# **TRANSFER**

# SECTION T

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TF

#### **PREPARATION**

#### SPECIAL SERVICE TOOLS

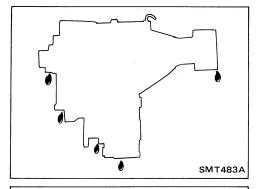
Tool number (Kent-Moore No.) Tool name	Description	
ST38060002 (J34311) Flange wrench		Removing companion flange nut Installing companion flange nut
ST30021000 (J22912-01) Puller		Removing counter gear front bearing (Use with ST36710010) Removing L & H hub
ST30031000 (J22912-01) Puller		Removing counter gear rear bearing (Use with ST36710010)
ST33290001 (J25810-A) Puller		Removing center case oil seal Removing rear oil seal
ST33051001 (J22888) Puller		Removing companion flange
ST30720000 ① (J25273) ② (J25405) Drift	a = 77 mm (b = 55.5 mm	1 Installing center case oil seal 2 Installing rear oil seal 3.03 in) dia. 1 (2.185 in) dia.
ST36710010 ( – ) Drift	a = 34,5 mm	Removing counter gear front bearing (Use with ST30021000) Removing counter gear rear bearing (Use with ST30031000) (1.358 in) dia.

#### **PREPARATION**

Tool number (Kent-Moore No.) Tool name	Description		`
ST33061000 (J8107-2) Drift	a b	a: 28.5 mm (1.122 in) d b: 38 mm (1.50 in) dia.	Removing main gear bearing
ST30613000 ① (J25742-3) ② (J34339) Drift	b	a: 72 mm (2.83 in) dia. b: 48 mm (1.89 in) dia.	<ol> <li>Installing main gear bearing</li> <li>Installing cover oil seal</li> </ol>
(J35864) Drift	a b	a = 26 mm (1.02 in) dia. b = 20 mm (0.79 in) dia. c = 150 mm (5.91 in)	Installing shift shaft oil seal
(J26092) Drift	2010	a = 44.5 mm (1.752 in) d b = 38.5 mm (1.516 in) d	
(J34291) Shim setting gauge set	BOYON LITATAN		Selecting counter gear rear bearing shim
(J34291-20) Plunger-shim setting gauge		)	Selecting counter gear rear bearing shim

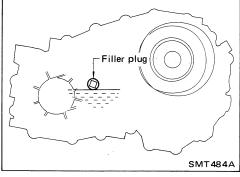
#### COMMERCIAL SERVICE TOOLS

Tool name	Description
Puller	Removing front drive shaft front bearing Removing front drive shaft rear bearing Removing main gear bearing
Drift	

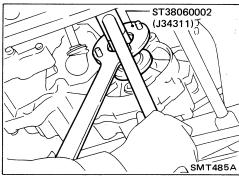


#### **Checking Transfer Oil**

• Check transfer for oil leakage.

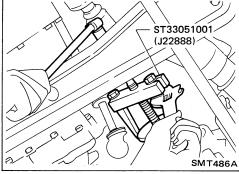


Check oil level.

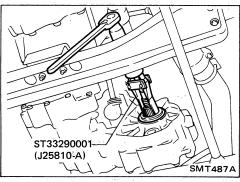


# Replacing Oil Seal CENTER CASE OIL SEAL

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

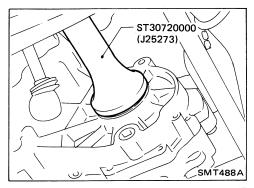


3. Remove companion flange.



4. Remove center case oil seal.

#### **ON-VEHICLE SERVICE**

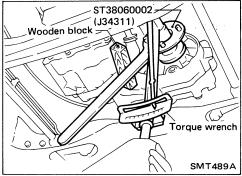


#### Replacing Oil Seal (Cont'd)

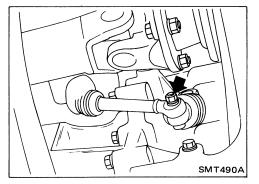
5. Install center case oil seal.

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

6. Install companion flange.

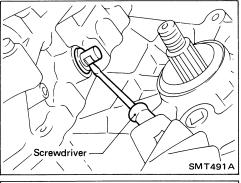


- 7. Tighten nut to the specified torque.
- 8. Install front propeller shaft.



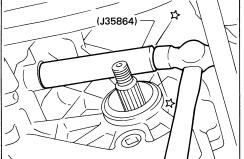
#### SHIFT SHAFT OIL SEAL

- 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.

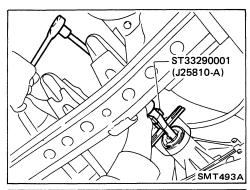


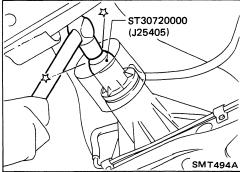
5. Install shift shaft oil seal.

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.

#### **ON-VEHICLE SERVICE**





#### Replacing Oil Seal (Cont'd)

**REAR OIL SEAL** 

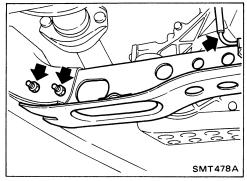
- 1. Remove rear propeller shaft. Refer to PD section.
- 2. Remove rear oil seal.

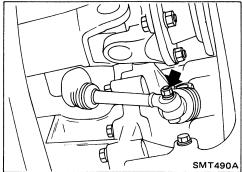
3. Install rear oil seal.

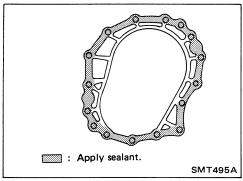
Before installing apply multi-purpose grease to seal lip.

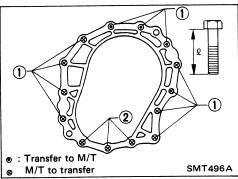
4. Install rear propeller shaft.

#### **REMOVAL AND INSTALLATION**









#### Removal

- Drain oil from transfer and transmission.
- Remove front and rear propeller shaft. Refer to section PD.
- Insert plug into rear 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 of Torsion Bar Spring in section FA. Then remove second crossmember.
- 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. (M/T model only)

#### Recommended sealant:

Nissan genuine part (KP610-00250) or equivalent

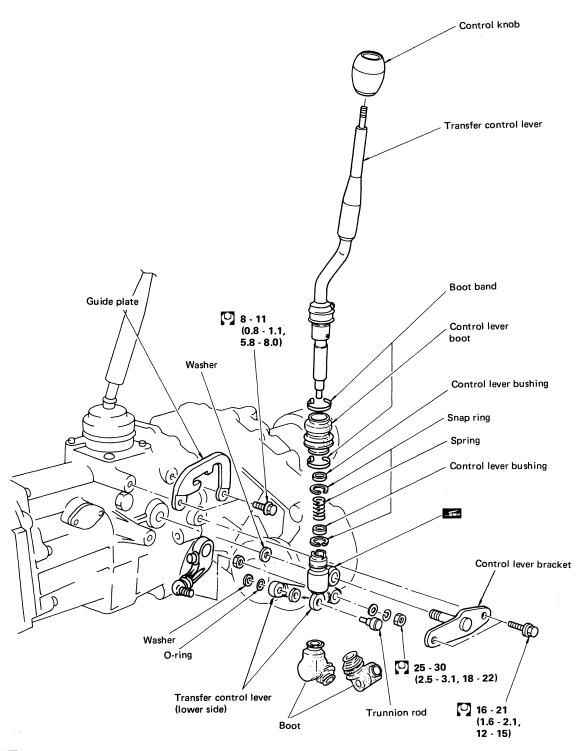
Tighten bolts securing transfer.

#### M/T model

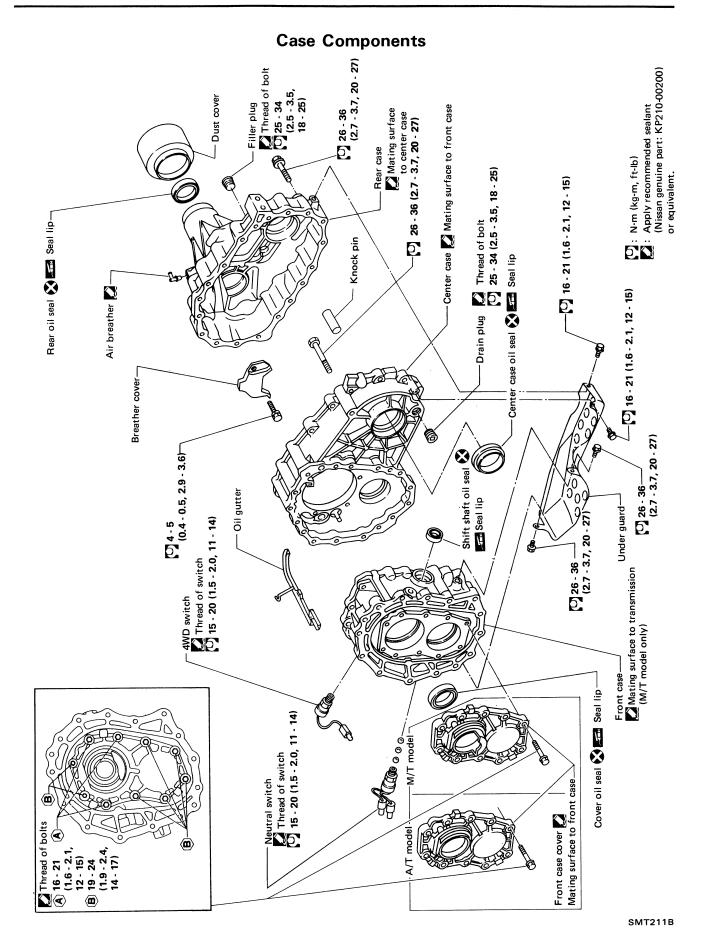
Bolt No.	Tightening torque N∙m (kg-m, ft-lb)	l mm (in)
1	31 - 41 (3.2 - 4.2, 23 - 30)	45 (1.77)
2	31 - 41 (3.2 - 4.2, 23 - 30)	60 (2.36)

#### A/T model

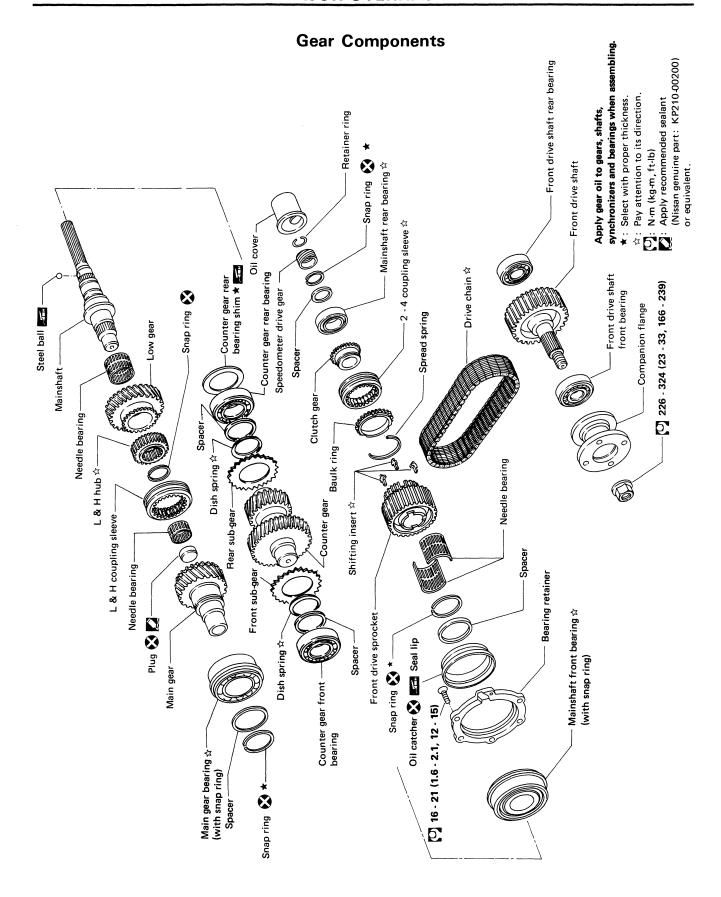
Bolt No.	Tightening torque N⋅m (kg-m, ft-lb)	l mm (in)
1	31 - 41 (3.2 - 4.2, 23 - 30)	60 (2.36)
2	31 - 41 (3.2 - 4.2, 23 - 30)	60 (2.36)

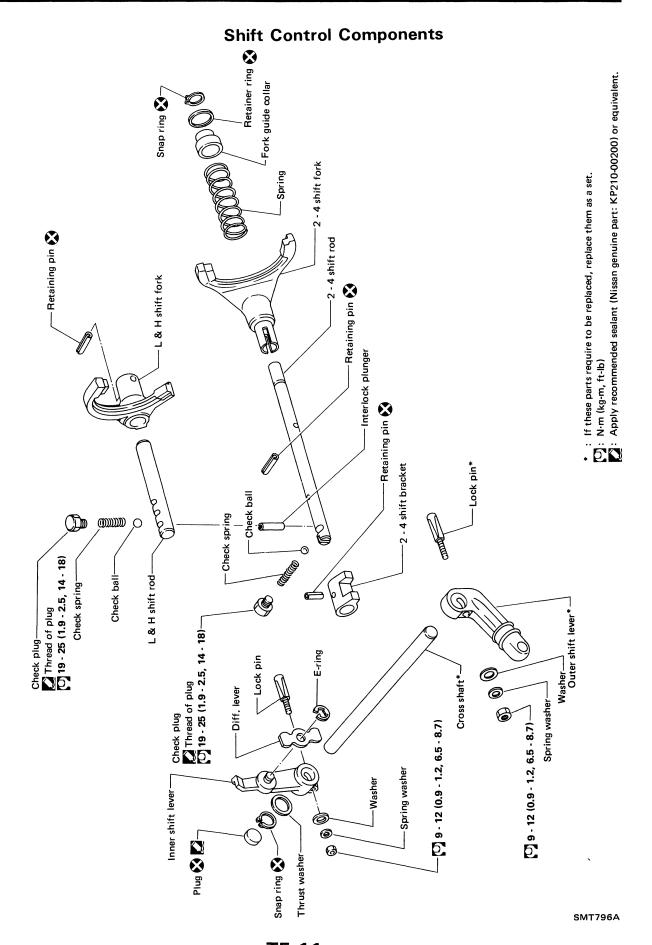


: N·m (kg-m, ft-lb)

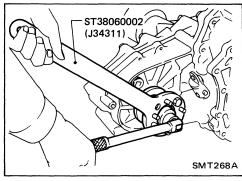


TF-9

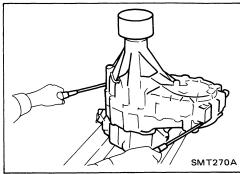




TF-11

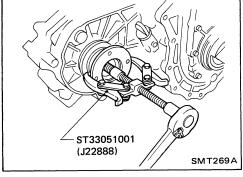


1. Remove nut of companion flange.

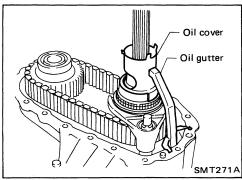


2. Remove rear case.

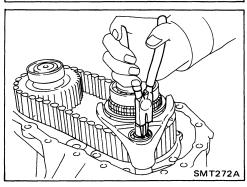
Be careful not to damage the mating surface.



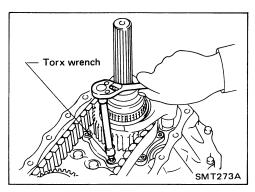
3. Remove companion flange



4. Remove oil cover and oil gutter.

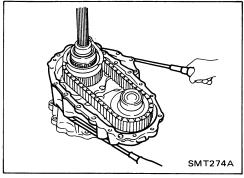


5. Remove snap ring from 2-4 shift rod.

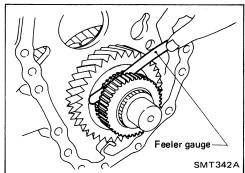


6. Remove bolts securing bearing retainer.

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.

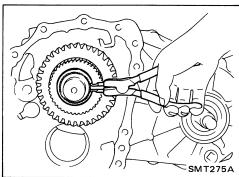


8. Measure end play of low gear.

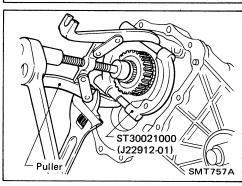
#### Standard:

0.2 - 0.35 mm (0.0079 - 0.0138 in)

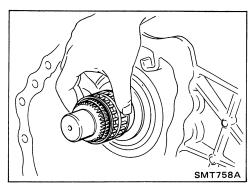
If end play is beyond the maximum value, check low gear and L & H hub for wear.



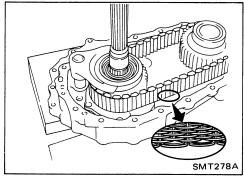
- 9. Disassemble center case assembly.
- a. Remove snap ring from mainshaft.



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

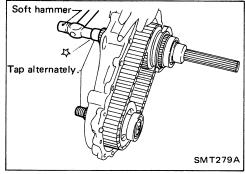


c. Remove needle bearing of low gear.



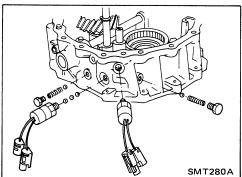
d. Make sure of the direction of the drive chain before removing it. (It must be reinstalled in the same direction.)

Check whether spring part of drive chain is installed on front or rear side.

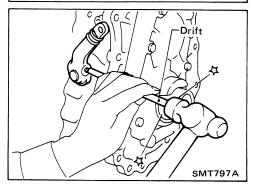


e. Remove mainshaft, front drive and drive chain as a set by tapping front end of mainshaft and front drive shaft alternately.

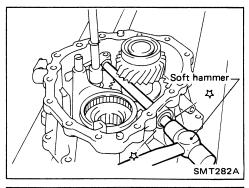
Be careful not to bend drive chain.



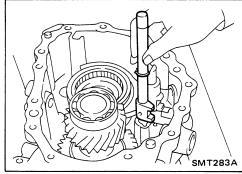
- 10. Disassemble front case assembly.
- a. Remove switches, check plugs, check springs and check balls.



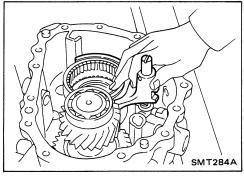
b. Remove outer shift lever.



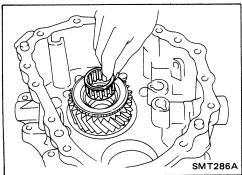
c. Remove lock pin of inner shift lever and drive out cross shaft with plug.



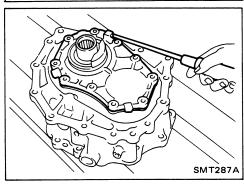
d. Remove 2-4 shift rod.



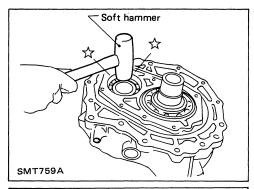
e. Remove L & H shift rod and fork assembly with coupling sleeve.



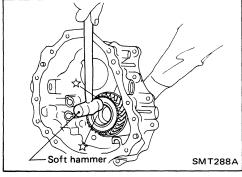
f. Remove needle bearing from main gear.



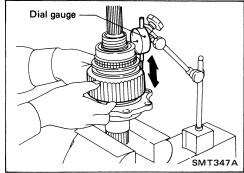
g. Remove bolts securing front case cover and then remove case.



h. Remove counter gear by tapping lightly.



i. Remove main gear by tapping lightly.



# Retainer ring

SMT289A



**DISASSEMBLY** 

1. Check end play of front drive sprocket.

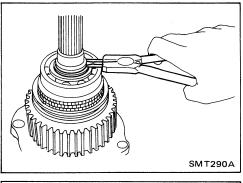
Standard:

0.2 - 0.35 mm (0.0079 - 0.0138 in)

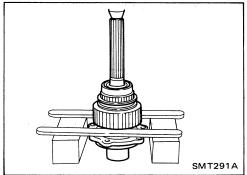
If end play is beyond the maximum value, check front drive sprocket and clutch gear for wear.

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

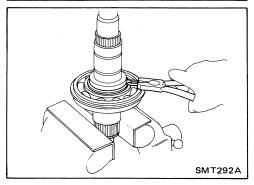
Be careful not to lose the steel ball.



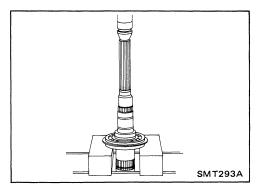
3. Remove snap ring and spacer.



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

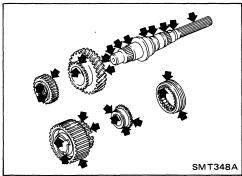


6. Remove bearing retainer and then remove snap ring and spacer.



#### Mainshaft (Cont'd)

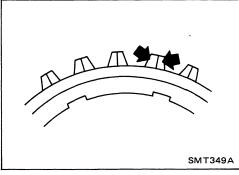
7. Press out mainshaft front bearing from mainshaft.



#### **INSPECTION**

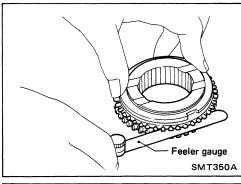
#### Gear and shaft

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



#### Baulk ring

• Check baulk ring for cracks or deformation.



• Measure clearance between baulk ring and gear.

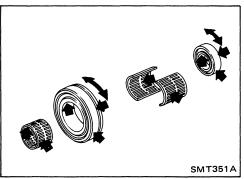
#### Baulk ring to gear clearance:

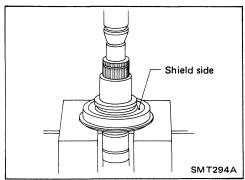
Unit: mm (in)

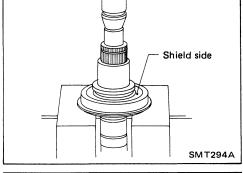
Standard	Wear limit
1.0 - 1.5 (0.039 - 0.059)	0.5 (0.020)

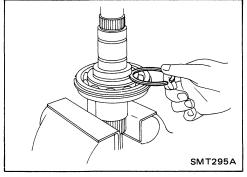
#### Bearing

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









#### 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.

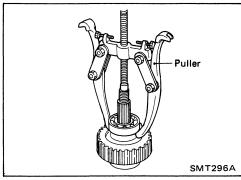
Allowable clearance between snap ring and groove:

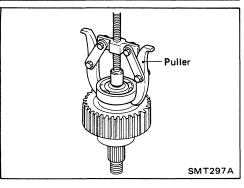
0 - 0.15 mm (0 - 0.0059 in)

#### 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 to further procedures, refer to "ASSEMBLY".

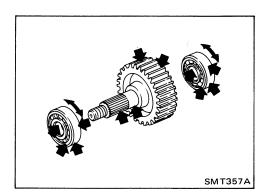




#### Front Drive Shaft **DISASSEMBLY**

Front drive shaft front bearing

Front drive shaft rear bearing



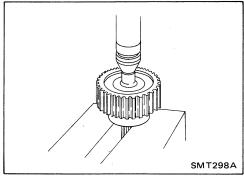
# Front Drive Shaft (Cont'd) INSPECTION

#### Sprocket and shaft

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

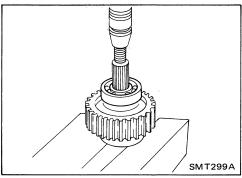
#### Bearing

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

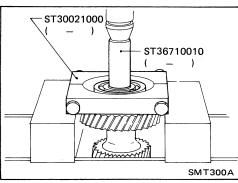


#### **ASSEMBLY**

Press front drive shaft front bearing.

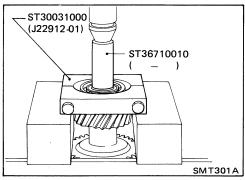


Press front drive shaft rear bearing.

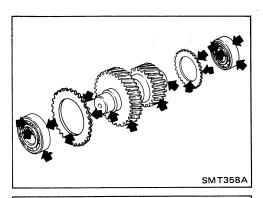


# Counter Gear DISASSEMBLY

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.



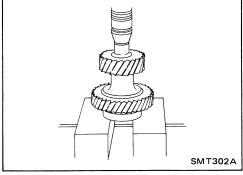
# Counter Gear (Cont'd) INSPECTION

#### Gear and shaft

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

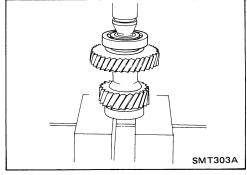
#### Bearing

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

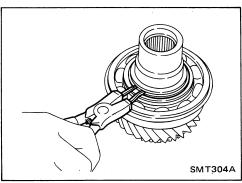


#### **ASSEMBLY**

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



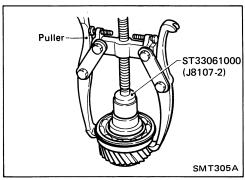
2. Install rear sub-gear, dish spring and spacer, and then press on counter gear rear bearing.



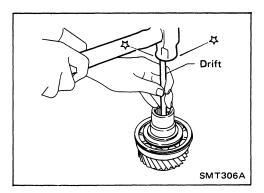
#### Main Gear DISASSEMBLY

#### Main gear bearing

1. Remove snap ring and spacer.



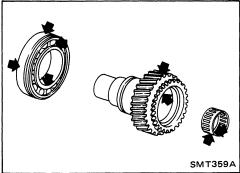
2. Pull out main gear bearing.



#### Main Gear (Cont'd)

#### Plug

Always replace it with new one whenever it is removed.



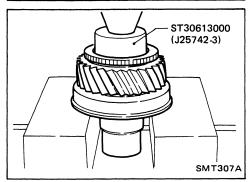
#### INSPECTION

#### Gear and shaft

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

#### Bearing

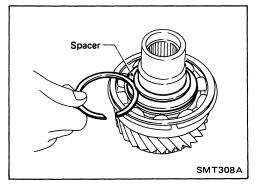
 Make sure bearings roll freely and are free from noise, crack, pitting or wear.



#### **ASSEMBLY**

#### Main gear bearing

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



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

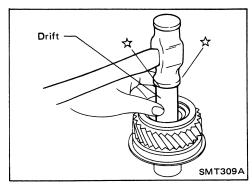
Allowable clearance between snap ring

#### and groove:

0 - 0.15 mm (0 - 0.0059 in)

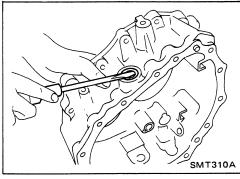
#### Available snap ring

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

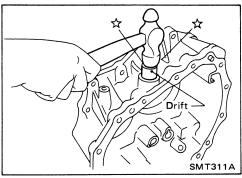


Main Gear (Cont'd) Plug

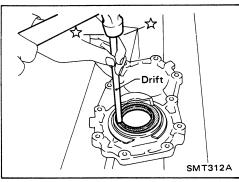
Apply sealant to plug and install it.



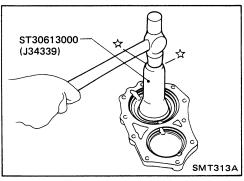
Front Case SHIFT SHAFT OIL SEAL Removal



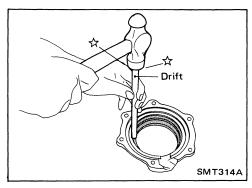
Installation



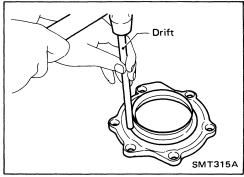
Front Case Cover COVER OIL SEAL Removal



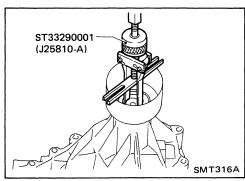
Installation



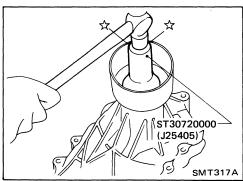
Bearing Retainer OIL CATCHER Removal



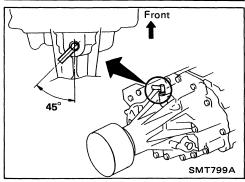
Installation



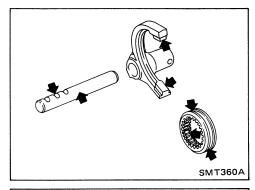
Rear Case REAR OIL SEAL Removal



Installation

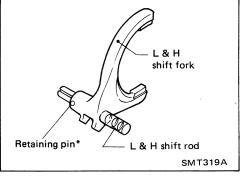


AIR BREATHER Install as shown in illustration.



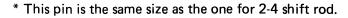
### **Shift Control Components** INSPECTION

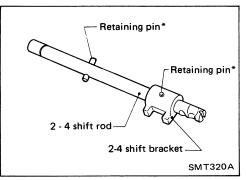
 Check contact surface and sliding surface for wear, scratches, projections or other faulty conditions.



#### L & H SHIFT ROD & FORK

Assemble as shown in illustration.



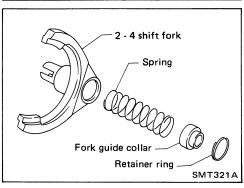


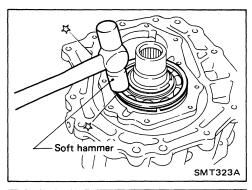
#### 2-4 SHIFT ROD & FORK

Assemble as shown in illustration.

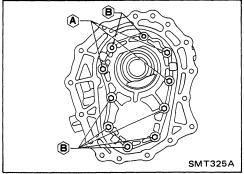
\* These pins are the same size.

Pay special attention to the direction of fork guide collar.





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

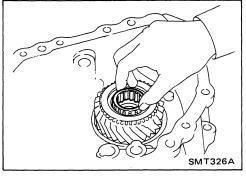


- b. Apply sealant to the mating surface and bolts of front case cover and install it on front case.
- These ten bolts should be coated with sealant.
- Tightening torque

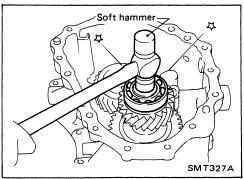
(A) : 16 - 21 N·m (1.6 - 2.1 kg·m, 12 - 15 ft-lb)

**(B)**: 19 - 24 N⋅m

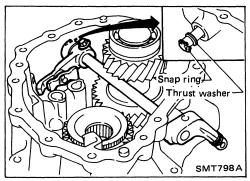
(1.9 - 2.4 kg-m, 14 - 17 ft-lb)



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

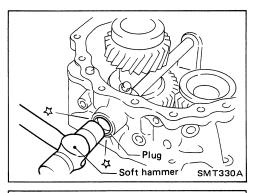


d. Install counter gear assembly by tapping lightly.

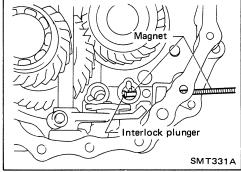


e. Install cross shaft and inner shift lever.

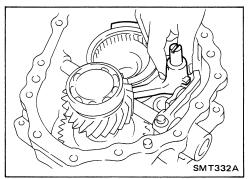
When replacing cross shaft, outer shift lever or lock pin of outer shift lever, replace them as a set.



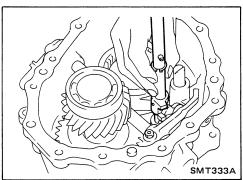
f. Apply sealant to plug and install it into front case.



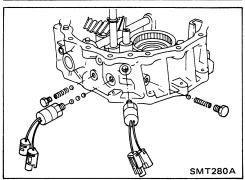
g. Insert interlock plunger into front case.



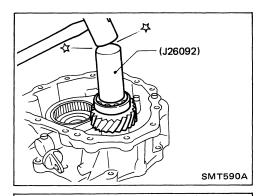
h. Install L & H shift rod and fork assembly with coupling sleeve.



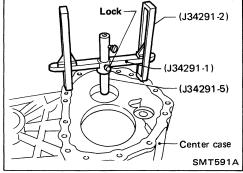
i. Install 2-4 shift rod.



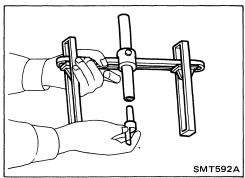
j. Install switches, check balls, check springs and plugs. Apply sealant to switches and plugs.



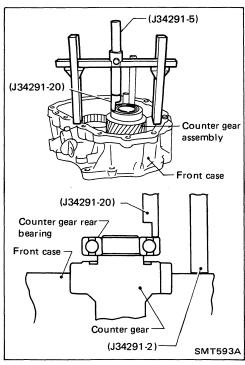
- 2. Select counter gear rear bearing shim.
- a. Seat counter gear assembly.



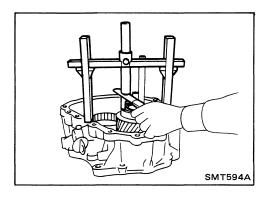
b. Place J34291-1 (bridge), J34291-2 (legs) and J34291-5 (gauging cylinder) on machined surface of center case and allow gauging cylinder to rest on top outer portion of counter gear rear bearing. Lock gauging cylinder in place.



c. Insert J34291-20 (gauging plunger) into J34291-5 (gauging cylinder).



d. Place bridge, legs, gauging cylinder and gauging plunger onto machined surface of front case assembly, and allow gauging plunger to drop until it contacts counter gear rear bearing mating surface.



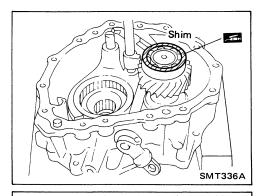
e. Lock gauging plunger in place and use feeler gauge to measure gap between gauging cylinder and gauging plunger.

f. Use measured distance and following chart to select correct shim

Counter gear end play: 0 - 0.2 mm (0 - 0.008 in) Counter gear rear bearing shim:

Thickness mm (in)	Part number
0.1 (0.004)	33112-C6900
0.2 (0.008)	33112-C6901
0.3 (0.012)	33112-C6902
0.4 (0.016)	33112-C6903
0.5 (0.020)	33112-33G00
0.6 (0.024)	33112-33G01

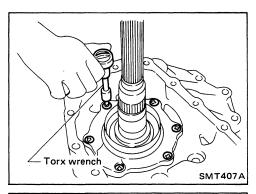
g. Select counter gear rear bearing shim.



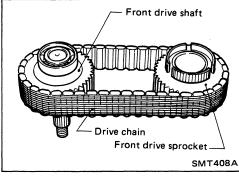
**SMT406A** 

- 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.

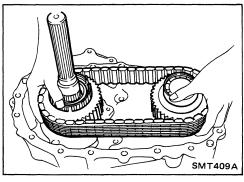


b. Install bearing retainer.

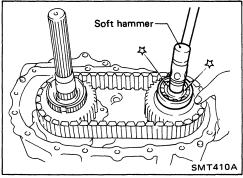


c. Put drive chain onto the front drive sprocket and front drive shaft, and then put them in center case.

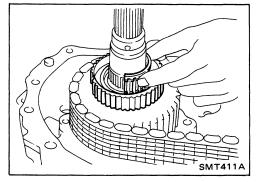
Pay attention to direction of drive chain. (Refer to DISASSEM-BLY.)



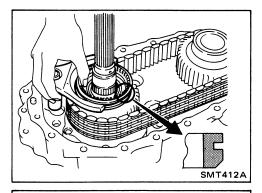
d. Install front drive shaft by tapping lightly. Make sure shafts are lined up in the case.



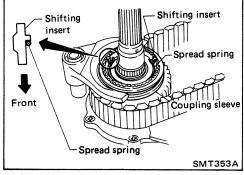
e. Apply gear oil to needle bearings and install them into front drive sprocket.



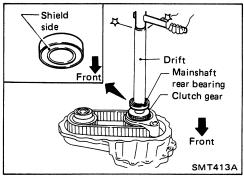
These needle bearings will be installed more easily if front drive sprocket is rotated while installing them.



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

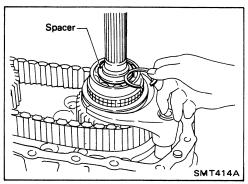


g. Install shifting inserts and spread spring.Pay special attention to direction of shifting inserts.



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

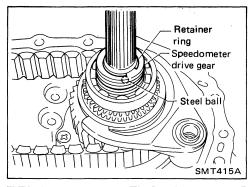
Place wooden block under mainshaft in order to protect mainshaft front bearing.



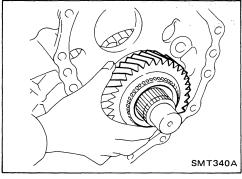
- i. Install spacer.
- j. Select snap ring with proper thickness and install it.
   Allowable clearance between snap ring and groove:
   0 0.15 mm (0 0.0059 in)

#### Available snap ring

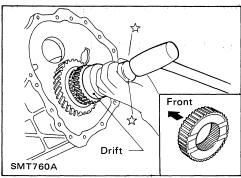
Thickness mm (in)	Part number
1.8 (0.071)	33138-33G20
1.9 (0.075)	33138-33G21
2.0 (0.079)	33138-33G22
2.1 (0.083)	33138-33G23
2.2 (0.087)	33138-33G24



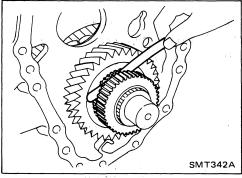
k. Install steel ball, speedometer drive gear and retainer ring. Steel ball is the smallest of check balls for this unit.



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

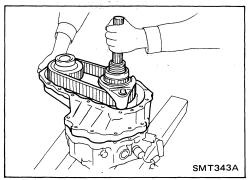


m. Install L & H hub and snap ring to mainshaft. Pay special attention to direction of L & H hub.

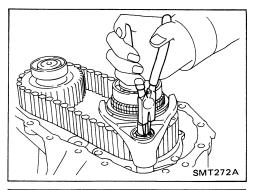


n. Measure end play of low gear.

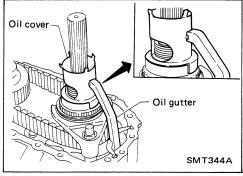
Standard: 0.2 - 0.35 mm (0.0079 - 0.0138 in)



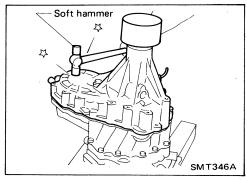
6. Apply sealant to mating surface and put center case assembly onto front case and tighten bolts.



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		TX10	
Gear ratio	High		1.000
Gear ratio	Low		2.020
	Main gear		29
Number of teeth	Low gear		37
	Counter gear	High	38
		Low	24
	Front drive sprocket		41
	Front drive shaft		41
Oil capacity	city liters (US qt, Imp qt)		2.2 (2-3/8, 2)

#### **Inspection and Adjustment**

#### **GEAR END PLAY**

#### 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

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 - 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

Thickness mm (in)	Part number
0.1 (0.004)	33112-C6900
0.2 (0.008)	33112-C6901
0.3 (0.012)	33112-C6902
0.4 (0.016)	33112-C6903
0.5 (0.020)	33112-33G00
0.6 (0.024)	33112-33G01

#### **Tightening Torque**

Unit	N·m	kg-m	ft-lb
Transfer installation			
Transfer fixing bolt	31 - 41	3.2 - 4.2	23 - 30
Second crossmember fixing bolt	59 - 78	6.0 - 8.0	43 - 58
Transfer control			
Guide plate fixing bolt	8 - 11	0.8 - 1.1	5.8 - 8.0
Control lever bracket fixing bolt	16 - 21	1.6 - 2.1	12 - 15
Transfer control lever to outer shift lever	25 - 30	2.5 - 3.1	18 - 22
Transfer unit			
Rear case to center case	26 - 36	2.7 - 3.7	20 - 27
Center case to front case	26 - 36	2.7 - 3.7	20 - 27
Front case cover	16 - 21	1.6 - 2.1	12 - 15
	19 - 24	1.9 - 2.4	14 - 17
Breather cover fixing bolt	4 - 5	0.4 - 0.5	2.9 - 3.6
Bearing retainer	16 - 21	1.6 - 2.1	12 - 15
Companion flange nut	226 - 324	23 - 33	166 - 239
Check plug	19 - 25	1.9 - 2.5	14 - 18
Cross shaft lock pin	9 - 12	0.9 - 1.2	6.5 - 8.7
4WD switch	15 - 20	1.5 - 2.0	11 - 14
Neutral switch	15 - 20	1.5 - 2.0	11 - 14
Drain plug	25 - 34	2.5 - 3.5	18 - 25
Filler plug	25 - 34	2.5 - 3.5	18 - 25
Speedometer sleeve	3 - 4	0.3 - 0.4	2.2 - 2.9
Underguard fixing bolt (M8 bolt)	16 - 21	1.6 - 2.1	12 - 15
(M10 bolt)	26 - 36	2.7 - 3.7	20 - 27