## **TRANSFER**



## **CONTENTS**

PREPARATION	2
ON-VEHICLE SERVICE	4
Replacing Oil Seal	4
REMOVAL AND INSTALLATION	
Removal	7
Installation	7
TRANSFER GEAR CONTROL	8
MAJOR OVERHAUL	g
Case Components	g
Gear Components	10
Shift Control Components	11
DISASSEMBLY	
DEDAID FOR COMPONENT DARTS	17

Mainshaft	17
Front Drive Shaft	19
Counter Gear	20
Main Gear	21
Front Case	23
Front Case Cover	23
Bearing Retainer	23
Rear Case	24
Shift Control Components	24
ASSEMBLY	
SERVICE DATA AND SPECIFICATIONS (SDS)	33
General Specifications	33
Inspection and Adjustment	33

### **SPECIAL SERVICE TOOLS**

Tool number Tool name	Description	
ST38060002* Flange wrench		Removing companion flange nut Installing companion flange nut
ST30021000* Puller		Removing counter gear front bearing (Use with ST36710010)
ST30031000* Puller		Removing counter gear rear bearing (Use with ST36710010)
ST33290001* Puller		Removing center case oil seal Removing rear oil seal
ST33051001* Puller		Removing companion flange
ST30720000* Drift	a b	Installing center case oil seal Installing rear oil seal  a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.
ST36710010* Drift	a	Removing counter gear front bearing (Use with ST30021000) Removing counter gear rear bearing (Use with ST30031000)  a: 34.5 mm (1.358 in) dia.
ST33061000* Drift	a b	Removing main gear bearing  a: 28.5 mm (1.122 in) dia. b: 38 mm (1.50 in) dia.

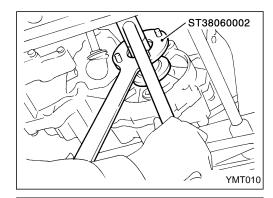
## **PREPARATION**

,	: Special	tool	or	commercial	equivalent

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

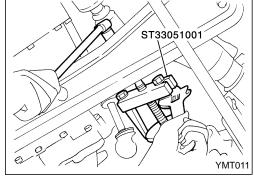
### **COMMERCIAL SERVICE TOOLS**

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

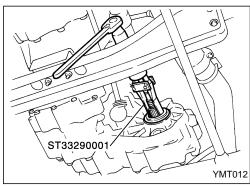


## Replacing Oil Seal

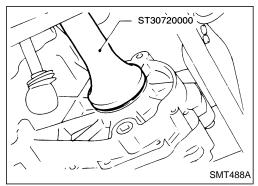
- CENTER CASE OIL SEAL
- 1. Remove front propeller shaft Refer to PD section.
- 2. Remove companion flange nut.



3. Remove companion flange.



4. Remove center case oil seal.



5. Install center case oil seal.

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

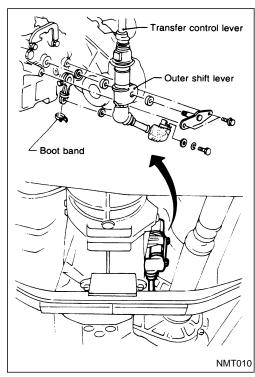
6. Install companion flange.

- Wooden block
  Torque wrench
  YMT013
- 7. Tighten nut to the specified torque.

(23 - 324 N m (23 - 33 kg-m, 166 - 239 ft-lb)

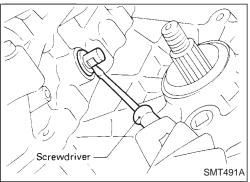
8. Install front propeller shaft.

## **ON-VEHICLE SERVICE**



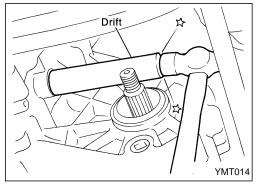
## Replacing Oil Seal (Cont'd) SHIFT SHAFT OIL SEAL

- 1. Remove front propeller shaft Refer to PD section.
- 2. Install companion flange Refer to "CENTER CASE OIL SEAL", TF-4.
- 3. Remove transfer control lever from transfer outer shift lever. Then remove outer shift lever.



4. Remove shift shaft oil seal.

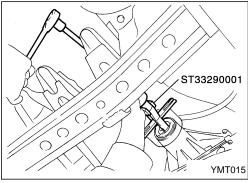
Be careful not do damage cross shaft.



5. Install shift shaft oil seal.

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

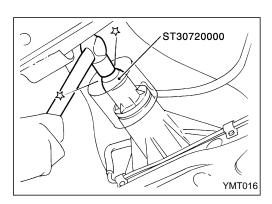
- 6. Install transfer control linkage.
- 7. Install companion flange Refer to "CENTER CASE OIL SEAL", TF-4.
- 8. Install front propeller shaft.



#### **REAR OIL SEAL**

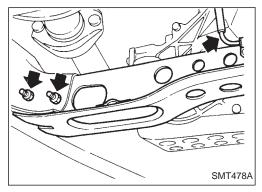
- 1. Remove rear propeller shaft Refer to PD section.
- 2. Remove rear oil seal.

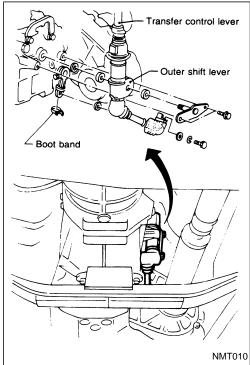
## **ON-VEHICLE SERVICE**

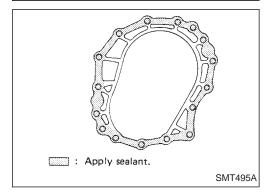


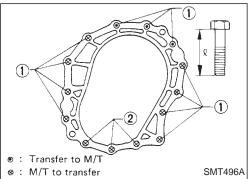
## Replacing Oil Seal (Cont'd)

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









#### Removal

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

#### **CAUTION:**

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

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

#### **WARNING:**

Support transfer while removing it.

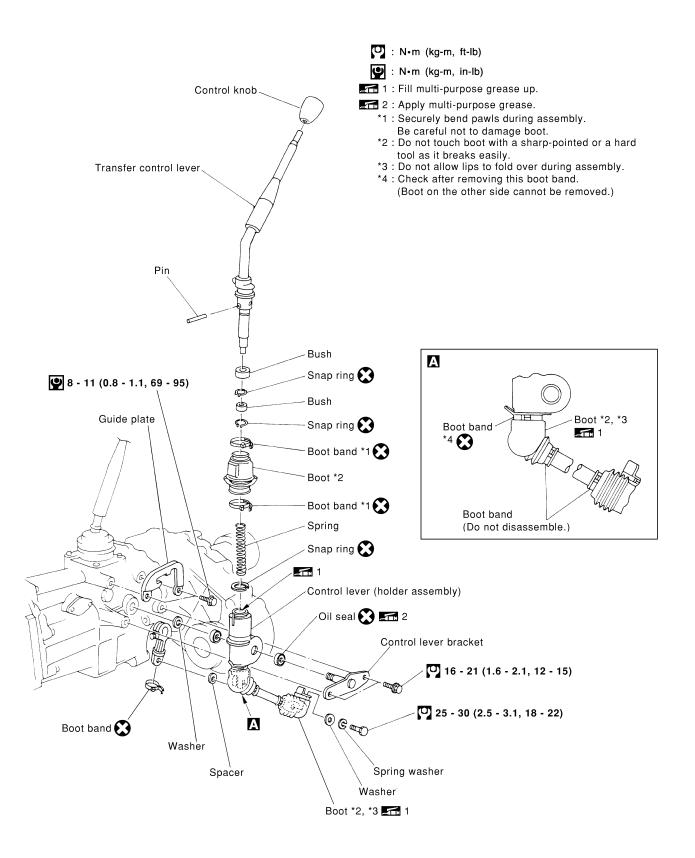
#### Installation

Apply recommended sealant to mating surface to transmission. **Recommended sealant:** 

Nissan genuine part (KP610-00250) or equivalent

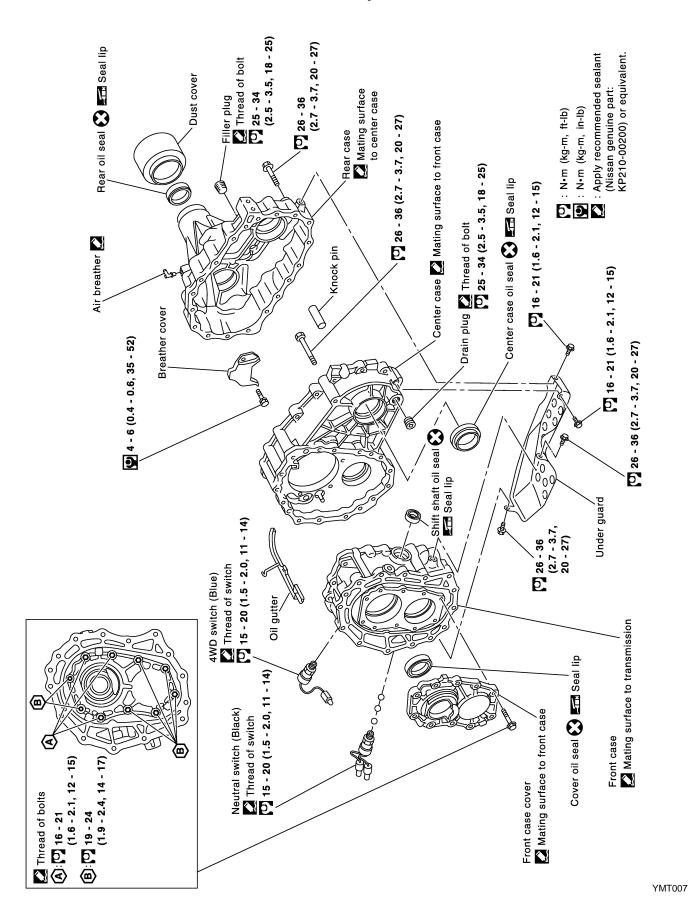
Tighten bolts securing transfer.

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)

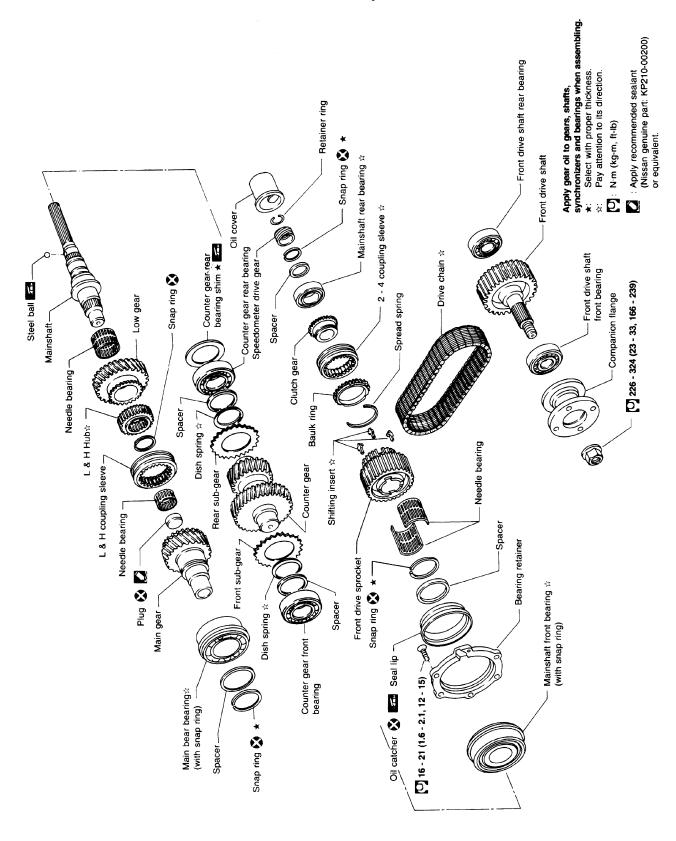


YMT006

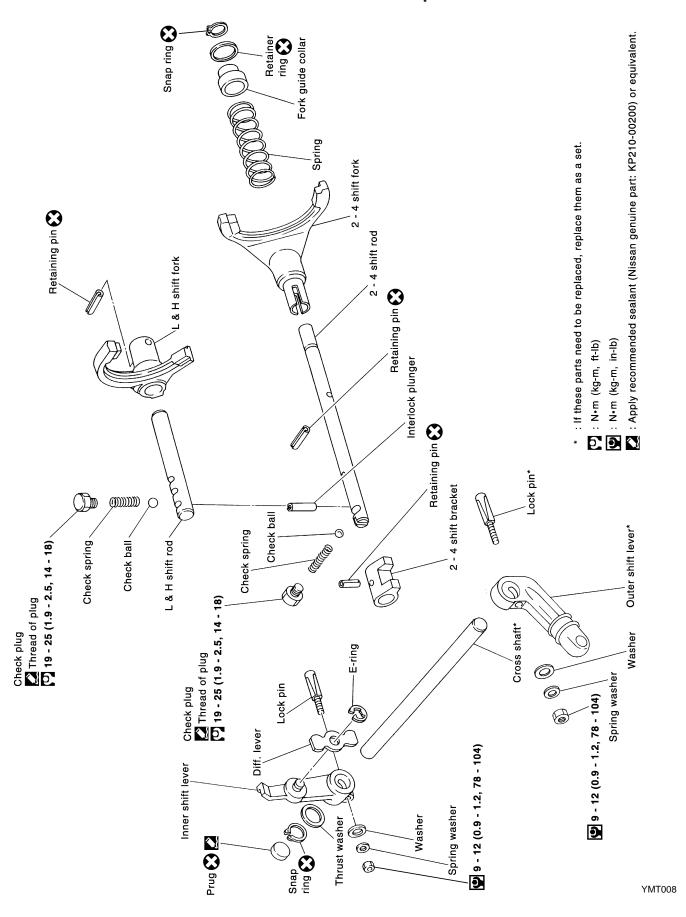
## **Case Components**



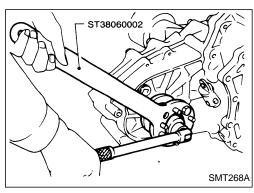
## **Gear Components**



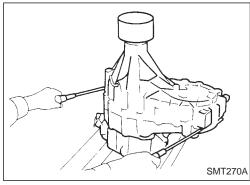
## **Shift Control Components**



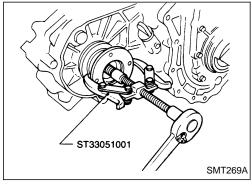
**TF-11** 



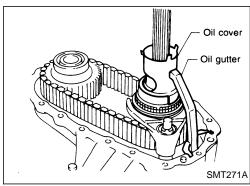
1. Remove nut of companion flange.



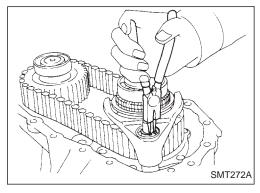
2. Remove rear case. Be careful not to damage the mating surface.



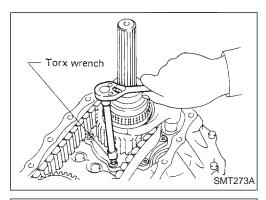
3. Remove companion flange.



4. Remove oil cover and oil gutter.

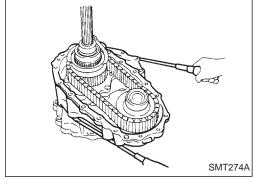


5. Remove snap ring from 2-4 shift rod.

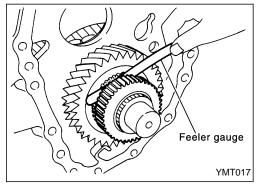


6. Remove bolts securing bearing retainer.

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.

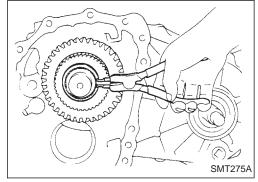


8. Measure end play of low gear.

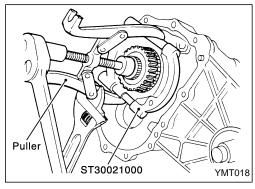
Standard:

0.2 - 0.35 mm (0.0079 - 0.0138 in)

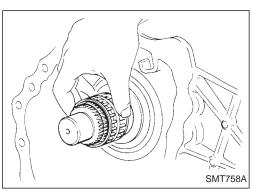
If end play is beyond the maximum value, check low gear and L & H hub for wear.



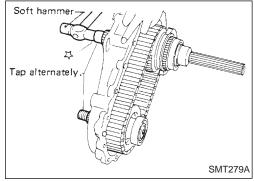
- 9. Disassemble center case assembly.
- a. Remove snap ring from mainshaft.



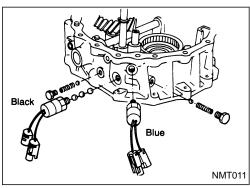
b. Pull out low gear with L & H hub.



c. Remove needle bearing of low gear.

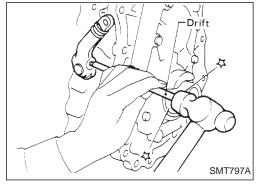


d. Remove mainshaft, front drive and drive chain as a set by tapping front end of mainshaft and front drive shaft alternately.
 Be careful not to bend drive chain.

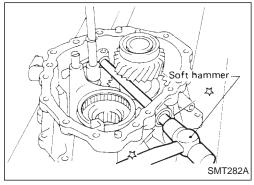


10. Disassemble front case assembly.

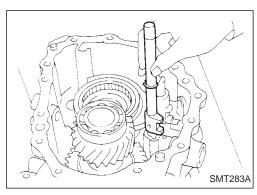
a. Remove switches, check plugs, check springs and check balls.



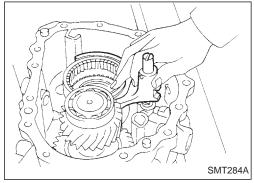
b. Remove outer shift lever.



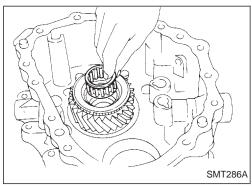
c. Remove lock pin of inner shift lever and drive out cross shaft with plug.



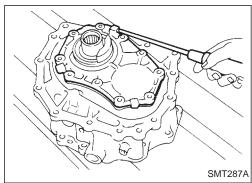
d. Remove 2-4 shift rod.



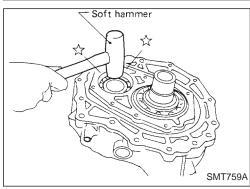
e. Remove L & H shift rod and fork assembly with coupling sleeve.



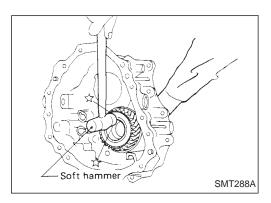
f. Remove needle bearing from main gear.



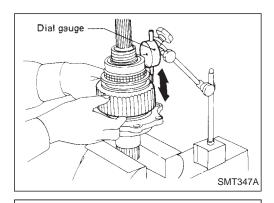
g. Remove bolts securing front case cover and then remove case.



h. Remove counter gear by tapping lightly.



i. Remove main gear by tapping lightly.



### **Mainshaft**

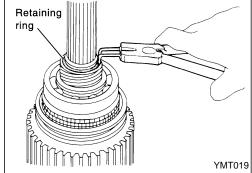
#### **DISASSEMBLY**

1. Check end play of front drive sprocket.

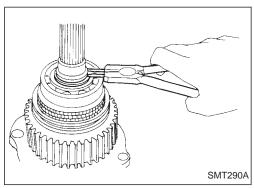
Standard:

0.2 - 0.35 mm (0.0079 - 0.0138 in)

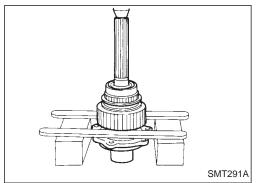
If end play is beyond the maximum value, check front drive sprocket and clutch gear for wear.



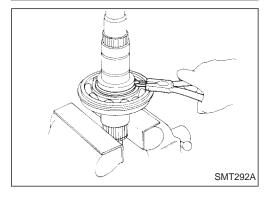
2. Remove retaining ring, speedometer drive gear and steel ball. **Be careful not to lose the steel ball.** 



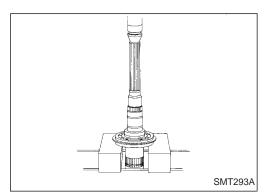
3. Remove snap ring and spacer.



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

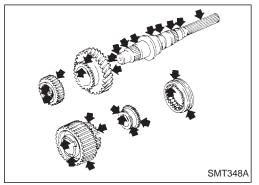


6. Remove bearing retainer and then remove snap ring and spacer.



## Mainshaft (Cont'd)

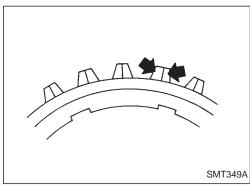
7. Press out mainshaft front bearing from mainshaft.



#### **INSPECTION**

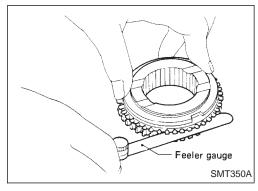
#### Gear and shaft

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



#### Baulk ring

Check baulk ring for cracks or deformation.



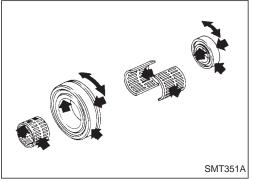
• Measure clearance between baulk ring and gear. Baulk ring to gear clearance:

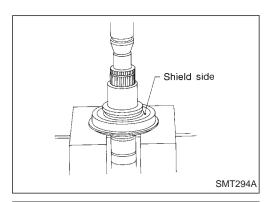
		/· \
Unit:	mm	(In)
OHIL.	111111	\ II I I I

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

### **Bearing**

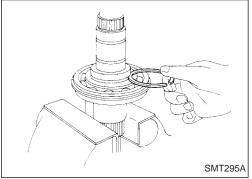
 Make sure bearings roll freely and are free from noise, cracks, pitting or wear.





## Mainshaft (Cont'd) **ASSEMBLY**

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



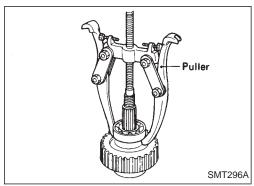
- 2. Install spacer.
- 3. Select snap ring with proper thickness and install it.

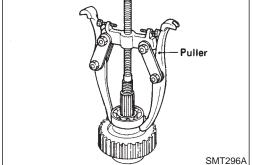
Allowable clearance between snap ring and groove: 0 - 0.15 mm (0 - 0.0059 in)

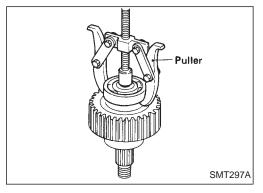
#### Available snap ring

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

4. Regarding further procedures, refer to "ASSEMBLY" above.



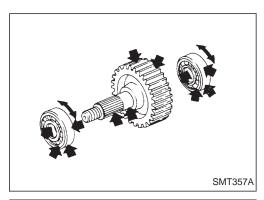




## **Front Drive Shaft DISASSEMBLY**

• Front drive shaft front bearing

Front drive shaft rear bearing



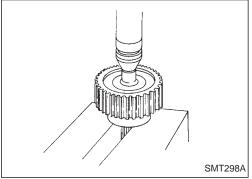
## Front Drive Shaft (Cont'd) INSPECTION

#### Sprocket and shaft

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

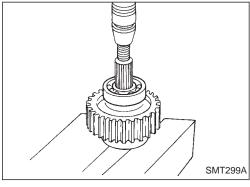
#### **Bearing**

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

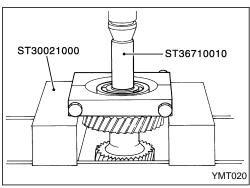


#### **ASSEMBLY**

Front drive shaft front bearing



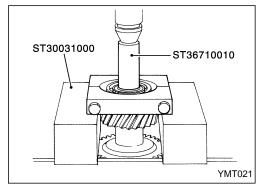
Rear drive shaft rear bearing



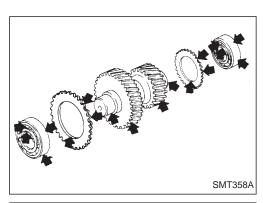
#### **Counter Gear**

#### **DISASSEMBLY**

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



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



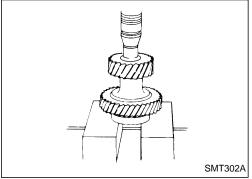
## Counter Gear (Cont'd) INSPECTION

#### Gear and shaft

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

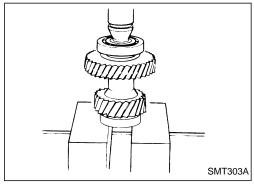
#### Bearing

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

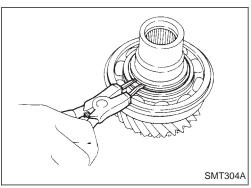


#### **ASSEMBLY**

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



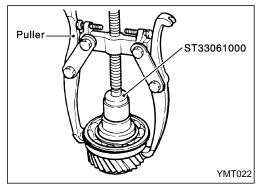
2. Install rear sub-gear, dish spring and spacer, and then press on counter gear rear bearing.



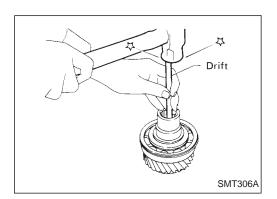
## Main Gear

## DISASSEMBLY

Main gear bearing1. Remove snap ring and spacer.



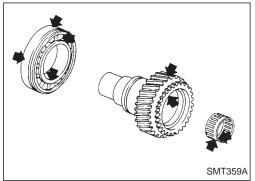
2. Pull out main gear bearing.



## Main Gear (Cont'd)

#### Plug

Always replace it with new one whenever it is removed.



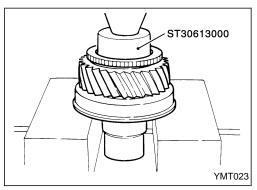
#### **INSPECTION**

#### Gear and shaft

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

#### Bearing

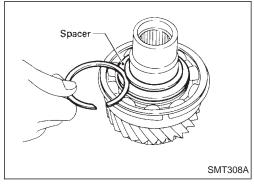
 Make sure bearings roll freely and are free from noise, cracks, pitting or wear.



#### **ASSEMBLY**

#### Main gear bearing

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



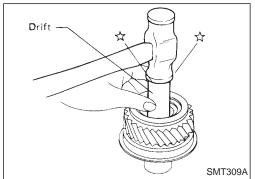
 Select snap ring with proper thickness and install it.
 Allowable clearance between snap ring and groove: 0 - 0.15 mm (0 - 0.0059 in)

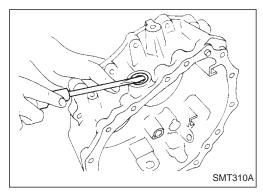
#### Available snap ring

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



Apply sealant to plug and install it.



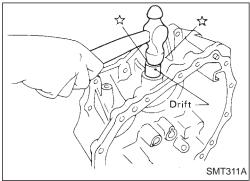


#### **Front Case**

#### SHIFT SHAFT OIL SEAL

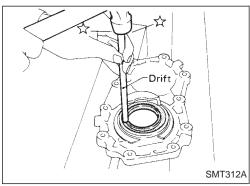
#### Removal

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



#### Installation

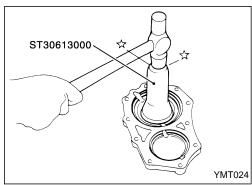
Install a new oil seal, using a suitable tool.



## Front Case Cover COVER OIL SEAL

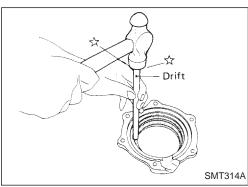
#### Removal

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



#### Installation

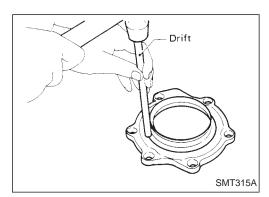
Install a new oil seal, using the Special Tool.



## Bearing Retainer OIL CATCHER

#### Removal

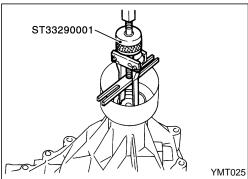
Remove the oil seal. Be careful not to damage its housing. Always replace after every disassembly.



## **Bearing Retainer (Cont'd)**

#### Installation

Install a new oil seal, using a suitable tool.

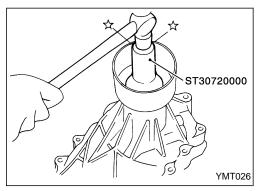


#### **Rear Case**

#### **REAR OIL SEAL**

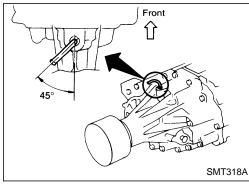
#### Removal

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



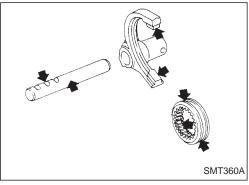
#### Installation

Install a new oil seal, using the Special Tool.



#### **AIR BREATHER**

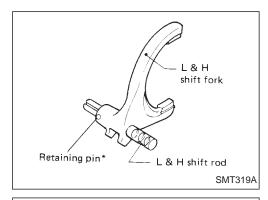
Install as shown in the illustration.



## **Shift Control Components**

#### **INSPECTION**

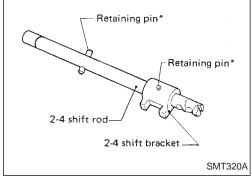
 Check contact surface and sliding surface for wear, scratches, projections or other faulty conditions.



## Shift Control Components (Cont'd) L & H SHIFT ROD & FORK

Assemble as shown in the illustration.

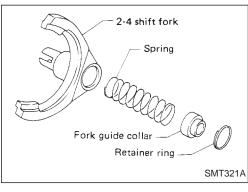
\* This pin is the same size as the one for 2-4 shift rod.



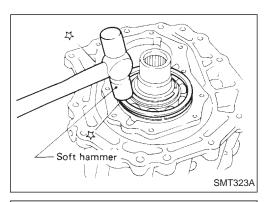
#### 2-4 SHIFT ROD & FORK

Assemble as shown in the illustration.

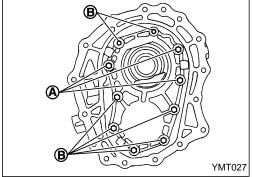
\* These pins are the same size.



Pay special attention to the direction of fork guide collar.



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



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

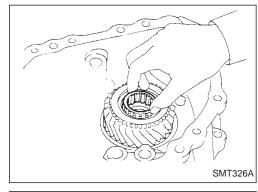
**Tightening torque** 

(A): 16 - 21 N·m

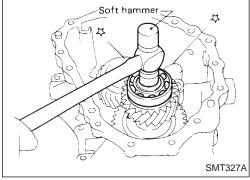
(1.6 - 2.1 kg-m, 12 - 15 ft-lb)

(B): 19 - 24 N·m

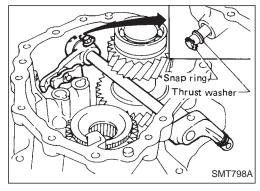
(1.9 - 2.4 kg-m, 14 - 17 ft-lb)



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

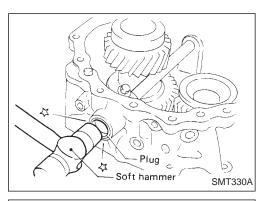


d. Install counter gear assembly by tapping lightly.

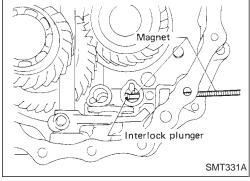


e. Install cross shaft and inner shift lever.

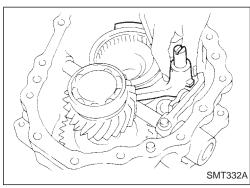
When replacing cross shaft, outer shift lever of lock pin of outer shift lever, replace them as a set.



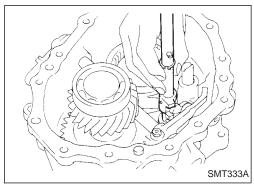
f. Apply sealant to plug and install it into front case.



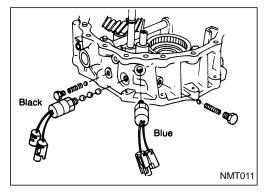
g. Insert interlock plunger into front case.



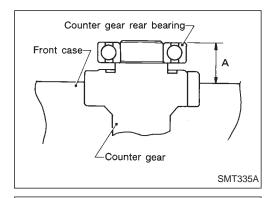
h. Install L & H shift rod and fork assembly with coupling sleeve.



i. Install 2-4 shift rod.

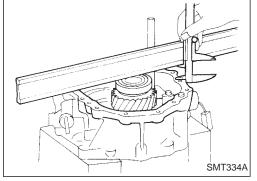


j. Install switches, check balls, check springs and plugs. **Apply sealant to switches and plugs.** 



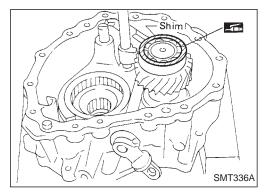
Select counter gear rear bearing shim.
 Counter gear end play:
 0 - 0.2 mm (0 - 0.008 in)

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

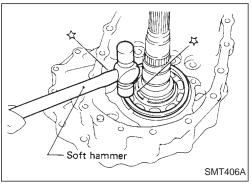


b. Select suitable shim using chart below.

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

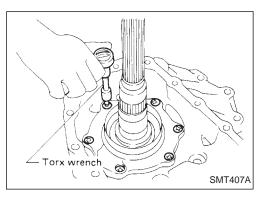


- 3. Place suitable shim on counter gear rear bearing with grease.
- 4. Apply gear oil to each part in front case.

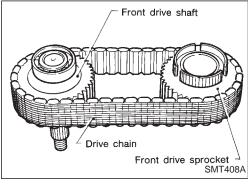


- 5. Assemble center case assembly.
- a. Install mainshaft on center case by tapping lightly.

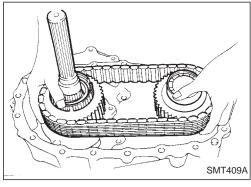
Apply gear oil to mainshaft front bearing.



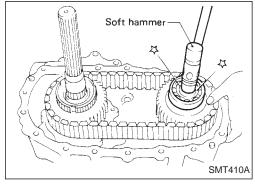
b. Install bearing retainer.



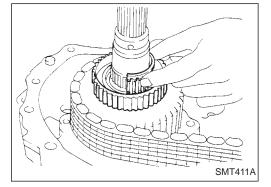
c. Put drive chain onto the front drive sprocket and front drive shaft, and then put them in center case.



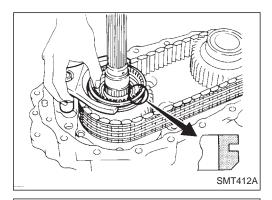
d. Install front drive shaft by tapping lightly.



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

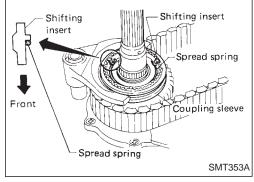


These needle bearings will be installed more easily if front drive sprocket is rotated while installing them.



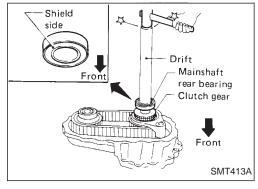
f. Install 2-4 coupling sleeve with 2-4 shift fork.

Pay special attention to direction of coupling sleeve.



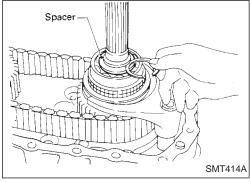
g. Install shifting inserts and spread spring.

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.

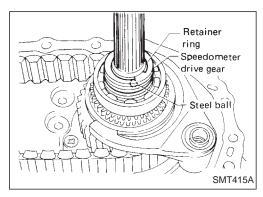


- i. Install spacer.
- j. Select snap ring with proper thickness and install it.

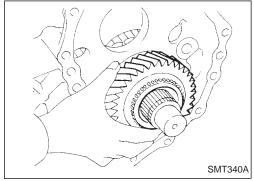
Allowable clearance between snap ring and groove: 0 - 0.15 mm (0 - 0.0059 in)

### Available snap ring

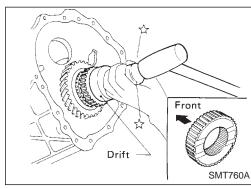
Thickness mm (in)	Part number
1.8 (0.071)	33138-33G20
1.9 (0.075)	33138-33G21
2.0 (0.079)	33138-33G22
2.1 (0.083)	33138-33G23
2.2 (0.087)	33138-33G24



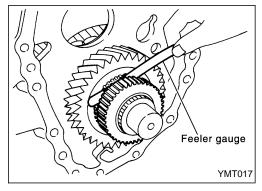
k. Install steel ball, speedometer drive gear and retainer ring. Steel ball is the smallest of check balls for this unit.



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



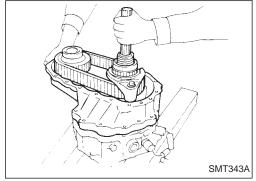
m. Install L & H hub and snap ring to mainshaft. Pay special attention to direction of L & H hub.



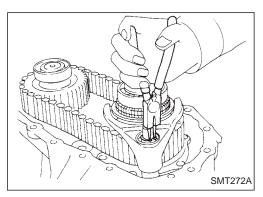
n. Measure end play of low gear.

Standard:

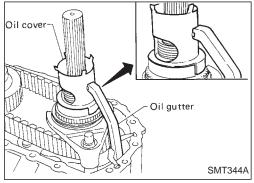
0.2 - 0.35 mm (0.0079 - 0.0138 in)



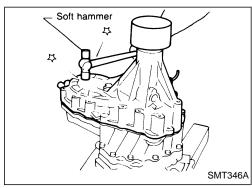
6. Apply sealant to mating surface and put center case assembly onto front case and tighten bolts.



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 (SDS)

## **General Specifications**

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

## **Inspection and Adjustment**

#### **GEAR END PLAY**

Unit: mm (in)

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

## CLEARANCE BETWEEN BAULK RING AND CLUTCH GEAR

Unit: mm (in)

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

## AVAILABLE SNAP RING

#### **Mainshaft front bearing**

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

## Mainshaft rear bearing

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

### Main gear bearing

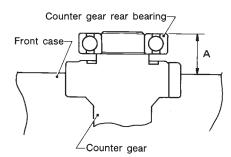
Allowable clearance	0 - 0.15 mm (0.0059 in)	
Thickness mm (in)	Part number	
2.6 (0.102)	33114-33G00	
2.7 (0.106)	33114-33G01	
2.8 (0.110)	33114-33G02	
2.9 (0.114)	33114-33G03	

# SERVICE DATA AND SPECIFICATIONS (SDS) Inspection and Adjustment (Cont'd)

### **AVAILABLE SHIM**

### Counter gear rear bearing

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



SMT335A