle bearing of low gear.

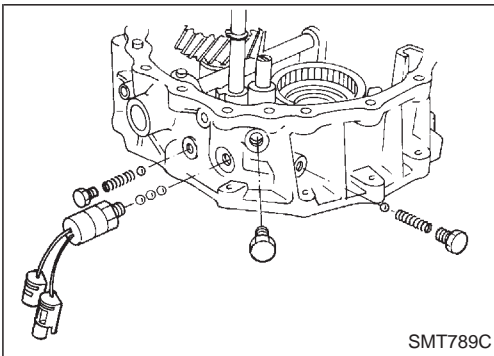


d. Make sure of the direction of the drive chain before removing it. (It must be reinstalled in the same direction.)



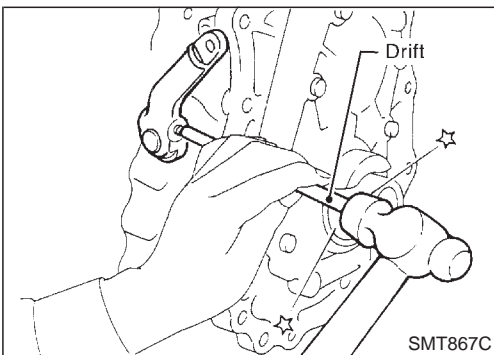
e. Remove mainshaft, front drive and drive chain as a set by tapping front end of mainshaft and front drive shaft alternately.

- **Be careful not to bend drive chain.**



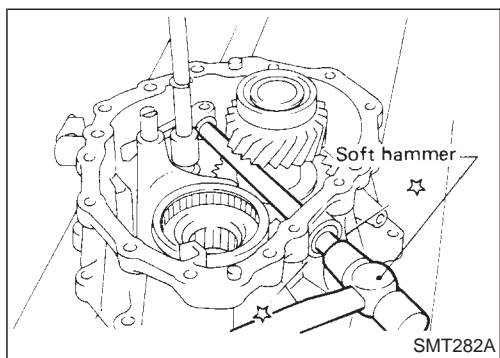
12. Disassemble front case assembly.

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

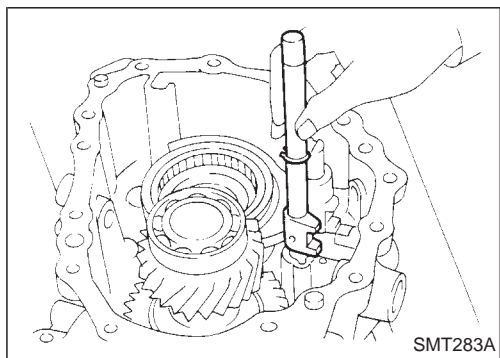


b. Remove outer shift lever.

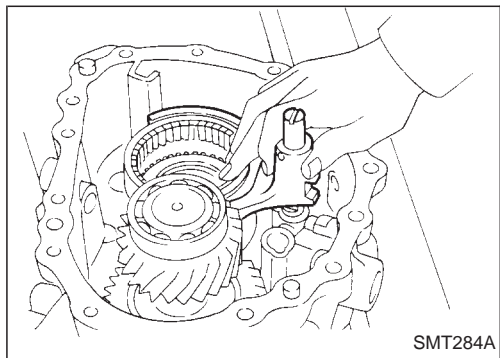
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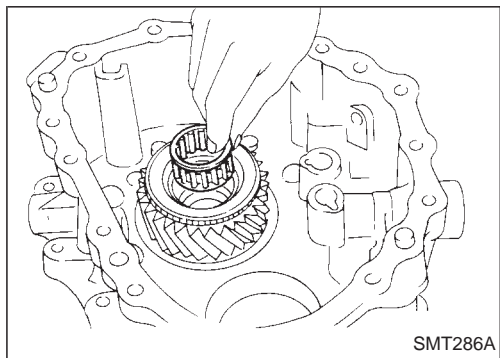
c. Remove lock pin of inner shift lever and drive out cross shaft with plug.



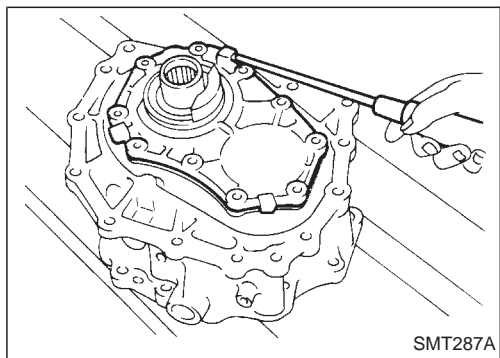
d. Remove 2-4 shift rod.



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.

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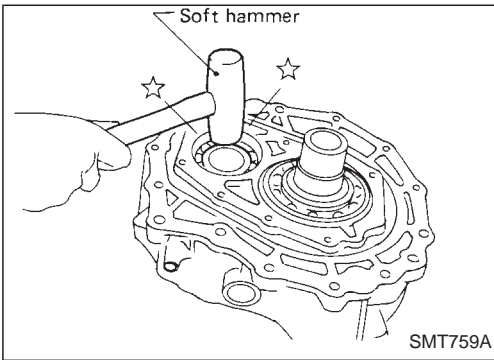
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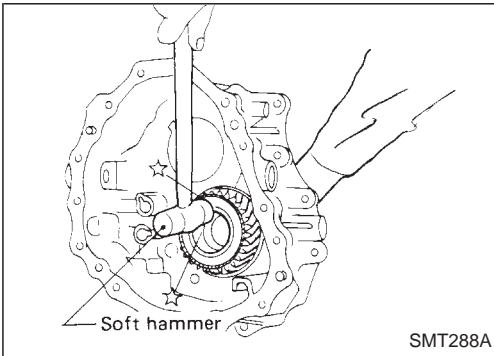
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## DISASSEMBLY

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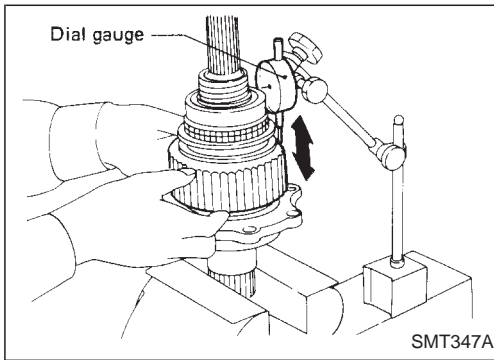


h. Remove counter gear by tapping lightly.



i. Remove main gear by tapping lightly.





## Mainshaft

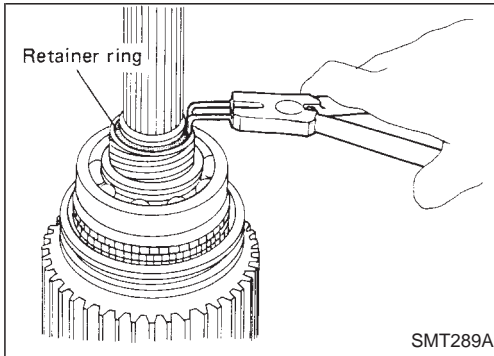
### DISASSEMBLY

1. Check end play of front drive sprocket.

**Standard:**

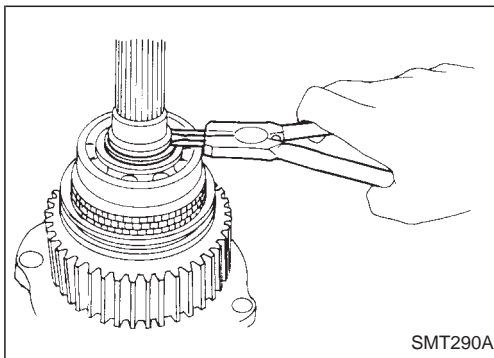
**0.2 - 0.35 mm (0.0079 - 0.0138 in)**

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

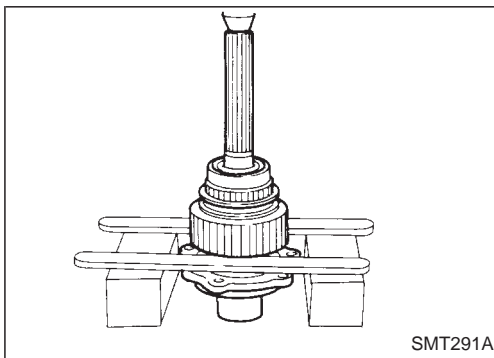


2. Remove retainer ring, speedometer drive gear and steel ball.

- Be careful not to lose the steel ball.

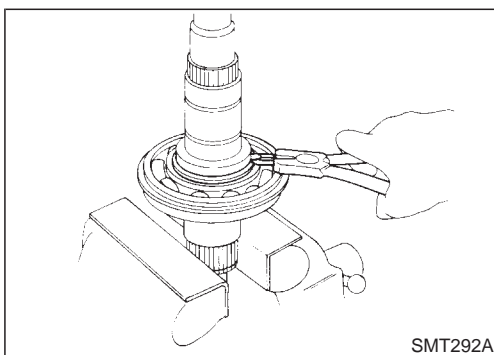


3. Remove snap ring and spacer.



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.

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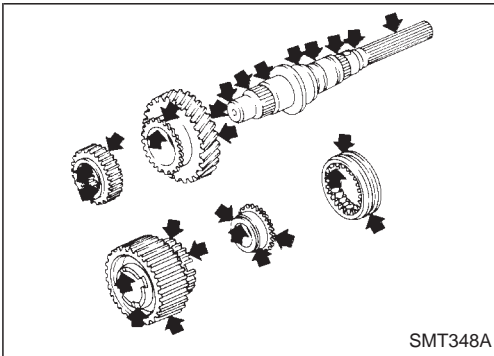
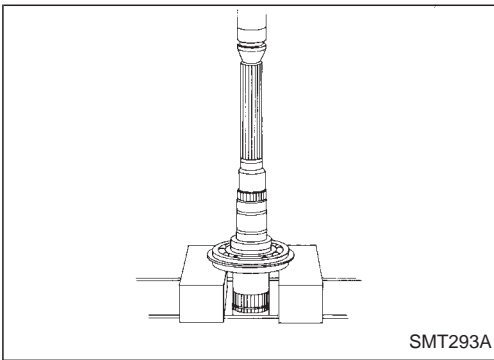
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## REPAIR FOR COMPONENT PARTS

### Mainshaft (Cont'd)

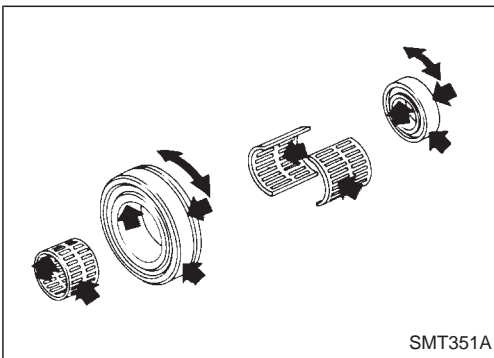
7. Press out mainshaft front bearing from mainshaft.



### INSPECTION

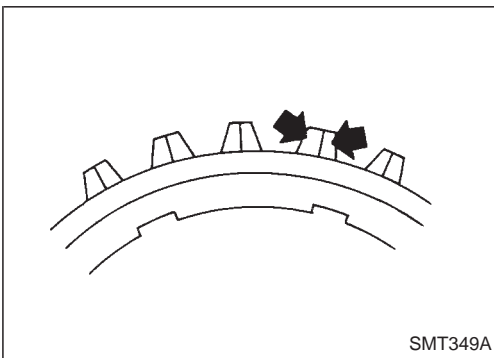
#### Gear and shaft

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



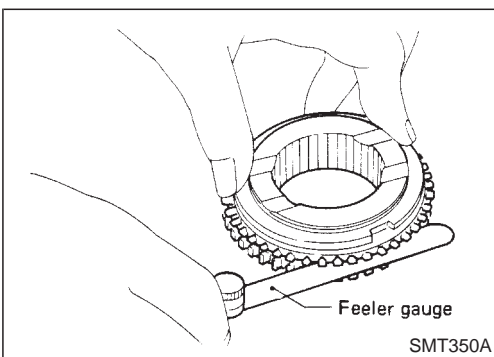
#### Bearing

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



#### Baulk ring

- Check baulk ring for cracks or deformation.



- Measure clearance between baulk ring and clutch gear.

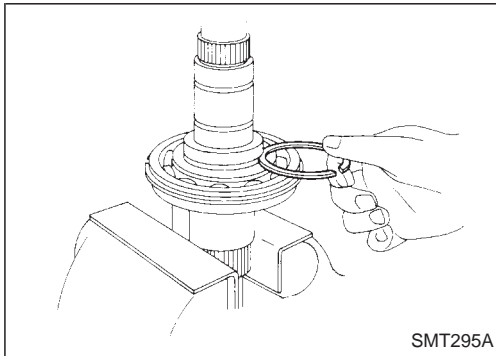
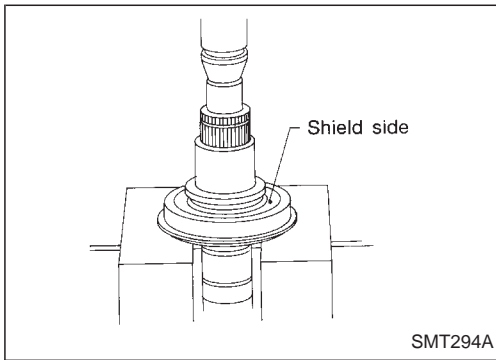
**Baulk ring to clutch gear clearance:**  
Refer to SDS, TF-31.

# REPAIR FOR COMPONENT PARTS

## Mainshaft (Cont'd)

### ASSEMBLY

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

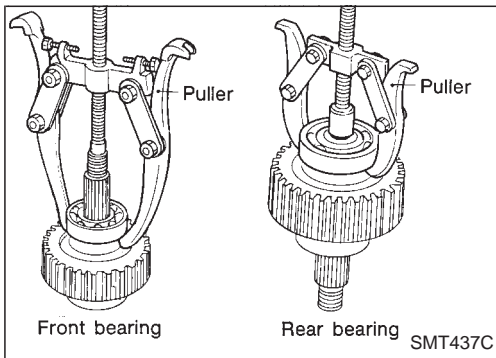


2. Install spacer.
3. Select snap ring with proper thickness and install it.
  - Allowable clearance between snap ring and groove:**  
0 - 0.15 mm (0 - 0.0059 in)
  - Available snap ring for mainshaft front bearing:**  
Refer to SDS, TF-31.
4. Regarding to further procedures, refer to "ASSEMBLY", TF-25.

## Front Drive Shaft

### DISASSEMBLY

- Front drive shaft front bearing and rear bearing



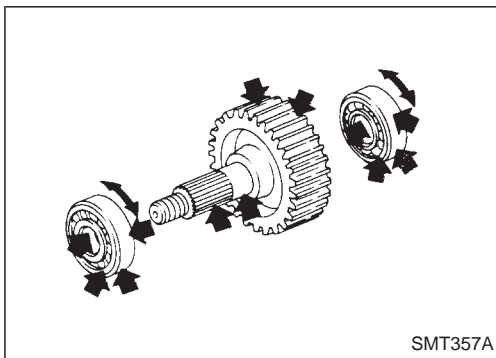
### INSPECTION

#### Sprocket and shaft

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

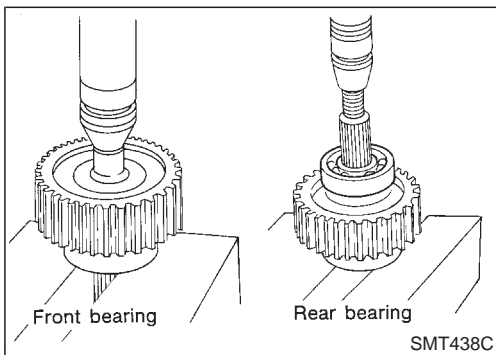
#### Bearing

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



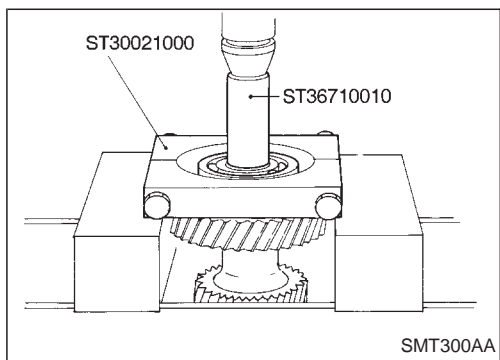
### ASSEMBLY

- Press front drive shaft front bearing and rear bearing.



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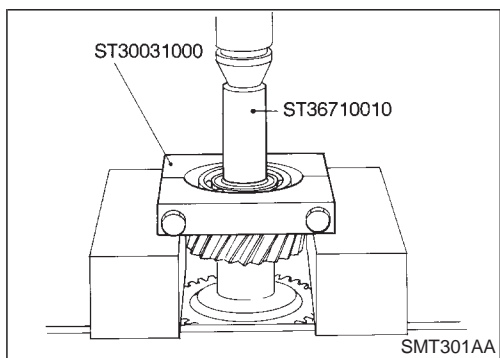
# REPAIR FOR COMPONENT PARTS



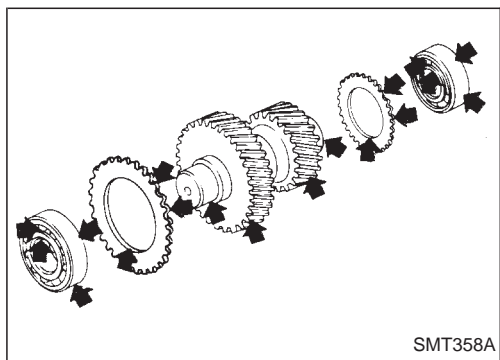
## Counter Gear

### DISASSEMBLY

1. Press out counter gear front bearing.
  - Remove front sub-gear, spacer and dish plate.



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



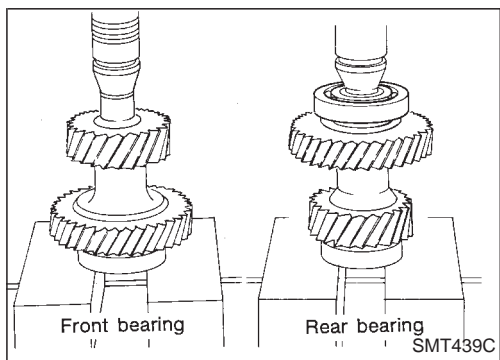
### INSPECTION

#### Gear and shaft

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

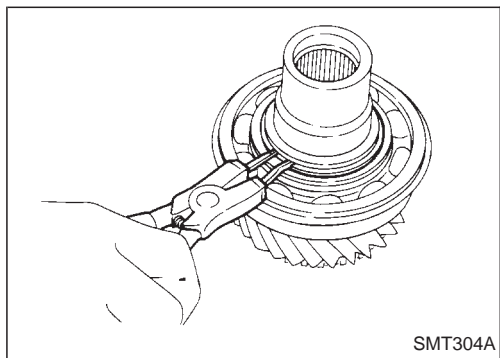
#### Bearing

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



### ASSEMBLY

1. Install front sub-gear, dish plate and spacer.
- Press on counter gear front bearing.
2. Install rear sub-gear, dish plate and spacer, and then press on counter gear rear bearing.



## Main Gear

### DISASSEMBLY

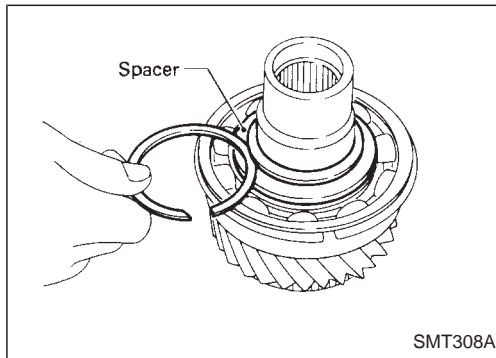
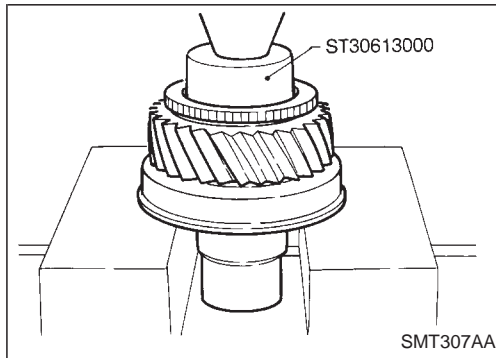
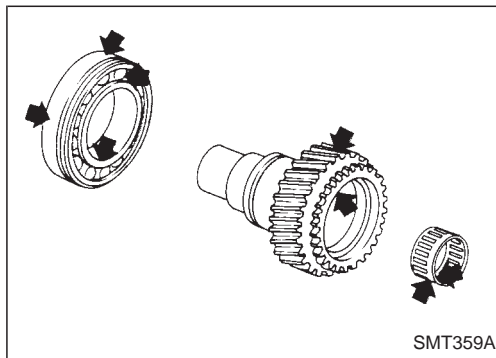
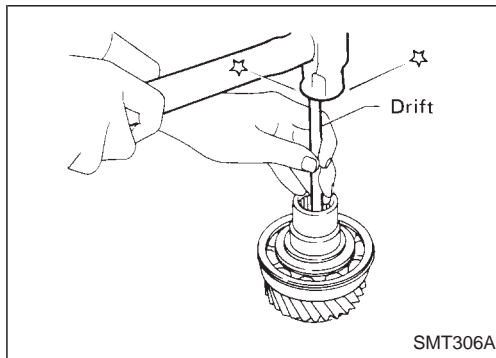
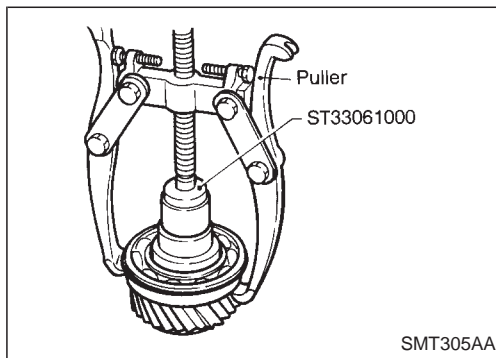
#### Main gear bearing

1. Remove snap ring.

# REPAIR FOR COMPONENT PARTS

## Main Gear (Cont'd)

2. Pull out main gear bearing.



### 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, crack, pitting or wear.

### ASSEMBLY

#### Main gear bearing

1. Press on main gear bearing.

2. 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 for main gear bearing:**  
**Refer to SDS, TF-31.**

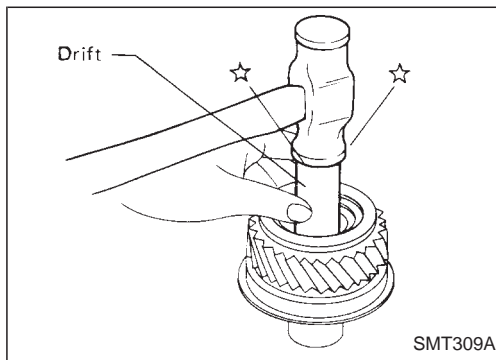
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## REPAIR FOR COMPONENT PARTS

### Main Gear (Cont'd)

#### Plug

- Apply sealant to plug and install it.

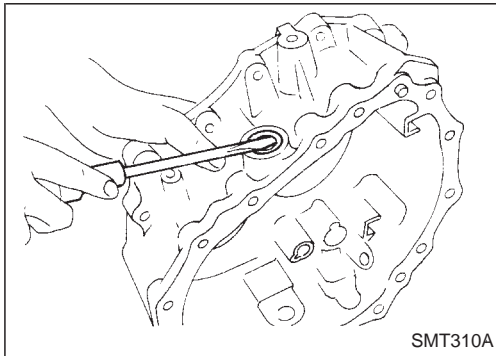


### Front Case

#### SHIFT SHAFT OIL SEAL

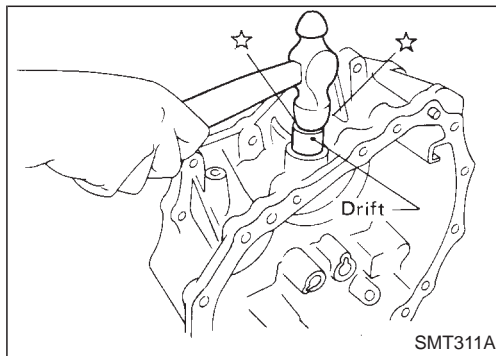
##### Removal

- Use a screwdriver to pry out old seal.
- Be careful not to damage case.
- Always replace with a new one whenever it has been removed.



##### Installation

- Install new shift shaft oil seal until flush with case.
- Before installing, apply multi-purpose grease to seal lip.

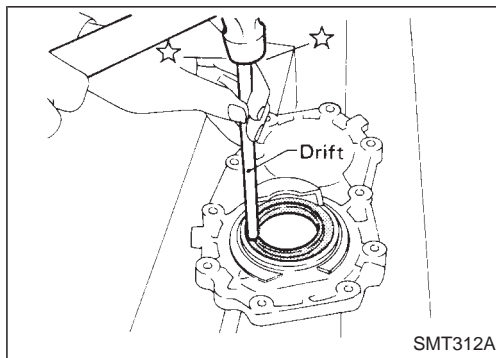


### Front Case Cover

#### COVER OIL SEAL

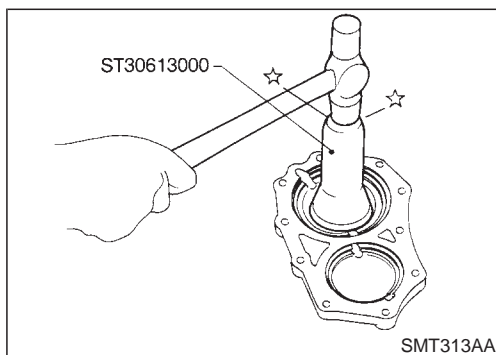
##### Removal

- Drive out old seal from inside of front case cover.
- Be careful not to damage front case cover.

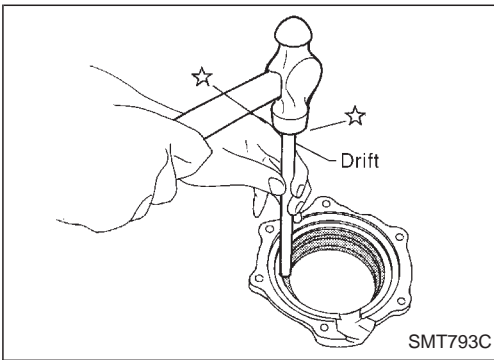


##### Installation

- Install new front case cover oil seal until it stops.
- Before installing, apply multi-purpose grease to seal lip.



# REPAIR FOR COMPONENT PARTS

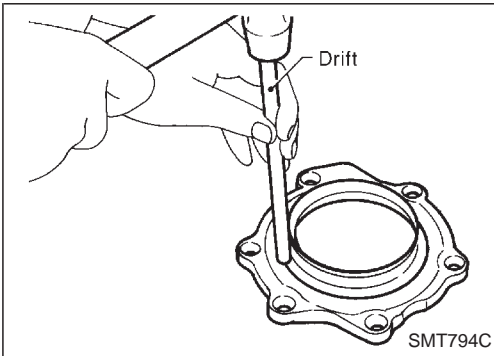


## Bearing Retainer

### OIL CATCHER

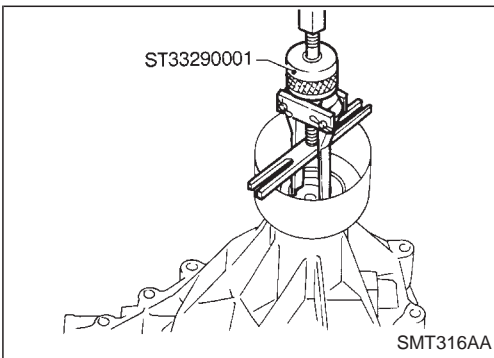
#### Removal

- Drive out oil catcher from inside of bearing retainer.
- Be careful not to damage bearing retainer.



#### Installation

- Install oil catcher until it stops.
- Be careful not to damage or distort oil catcher or bearing retainer.
- Before installing, apply multi-purpose grease to seal lip.

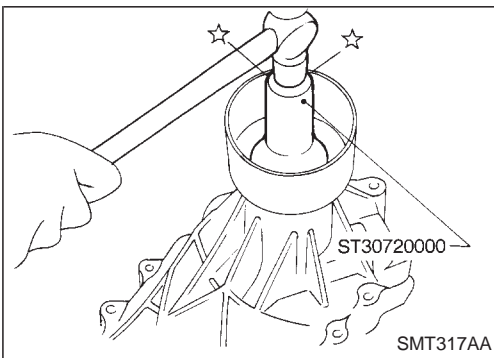


## Rear Case

### REAR OIL SEAL

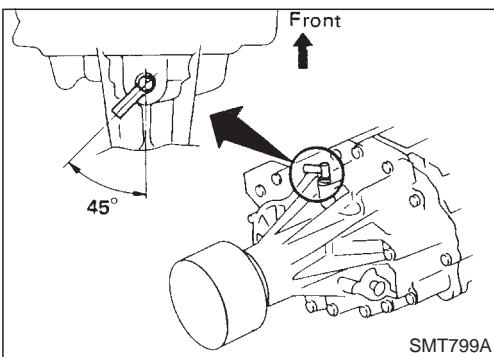
#### Removal

- Pull out rear oil seal.



#### Installation

- Install new rear oil seal until it stops.
- Before installing, apply multi-purpose grease to seal lip.



## AIR BREATHER

- Install as shown in illustration.

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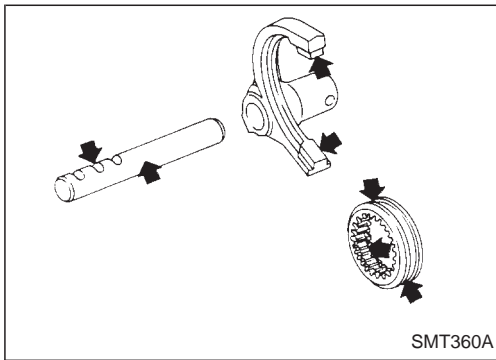
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# REPAIR FOR COMPONENT PARTS

## Shift Control Components

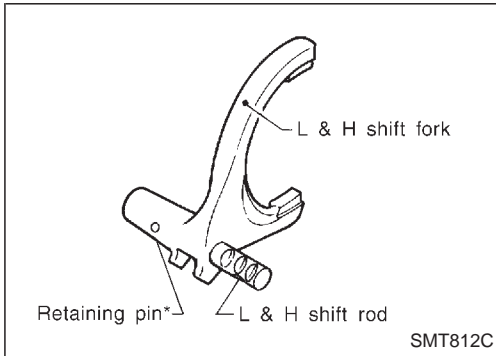
### INSPECTION

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



### L & H SHIFT ROD & FORK

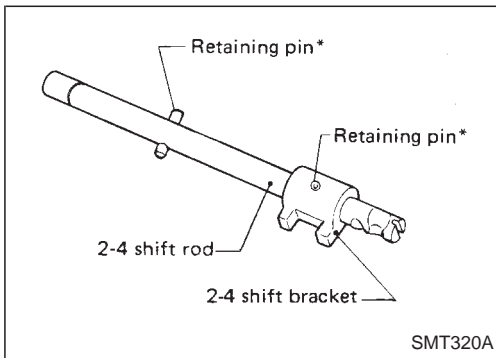
- Assemble as shown in illustration.



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

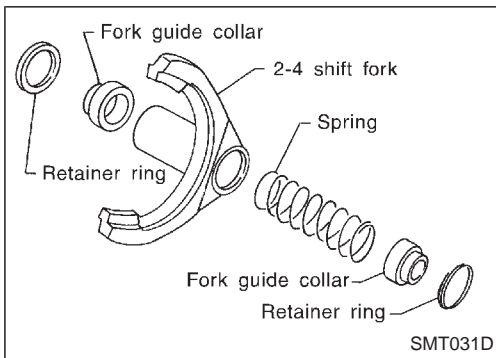
### 2-4 SHIFT ROD & FORK

- Assemble as shown in illustration.



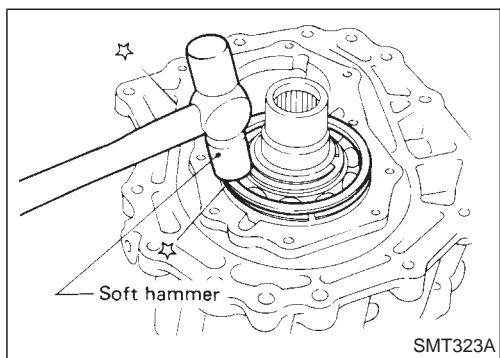
\* Retaining pins are the same size.

- Pay special attention to the direction of fork guide collar.

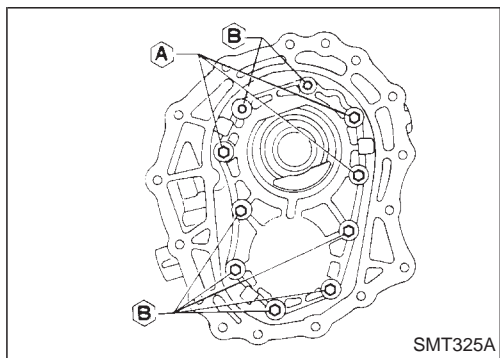




# ASSEMBLY

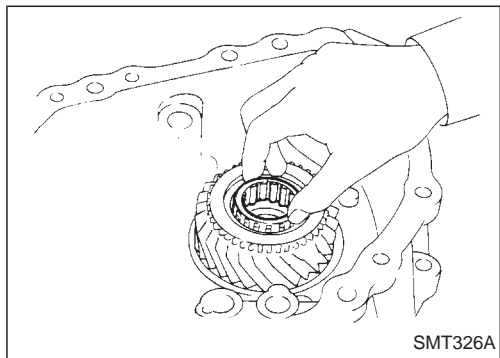


1. Assemble front case.
  - a. Install main gear assembly by tapping lightly.

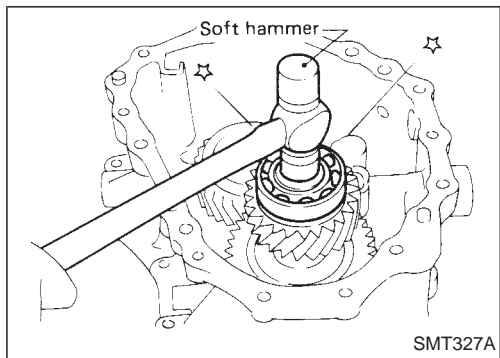


- b. Apply sealant to the mating surface and bolts of front case cover and install it on front case.

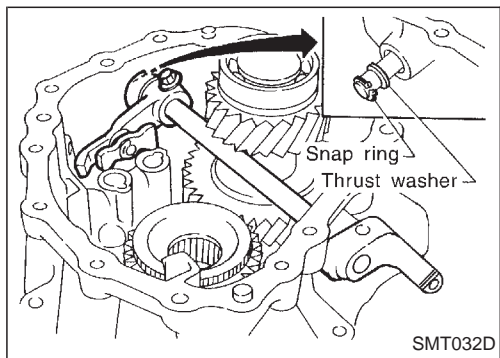
- **These ten bolts should be coated with sealant.**
- **Tightening torque**
  - A : 16 - 21 N·m  
(1.6 - 2.1 kg-m, 12 - 15 ft-lb)
  - B : 19 - 24 N·m  
(1.9 - 2.4 kg-m, 14 - 17 ft-lb)



- 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 or lock pin of outer shift lever, replace them as a set.**

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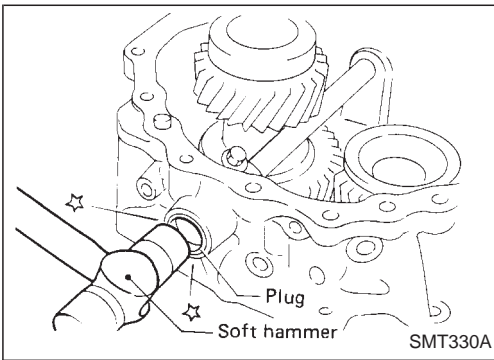
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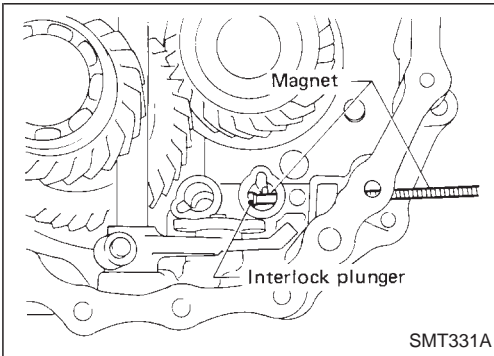
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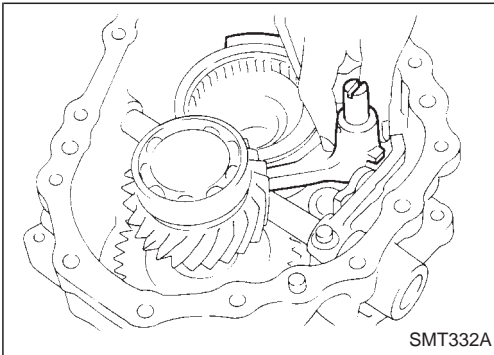
# ASSEMBLY



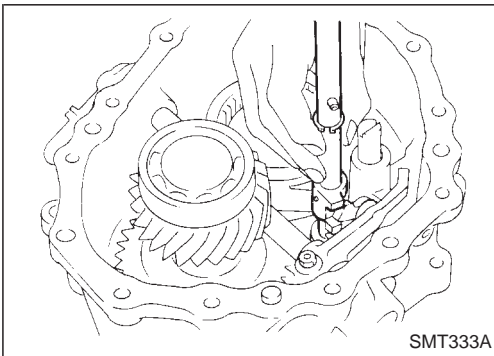
f. Apply sealant to plug and install it into front case.



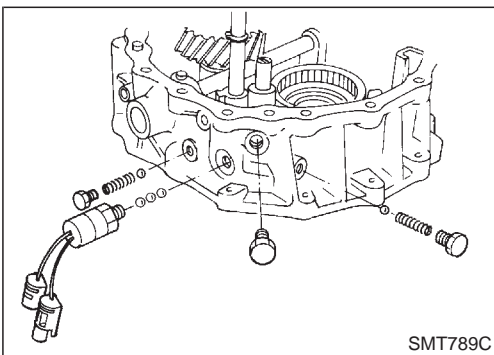
g. Insert interlock plunger into front case.



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

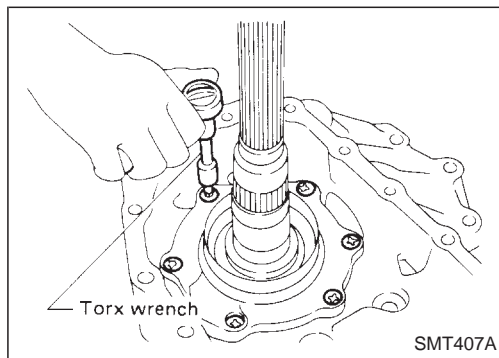
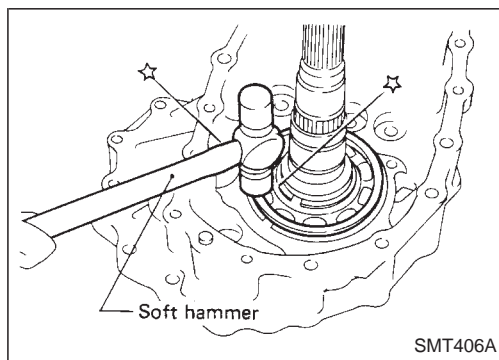
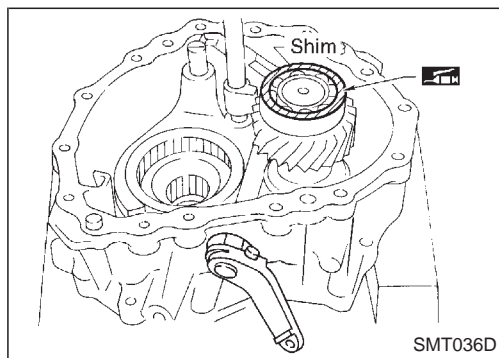
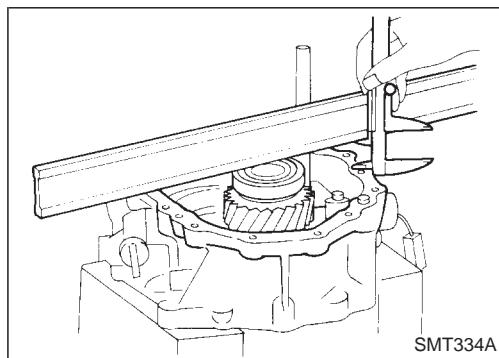
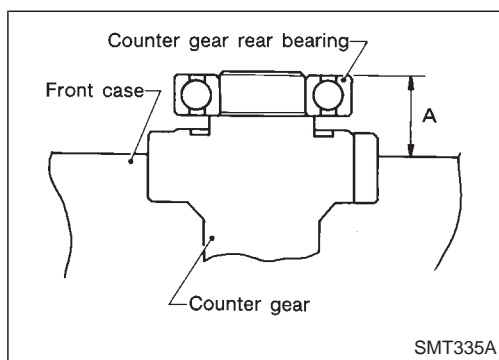


i. Install 2-4 shift rod.



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

# ASSEMBLY



2. Select counter gear rear bearing shim.

**Counter gear end play:**

**0 - 0.2 mm (0 - 0.008 in)**

**Counter gear rear bearing shim:**

**Refer to SDS, TF-31.**

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

- b. Select suitable shim using SDS chart. Refer to SDS, TF-31.

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.**

- b. Install bearing retainer.

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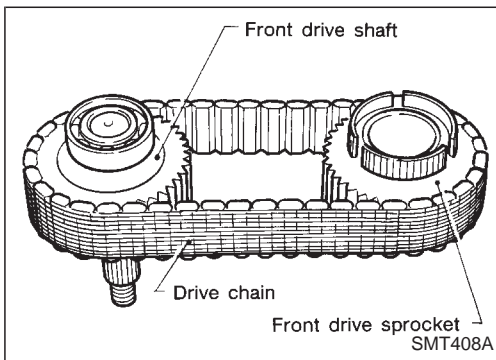
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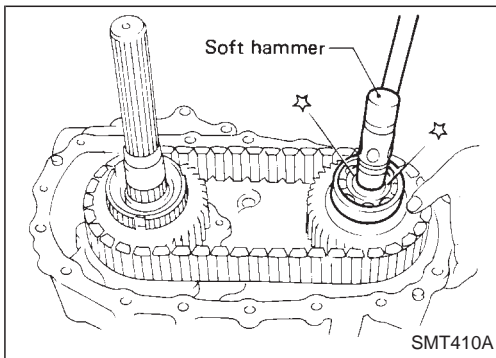
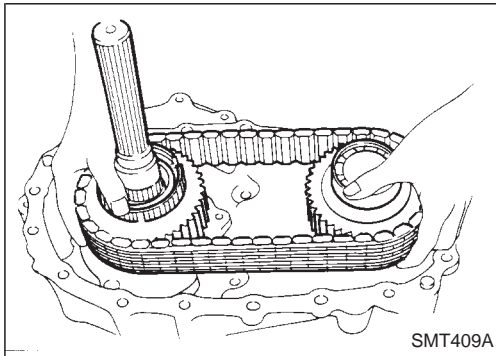
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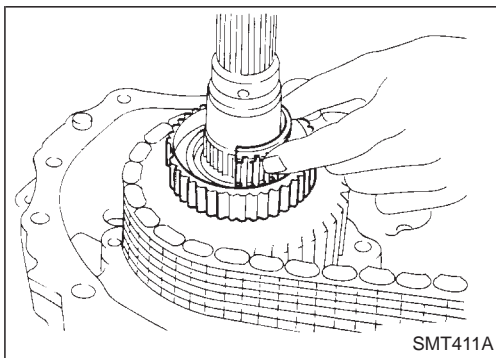
## ASSEMBLY



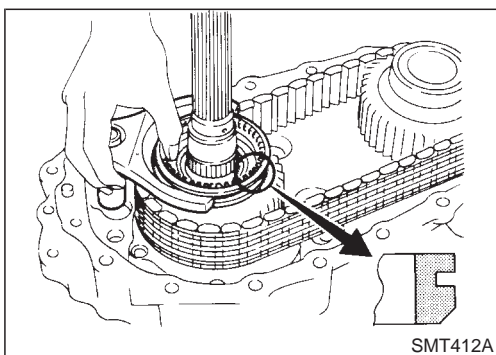
- c. Put drive chain onto the front drive sprocket and front drive shaft, and then put them in center case.



- d. Install front drive shaft by tapping lightly.  
● **Make sure shafts are lined up in the case.**

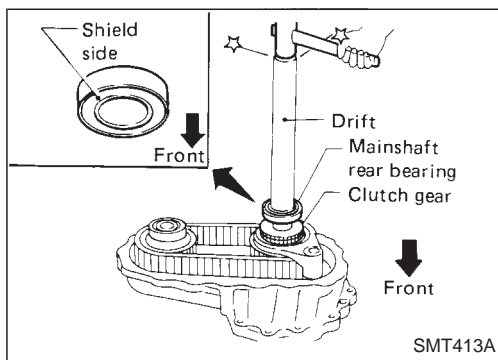


- e. Apply gear oil to needle bearings and install them into front drive sprocket.  
● **These needle bearings will be installed move easily if front drive sprocket is rotated while installing them.**

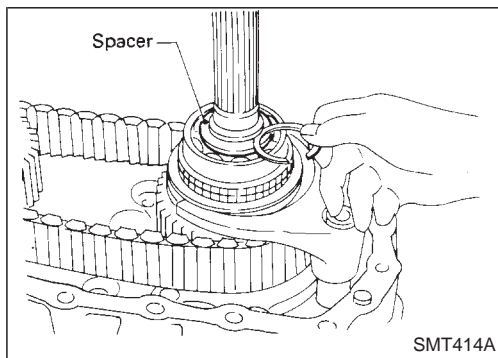


- f. Install 2-4 coupling sleeve with 2-4 shift fork.  
● **Pay special attention to direction of coupling sleeve.**

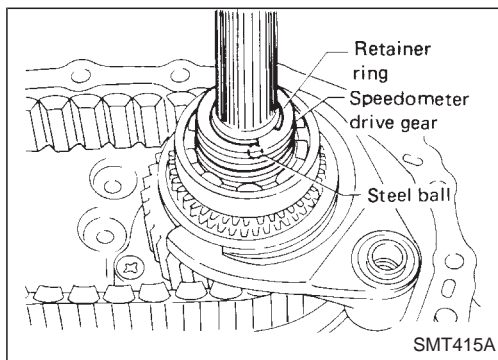
# ASSEMBLY



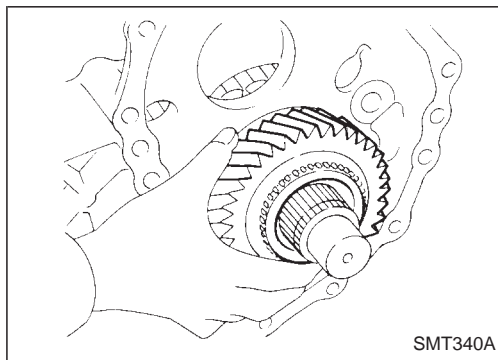
- g. Install clutch gear and mainshaft rear bearing.
- Place wooden block under mainshaft in order to protect mainshaft front bearing.



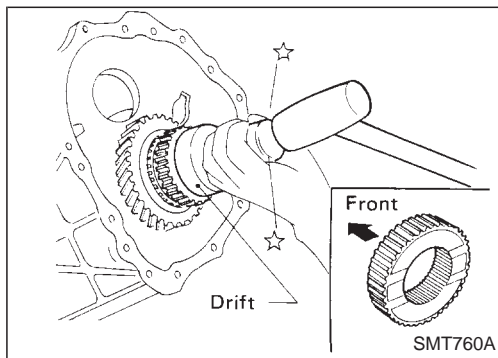
- h. Install spacer.
- i. Select snap ring with proper thickness and install it.
- Allowable clearance between snap ring and groove:  
0 - 0.15 mm (0 - 0.0059 in)**
- Available snap ring for mainshaft rear bearing:  
Refer to SDS, TF-31.**



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



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



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

GI

MA

EM

LC

EC

FE

CL

MT

TF

PD

FA

RA

BR

ST

RS

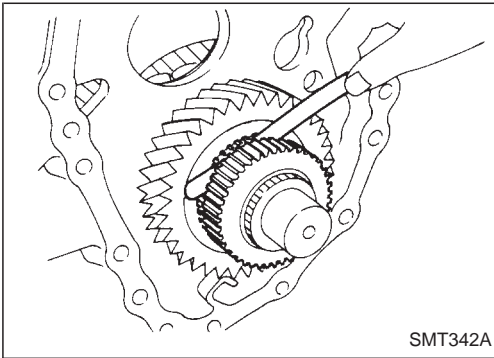
BT

HA

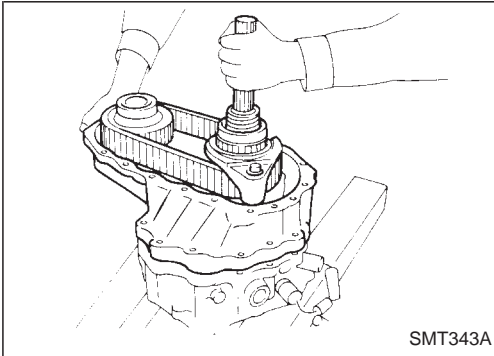
EL

IDX

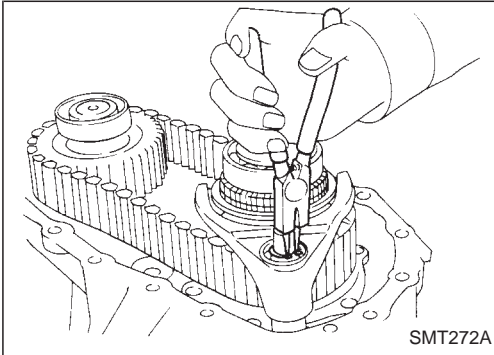
## ASSEMBLY



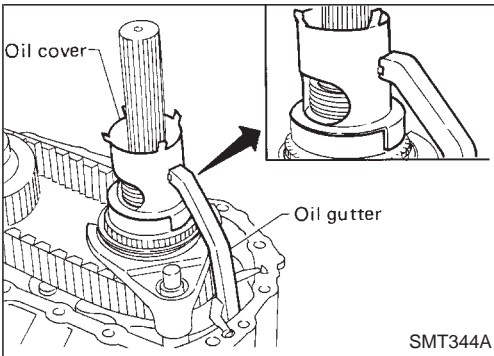
- m. Measure end play of low gear.  
**Standard: 0.2 - 0.35 mm (0.0079 - 0.0138 in)**



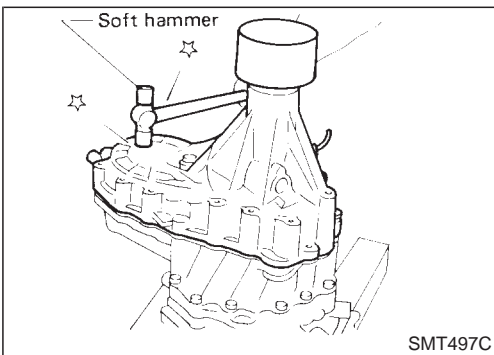
6. Apply sealant to mating surface and put center case assembly onto front case and tighten bolts.



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.  
11. Install 4WD switch.  
● **Apply sealant to thread of switch.**

