

MANUAL TRANSMISSION

SECTION **MT**

CONTENTS

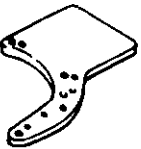
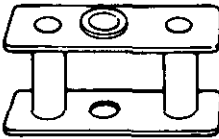
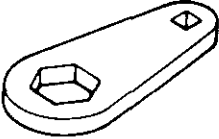
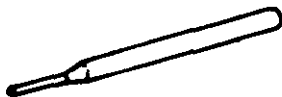
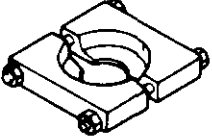
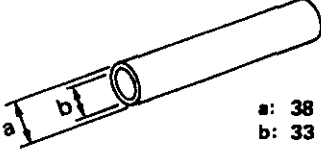
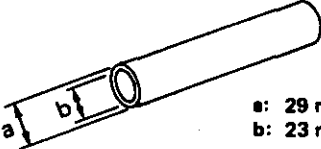
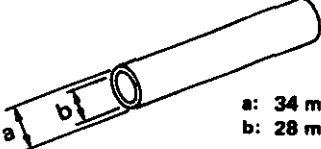
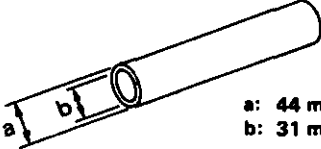
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FS5W71C & FS5R30A	
PREPARATION	MT- 2
ON-VEHICLE SERVICE	MT- 7
REMOVAL AND INSTALLATION	MT- 8
<hr/>	
FS5W71C	
MAJOR OVERHAUL	MT- 9
DISASSEMBLY	MT-12
INSPECTION	MT-17
ASSEMBLY	MT-19
<hr/>	
FS5R30A	
MAJOR OVERHAUL	MT-31
DISASSEMBLY	MT-35
INSPECTION	MT-42
ASSEMBLY	MT-44
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FS5W71C & FS5R30A	
SERVICE DATA AND SPECIFICATIONS (S.D.S.)	MT-56

MT

PREPARATION

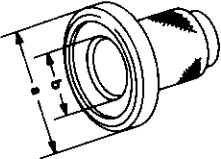

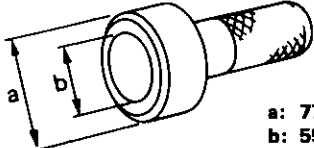
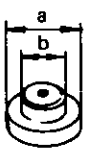
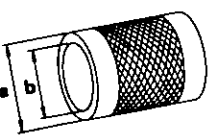
FS5W71C

SPECIAL SERVICE TOOLS – for FS5W71C

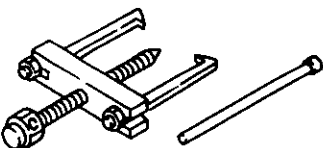
Tool number (Kent-Moore No.) Tool name	Description	
ST23810001 (-) Adapter setting plate		Fixing adapter plate with gear assembly
KV31100401 (-) Transmission press stand		Pressing counter gear and mainshaft
ST22520000 (J26348) Wrench		Tightening mainshaft lock nut
ST23540000 (J25689-A) Pin punch		Removing and installing fork rod retaining pin
ST30031000 (J22912-01) Puller		Removing and installing 1st gear bushing Removing main drive gear bearing Measuring wear of baulk rings
ST23860000 (-) Drift	 a: 38 mm (1.50 in) dia. b: 33 mm (1.30 in) dia.	Installing counter drive gear
ST22360002 (J25679-01) Drift	 a: 29 mm (1.14 in) dia. b: 23 mm (0.91 in) dia.	Installing counter gear front and rear end bearings
ST22350000 (J25678-01) Drift	 a: 34 mm (1.34 in) dia. b: 28 mm (1.10 in) dia.	Installing O.D. gear bushing
ST23800000 (J25691-01) Drift	 a: 44 mm (1.73 in) dia. b: 31 mm (1.22 in) dia.	Installing front cover oil seal

PREPARATION


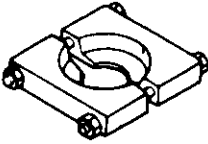

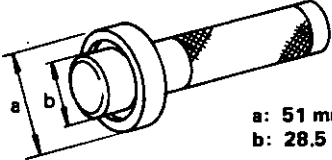
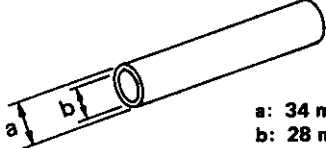
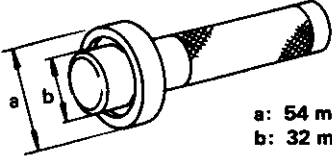
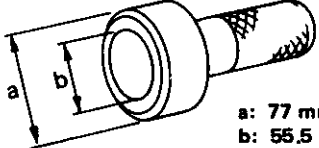
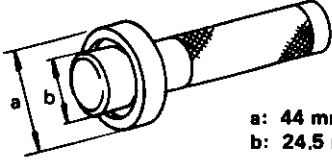
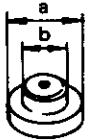
FS5W71C

Tool number (Kent-Moore No.) Tool name	Description	
ST33400001 (J26082) Drift		Installing rear oil seal a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.
ST33290001 (J25810-A) Puller		Removing rear oil seal
ST30720000 (-) Drift		Installing mainshaft ball bearing a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.
ST30613000 (J25742-3) Drift		Installing main drive gear bearing a: 71.5 mm (2.815 in) dia. b: 47.5 mm (1.870 in) dia.
ST33200000 (J26082) Drift		Installing counter rear bearing Installing 3rd & 4th synchronizer assembly a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia.

COMMERCIAL SERVICE TOOL – for FS5W71C

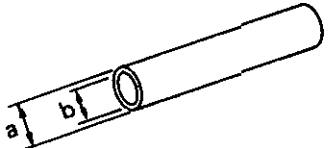
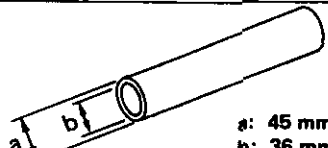
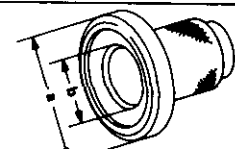
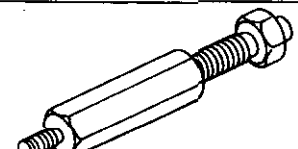
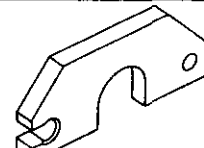
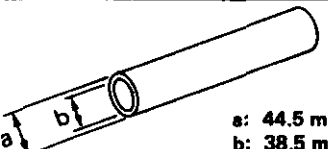
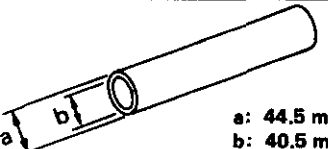
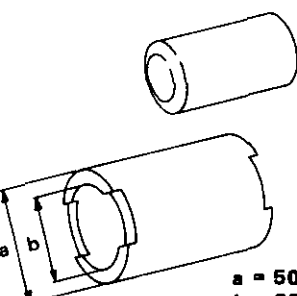
Tool name	Description	
Puller		Removing counter bearings, counter drive and O.D. gears

SPECIAL SERVICE TOOLS – for FS5R30A

Tool number (Kent-Moore No.) Tool name	Description	
ST23540000 (J25689-A) Pin punch		Removing and installing retaining pin
ST30031000 (J22912-01) Puller		Removing 1st & 2nd synchronizer assembly Removing counter gear rear thrust bearing Removing main drive bearing
ST33290001 (J25810-A) Puller		Removing rear oil seal
ST33230000 (-) Drift	 a: 51 mm (2.01 in) dia. b: 28.5 mm (1.122 in) dia.	Removing mainshaft and counter gear
ST22350000 (J25678-01) Drift	 a: 34 mm (1.34 in) dia. b: 28 mm (1.10 in) dia.	Removing counter gear front bearing (Use with KV38100300)
KV38100300 (J25523) Drift	 a: 54 mm (2.13 in) dia. b: 32 mm (1.26 in) dia.	Removing counter gear front bearing (Use with ST22350000) Installing counter gear rear bearing
ST30720000 ① (J34286) ② (J34331) Drift	 a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.	① Removing mainshaft front bearing ② Installing mainshaft front bearing
ST33210000 ① (J25523) ② (J25803-01) Drift	 a: 44 mm (1.73 in) dia. b: 24.5 mm (0.965 in) dia.	① Installing counter gear front bearing ② Installing front cover oil seal
ST30613000 (J25742-3) Drift	 a: 72 mm (2.83 in) dia. b: 48 mm (1.89 in) dia.	Installing main drive gear bearing

PREPARATION

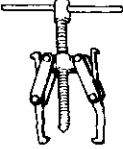
FS5R30A

Tool number (Kent-Moore No.) Tool name	Description	
ST37750000 ① (J34286) ② (J34332) ③ (J34334) ④ (J25679-01) Drift	 <p style="text-align: center;">a: 40 mm (1.57 in) dia. b: 31 mm (1.22 in) dia.</p>	① Removing counter gear rear bearing ② Installing O.D. gear bushing ② Installing reverse cone ③ Installing reverse counter gear ④ Installing counter gear rear end bearing
ST22452000 (J34337) Drift	 <p style="text-align: center;">a: 45 mm (1.77 in) dia. b: 36 mm (1.42 in) dia.</p>	Installing reverse hub Installing mainshaft rear bearing
ST33400001 (J26082) Drift	 <p style="text-align: center;">a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.</p>	Installing rear oil seal
(J26349-3) Puller leg		Installing mainshaft and counter gear (Use with J34328)
(J34328) Puller		Installing mainshaft and counter gear (Use with J26349-3)
(J26092) Drift	 <p style="text-align: center;">a: 44.5 mm (1.752 in) dia. b: 38.5 mm (1.516 in) dia.</p>	Installing sub-gear snap ring
(J34342) Drift	 <p style="text-align: center;">a: 44.5 mm (1.752 in) dia. b: 40.5 mm (1.594 in) dia.</p>	Installing O.D. main gear Installing reverse gear bushing
ST36730000 (-) Drift	 <p style="text-align: center;">a = 50 mm (1.97 in) dia. b = 39 mm (1.54 in) dia.</p>	Installing sub-gear on reverse idler gear

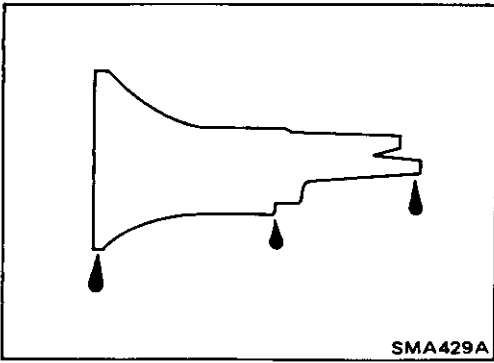
PREPARATION

FS5R30A

COMMERCIAL SERVICE TOOL – for FS5R30A

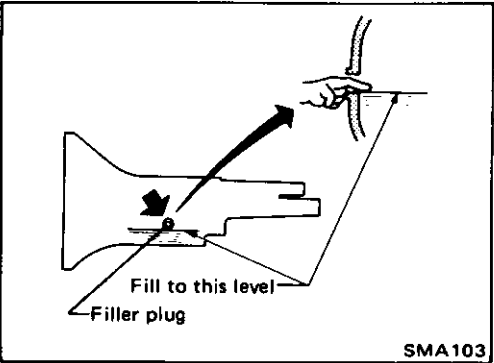
Tool name	Description
Puller	 <ul style="list-style-type: none">Removing counter gear rear end bearingRemoving mainshaft rear bearingRemoving reverse synchronizer hubRemoving reverse counter gear

ON-VEHICLE SERVICE

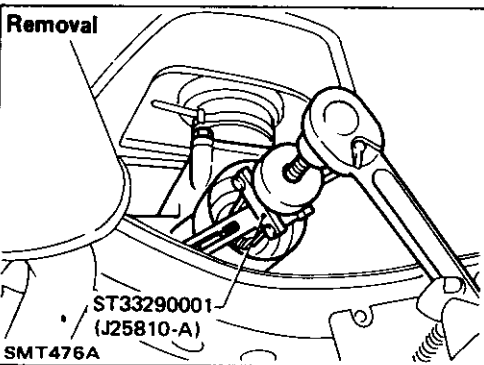


Checking M/T Oil

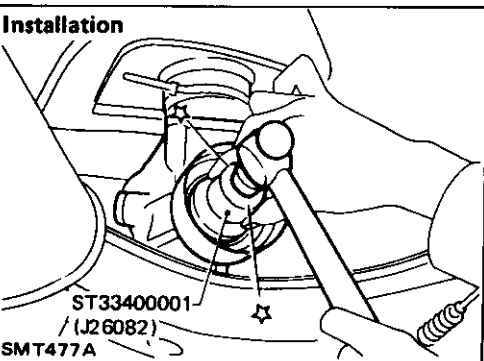
- Check manual transmission for leakage.



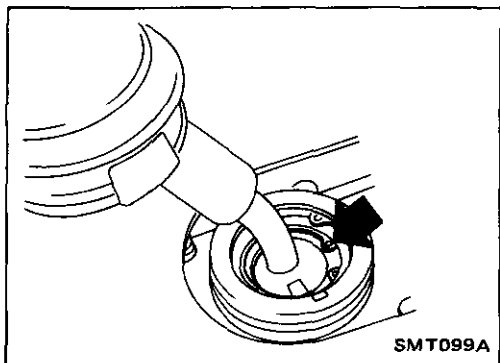
- Check oil level.



Replacing Rear Oil Seal



REMOVAL AND INSTALLATION



Removal

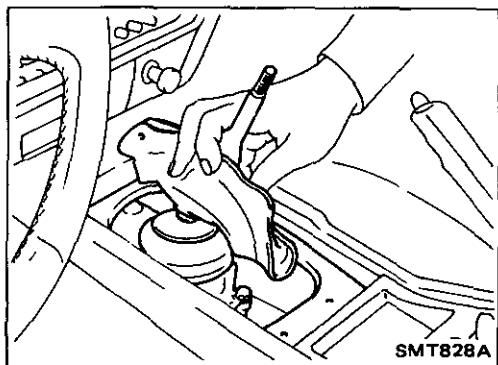
- Remove exhaust front tube, catalytic converter and exhaust manifold connecting tube.
Refer to section EM.
- Remove propeller shaft.
Refer to section PD

Insert plug into rear oil seal after removing propeller shaft.

- Support engine by placing a jack under oil pan.

CAUTION:

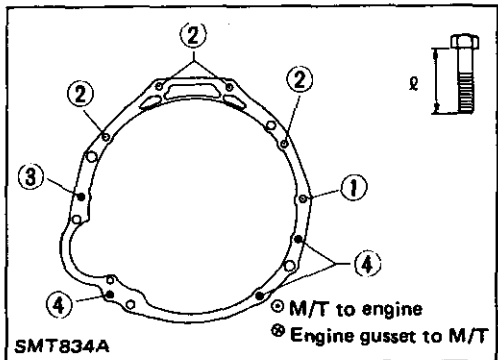
- Be careful not to damage spline, sleeve yoke and rear oil seal, when removing propeller shaft.
- Do not place jack under the oil pan drain plug.
- Remove shift lever (FS5W71C).



WARNING:

Support Manual Transmission, while removing it.

- Remove shift knob and console boot finisher (FS5R30A).
Dust cover must not be removed from shift lever.

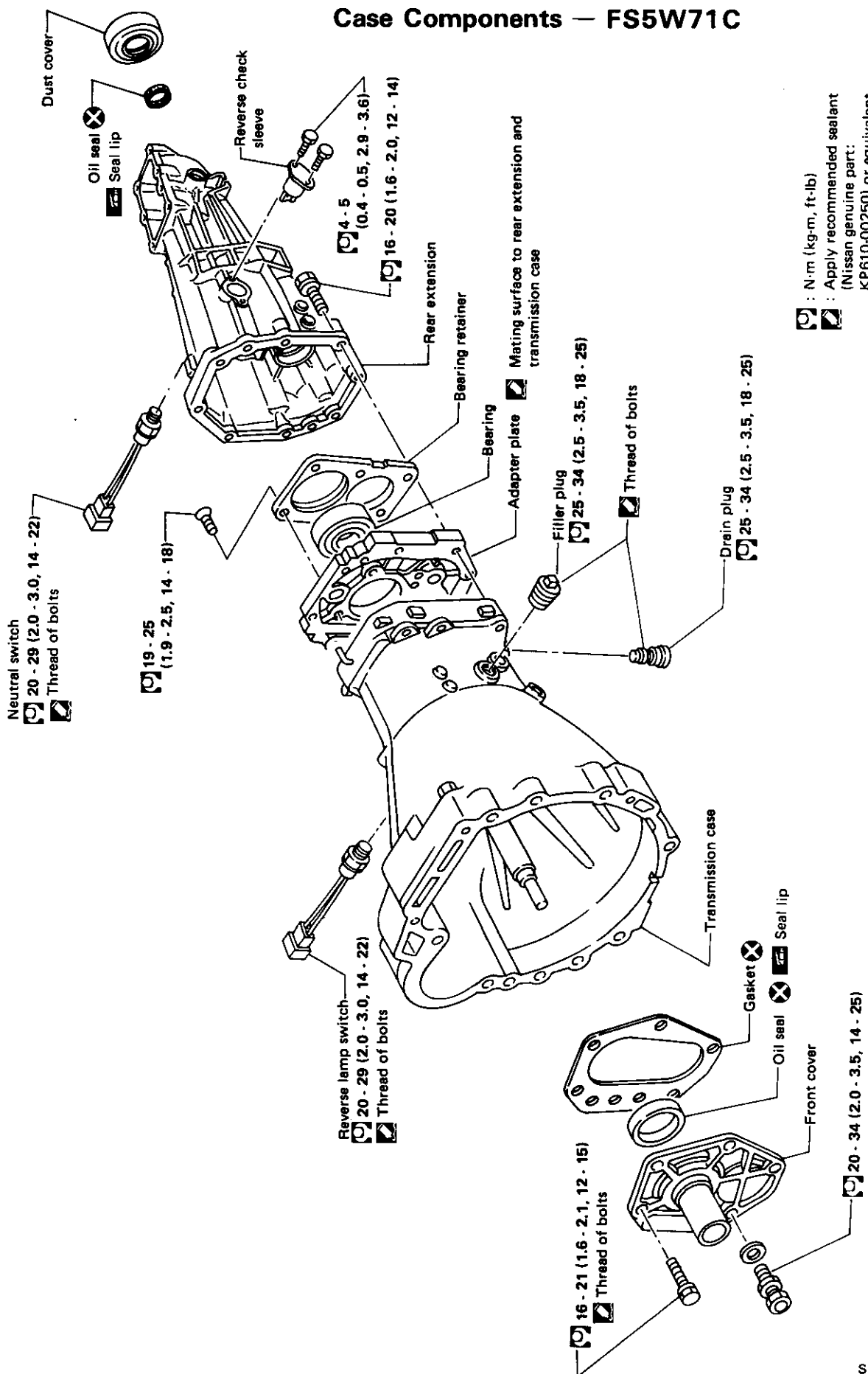


Installation

- Tighten bolt securing transmission.

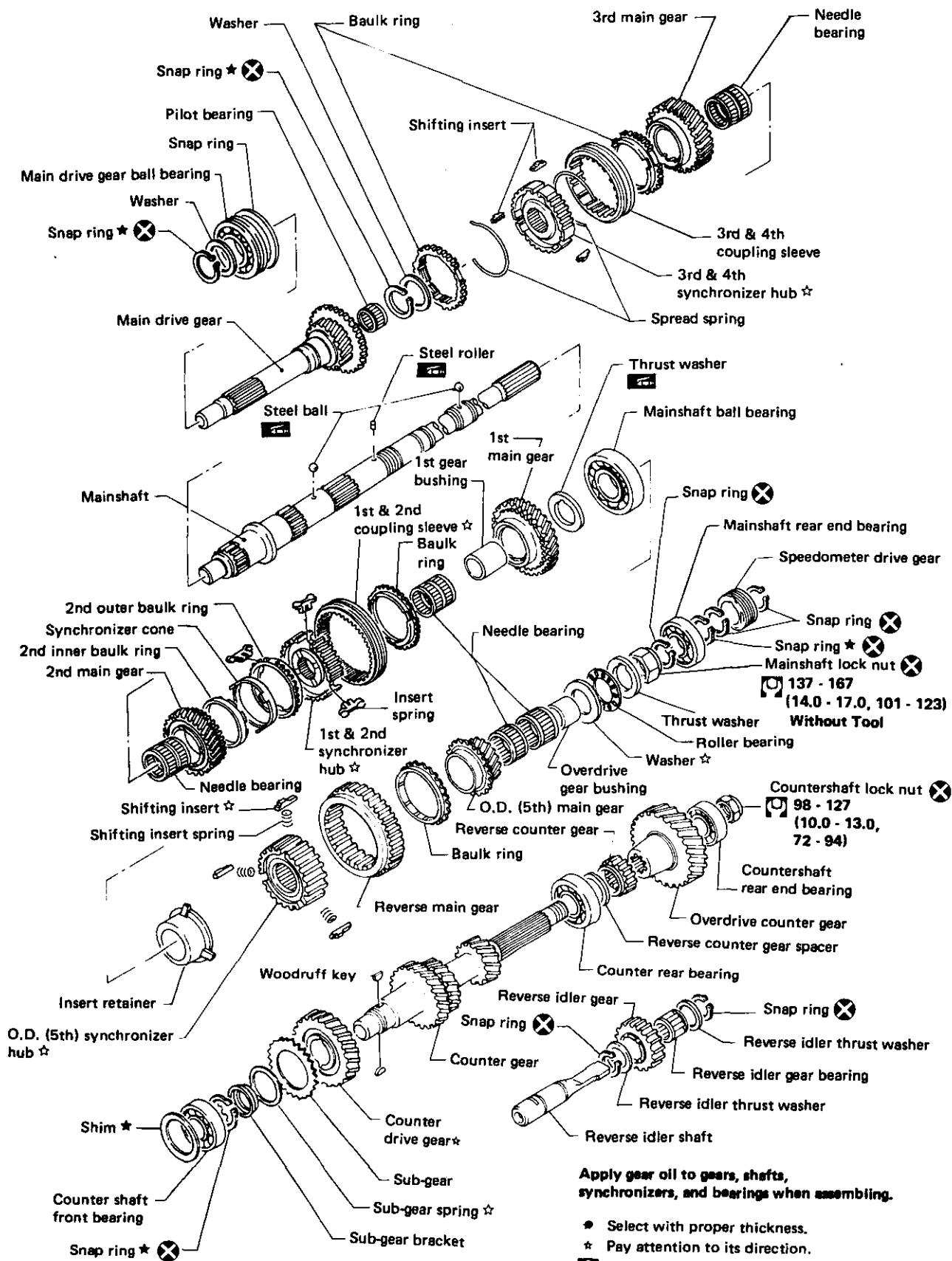
Bolt No.	Tightening torque N·m (kg·m, ft·lb)	ℓ mm (in)
1	39 - 49 (4.0 - 5.0, 29 - 36)	65 (2.56)
2	39 - 49 (4.0 - 5.0, 29 - 36)	60 (2.36)
3	29 - 39 (3.0 - 4.0, 22 - 29)	55 (2.17)
4	29 - 39 (3.0 - 4.0, 22 - 29)	25 (0.98)

Case Components — FS5W71C



: N·m (kg-m, ft-lb)
 : Apply recommended sealant (Nissan genuine part: KP610-00250) or equivalent.

Gear Components — FS5W71C

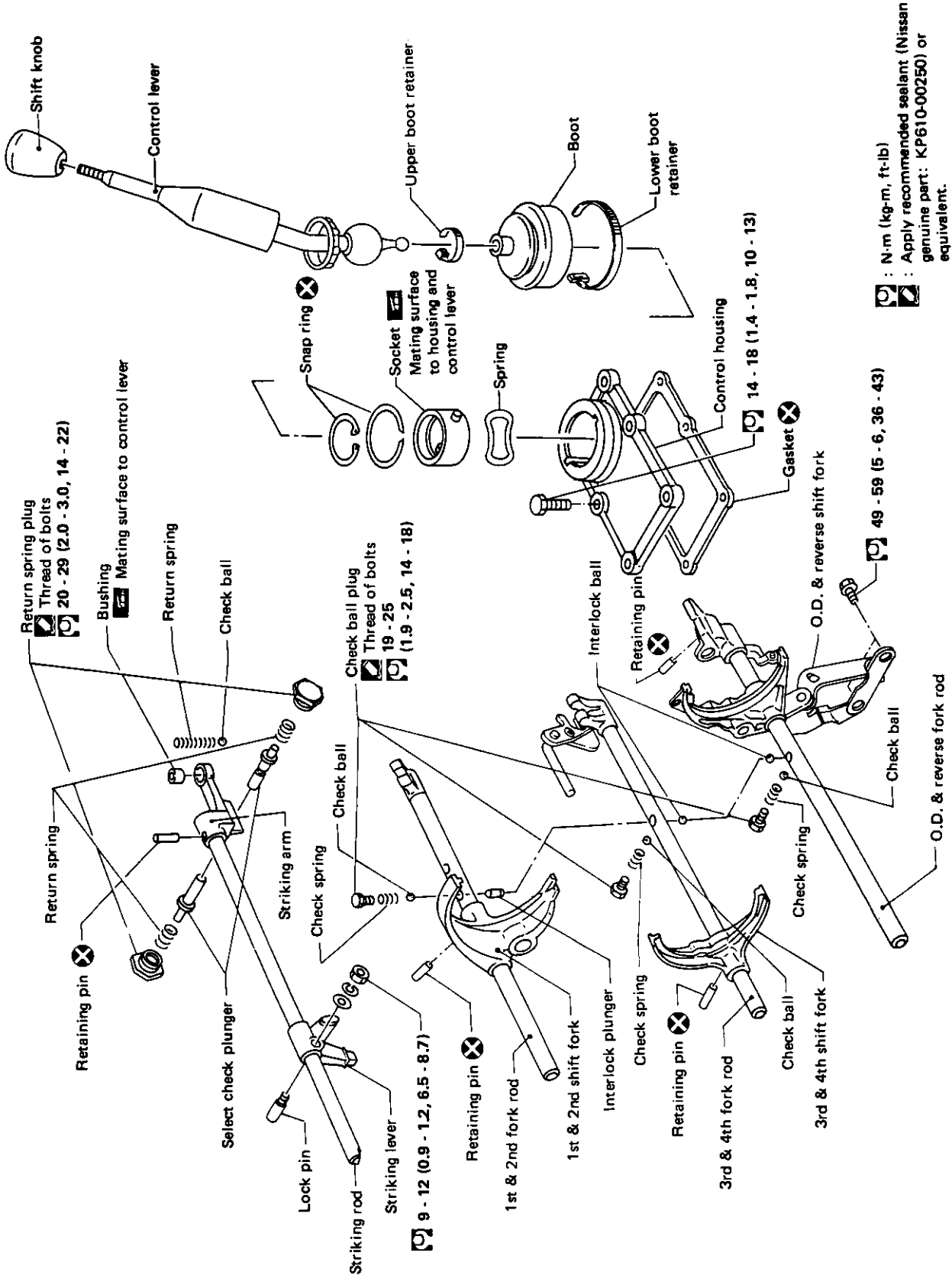


Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.

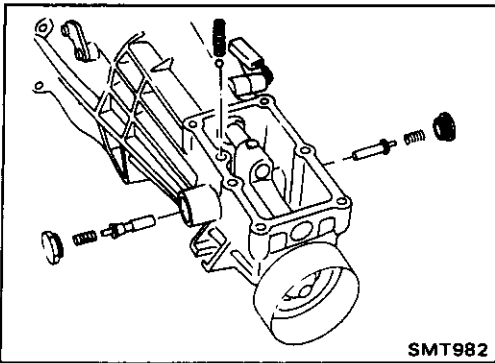
- Select with proper thickness.
- ★ Pay attention to its direction.

⊗ : N-m (kg-m, ft-lb)

Shift Control Components—FS5W71C
(With mainshaft braking mechanism)



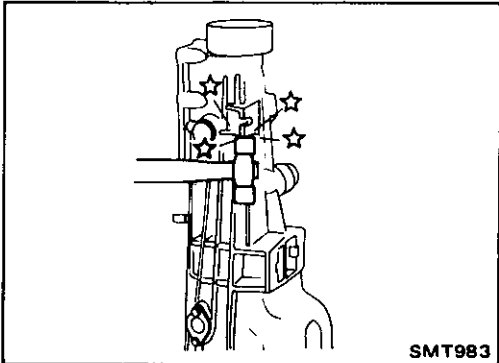
⊗ : N.m (kg-m, ft-lb)
 □ : Apply recommended sealant (Nissan genuine part: KP610-00250) or equivalent.



SMT982

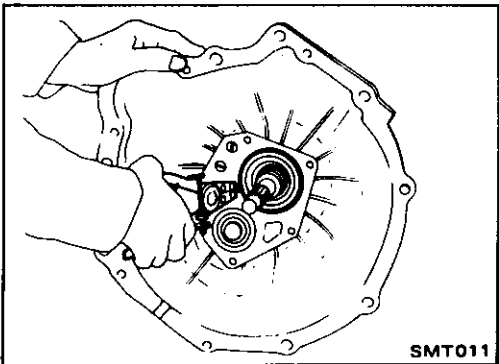
Case Components

1. Remove rear extension.
 - a. Remove control housing, check ball, return spring plug, select check plunger and return springs.



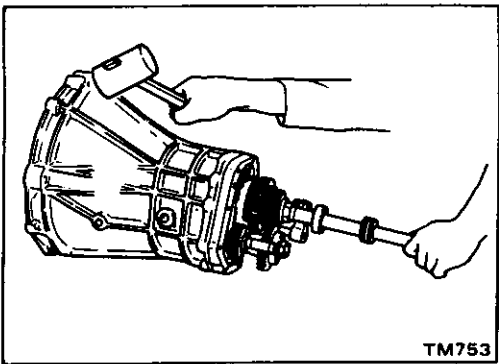
SMT983

- b. Remove rear extension by lightly tapping it.



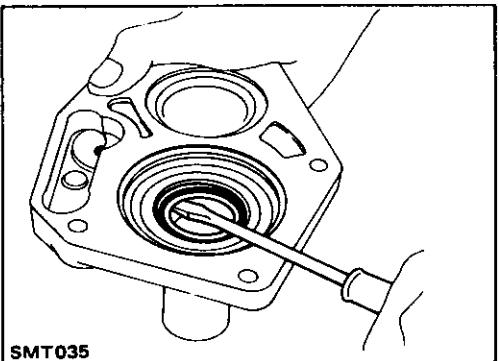
SMT011

2. Remove front cover, gasket, shim of countershaft front bearing, and snap ring of main drive gear ball bearing.



TM753

3. Separate transmission case from adapter plate.

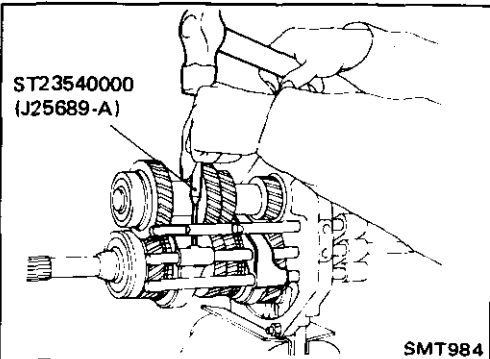
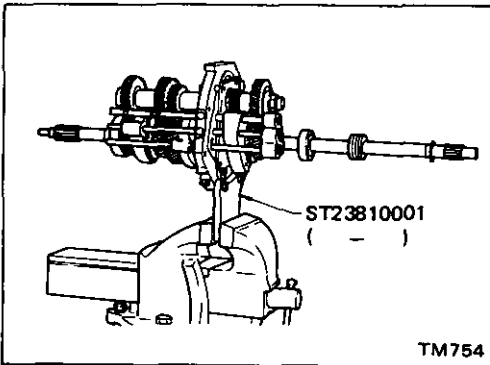


SMT035

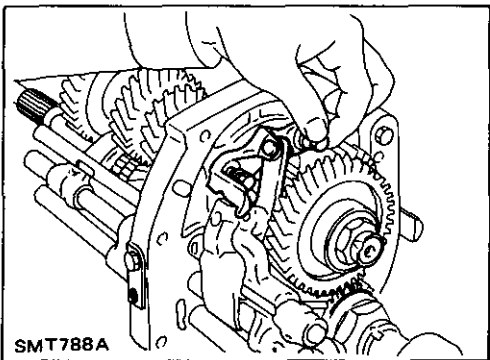
4. Remove oil seal of front cover.
Be careful not to damage mating surface of front cover.

Shift Control Components

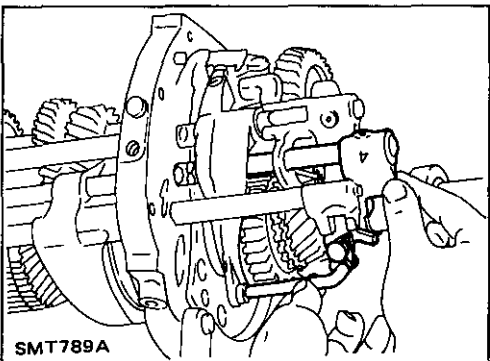
1. Set up Tool on adapter plate.
2. Remove check ball plugs, check springs, and check balls.



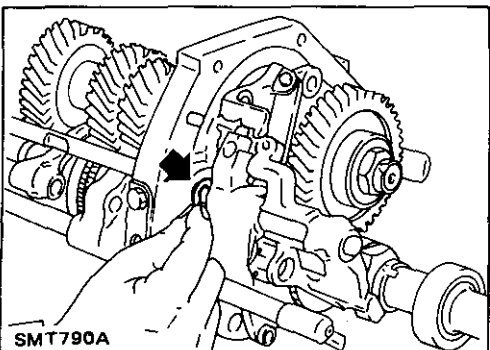
3. Drive out retaining pins. Then drive out fork rods and remove interlock balls.



4. Remove lever bracket securing bolt.



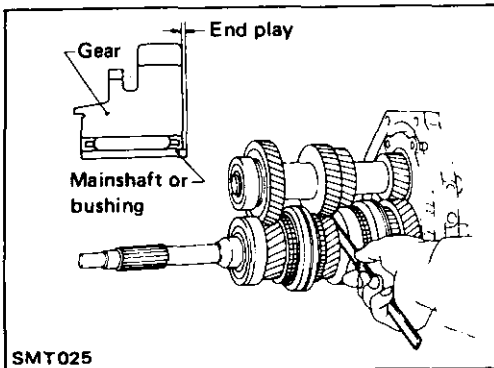
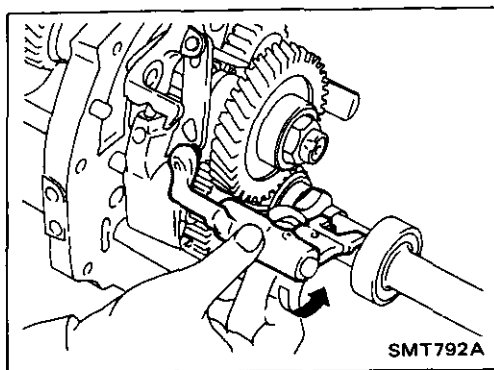
5. Draw out 3rd-4th fork rod.



6. Remove E-ring from O.D.-rev. fork rod.

Shift Control Components (Cont'd)

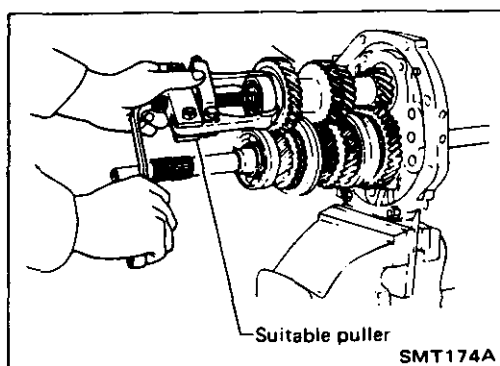
7. Draw out O.D.-rev. fork shaft by rotating O.D.-rev. bracket counterclockwise.



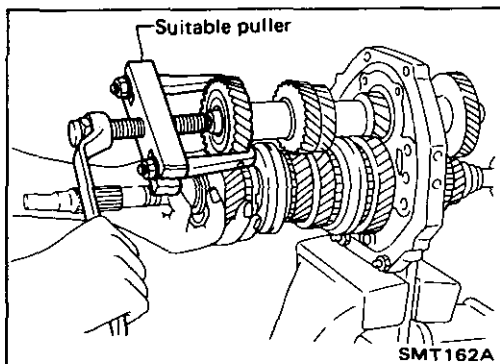
Gear Components

1. Before disassembly, measure each gear end play.
 - If end play is not within the specified limit, disassemble and check the parts.
 - Replace any part which is worn or damaged.

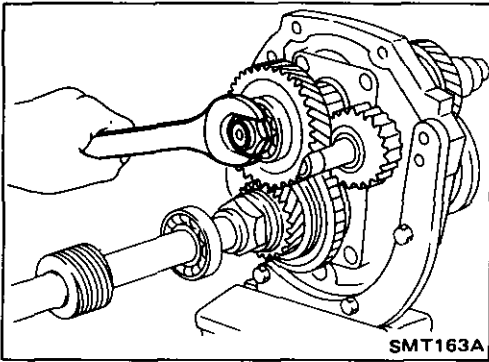
Gear	End play mm (in)
1st	0.31 - 0.41 (0.0122 - 0.0161)
2nd	0.11 - 0.21 (0.0043 - 0.0083)
3rd	0.11 - 0.21 (0.0043 - 0.0083)
O.D.	0.24 - 0.41 (0.0094 - 0.0161)



2. Mesh 2nd and reverse gear, then draw out counter front bearing with suitable puller.
3. Remove snap ring and then remove sub-gear bracket, sub-gear spring and sub-gear.

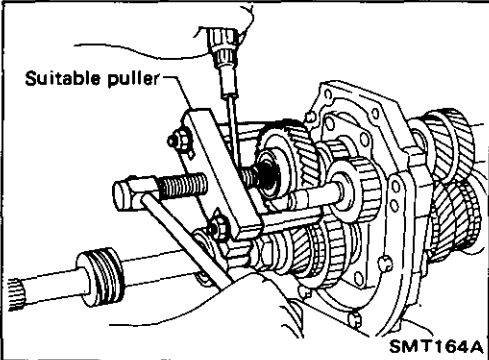


4. Draw out counter drive gear with main drive gear assembly with suitable puller.
 - When drawing out main drive gear assembly, be careful not to drop pilot bearing and baulk ring.

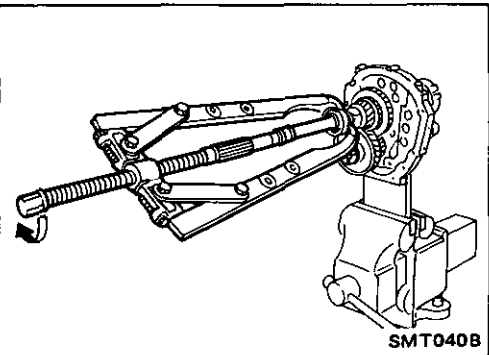
Gear Components (Cont'd)

5. Disassemble parts at rear of adapter plate as follows.
 - a. Release staking on countershaft nut and mainshaft nut and loosen these nuts.

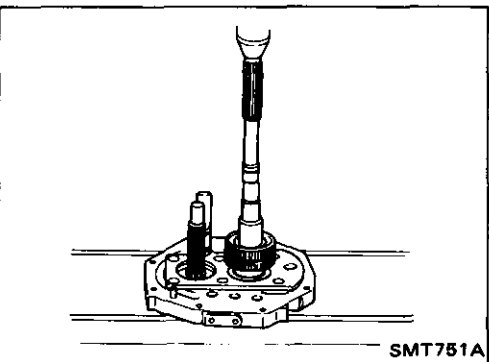
Mainshaft nut: Left-hand thread



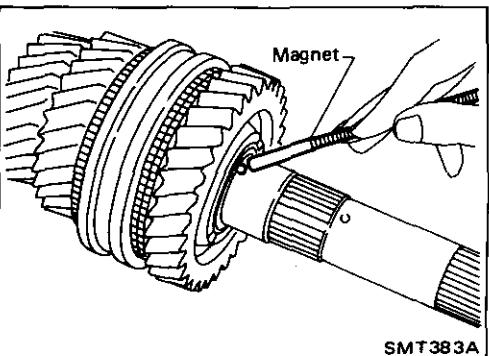
- b. Pull out O.D. counter gear with bearing with suitable puller.
 - c. Draw out reverse counter gear and spacer.
 - d. Remove snap rings from reverse idler shaft, and draw out reverse idler gear, thrust washers and reverse idler gear bearing.
 - e. Remove speedometer drive gear and steel ball.



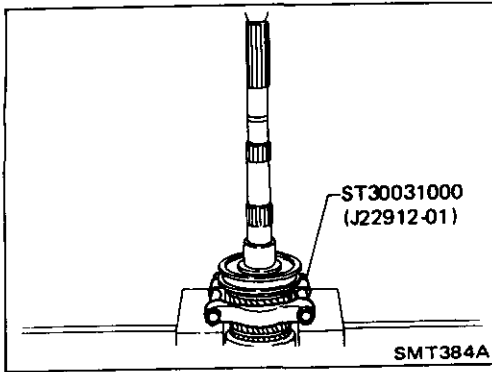
- f. Remove snap ring and pull out overdrive mainshaft bearing, then remove snap ring.
 - g. Remove mainshaft nut.
 - h. Remove thrust washer, steel roller, roller bearing and washer.
 - i. Remove O.D. main gear, needle bearing and baulk ring (O.D.).
 - j. Remove O.D. coupling sleeve, shifting inserts and shifting insert springs.



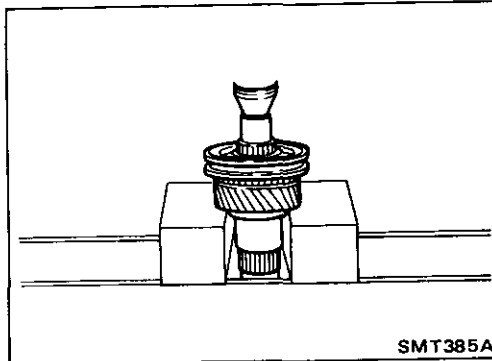
- k. Press out mainshaft and counter gear alternately. **Make sure to alternate pressing of mainshaft and counter gear so as not to allow the front surface of one to contact the rear surface of the other.**



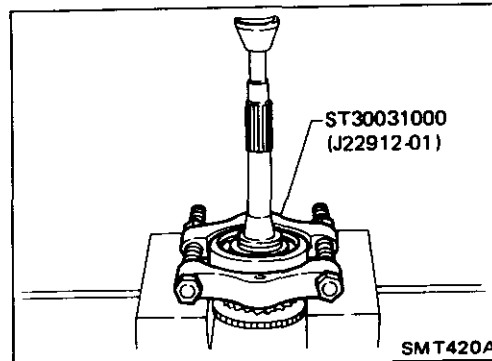
6. Remove front side components on mainshaft.
 - a. Remove 1st gear washer and steel ball.
 - b. Remove 1st main gear and 1st gear needle bearing.

DISASSEMBLY**Gear Components (Cont'd)**

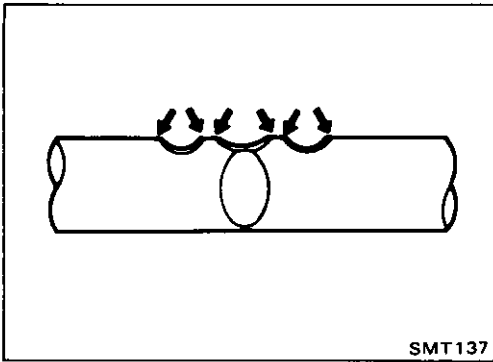
- c. Press out 2nd main gear together with 1st gear bushing and 1st & 2nd synchronizer assembly.
- d. Remove mainshaft front snap ring.



- e. Press out 3rd main gear together with 3rd & 4th synchronizer assembly and 3rd gear needle bearing.

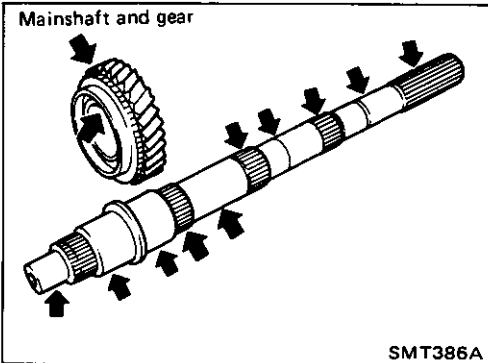


- 7. Remove main drive gear bearing.
 - a. Remove snap ring and washer.
 - b. Remove main drive gear bearing.



Shift Control Components

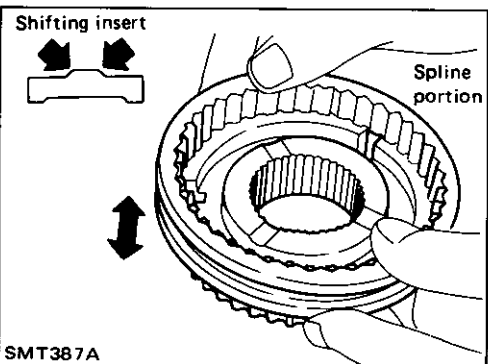
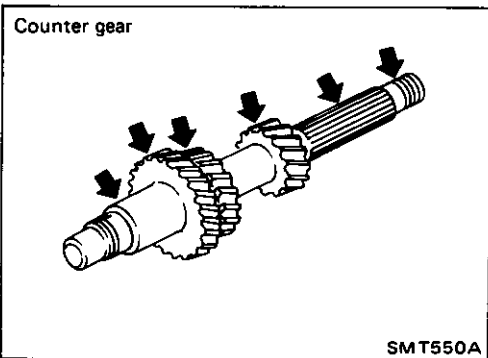
- Check contact surface and sliding surface of fork rods for wear, scratches, projections or other damage.



Gear Components

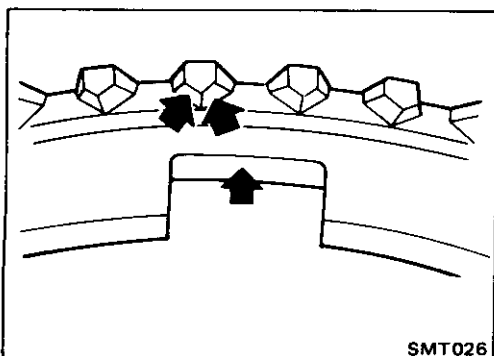
GEARS AND SHAFTS

- Check shafts for cracks, wear or bending.
- Check gears for excessive wear, chips or cracks.



SYNCHRONIZERS

- Check spline portion of coupling sleeves, hubs and gears for wear or cracks.
- Check baulk rings for cracks or deformation.
- Check shifting inserts for wear or deformation.
- Check insert springs for deformation.



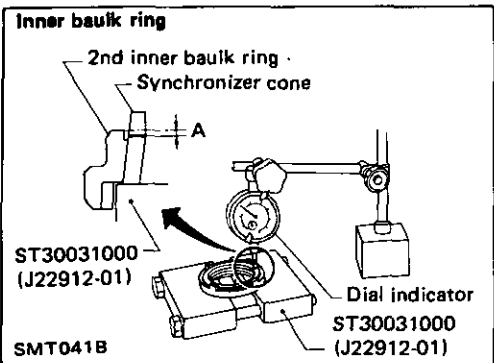
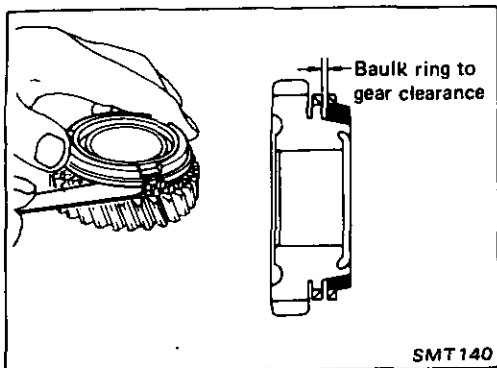
Gear Components (Cont'd)

- Measure clearance between baulk ring and gear.

Clearance between baulk ring and gear

Unit: mm (in)

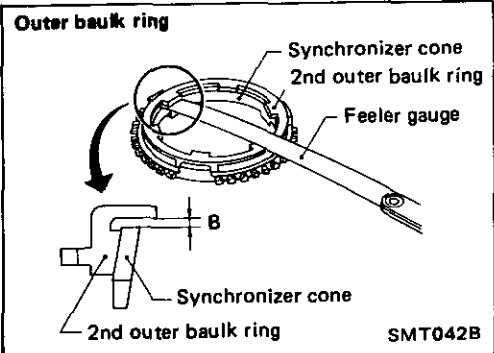
	Standard	Wear limit
1st 3rd Main drive O.D.	1.2 - 1.6 (0.047 - 0.063)	0.8 (0.031)



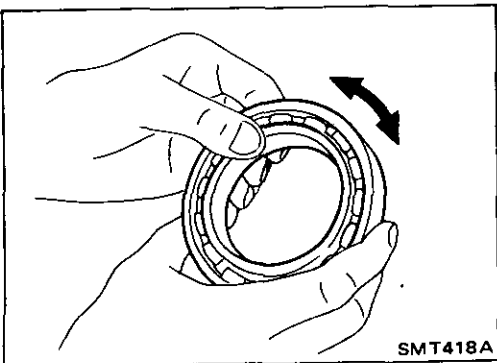
- Measure wear of 2nd baulk ring
- a Place baulk-rings in position on synchronizer cone.
- b. While holding baulk rings against synchronizer cone as far as it will go, measure dimensions "A" and "B".

Unit: mm (in)

Dimension	Standard	Wear limit
A	0.7 - 0.9 (0.028 - 0.035)	0.2 (0.008)
B	0.6 - 1.1 (0.024 - 0.043)	0.2 (0.008)

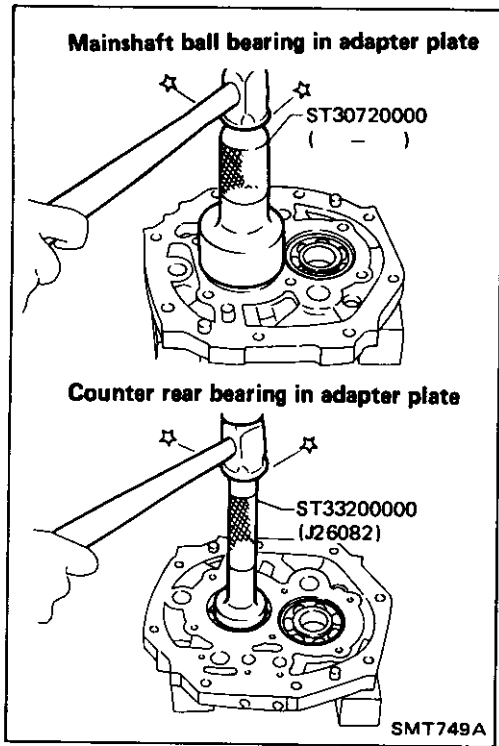


- c. If dimension "A" or "B" is smaller than the wear limit, replace baulk ring.



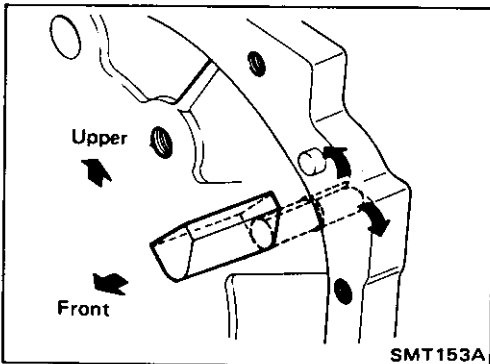
BEARINGS

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



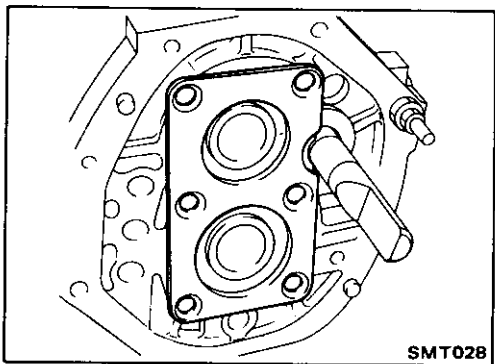
Gear Components

1. Install bearings into case components.



2. Assemble adapter plate parts.

- Install oil gutter on adapter plate and expand on rear side.

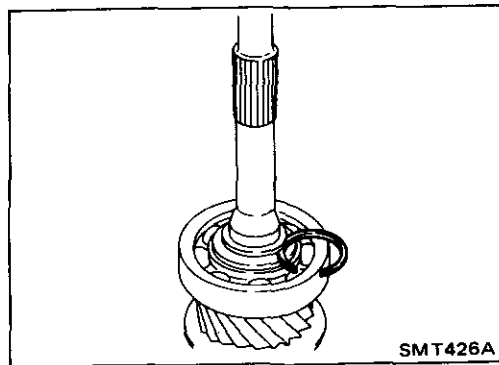
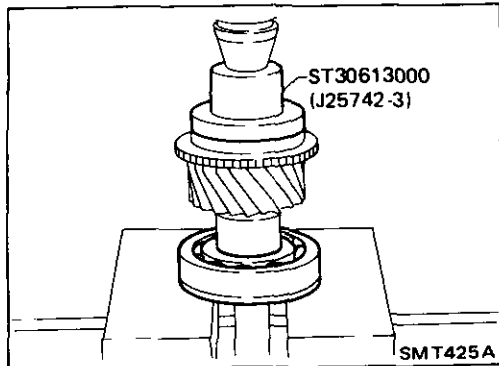
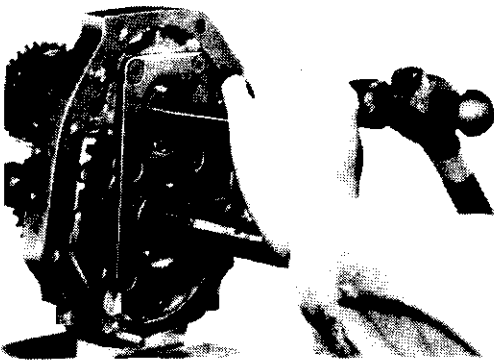


- Install bearing retainer.

a. Insert reverse shaft, then install bearing retainer.

Gear Components (Cont'd)

- b. Tighten each screw, then stake it at two points.



3. Install main drive gear bearing.
 - a. Press in main drive gear bearing.
 - b. Install main drive gear spacer.

- c. Select proper main drive gear snap ring to minimize clearance of groove.

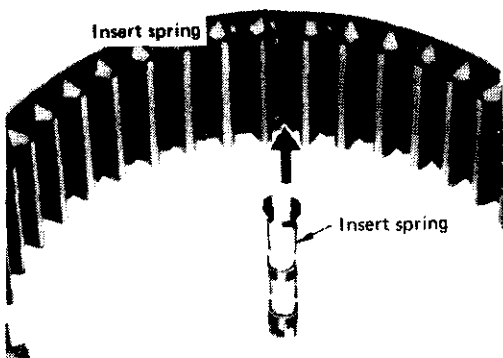
**Allowable clearance of groove:
0 - 0.13 mm (0 - 0.0051 in)**

Main drive gear snap ring

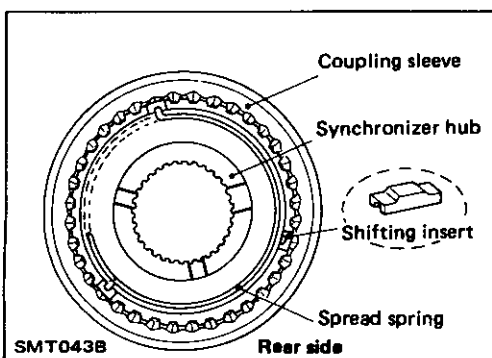
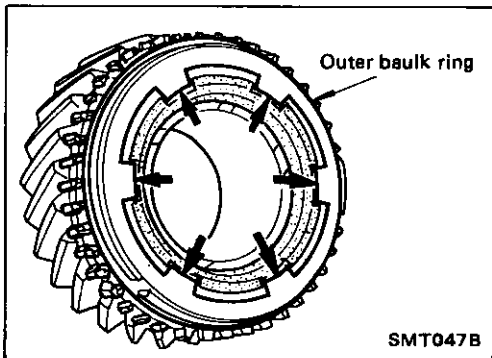
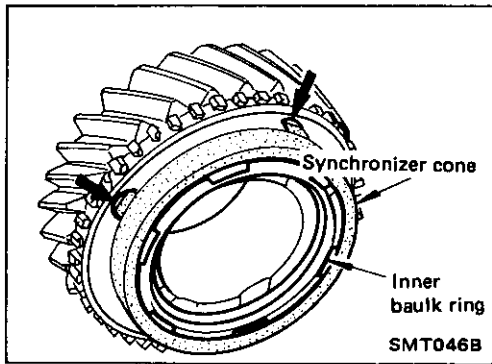
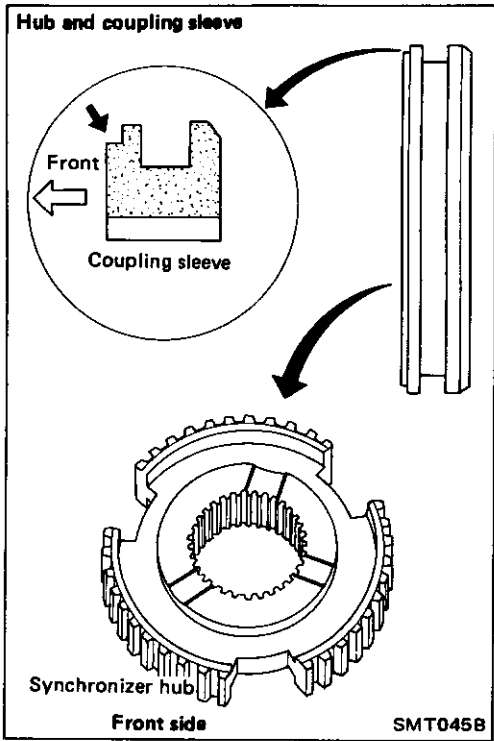
Thickness mm (in)	Part number
1.73 (0.0681)	32204-78005
1.80 (0.0709)	32204-78000
1.87 (0.0736)	32204-78001
1.94 (0.0764)	32204-78002
2.01 (0.0791)	32204-78003
2.08 (0.0819)	32204-78004

- d. Install selected snap ring on main drive gear.

4. Assemble synchronizers.
1st & 2nd synchronizer



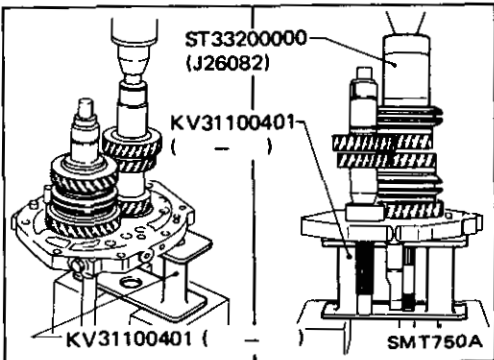
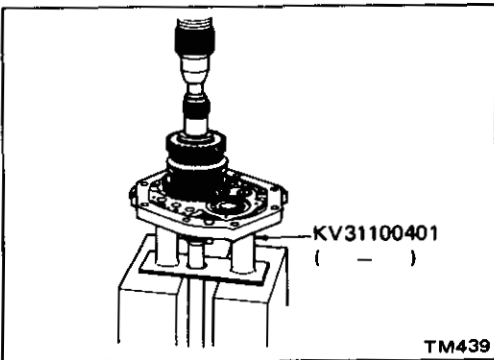
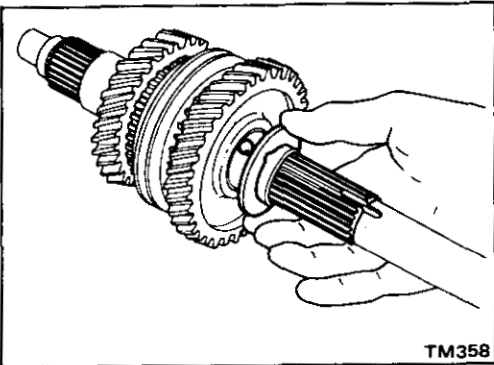
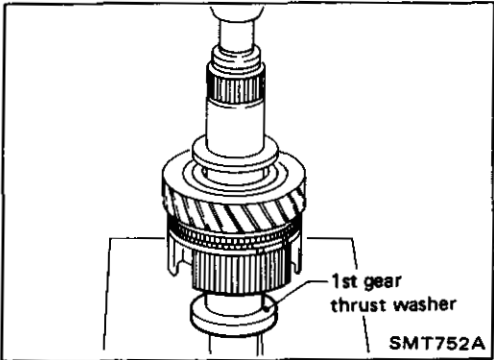
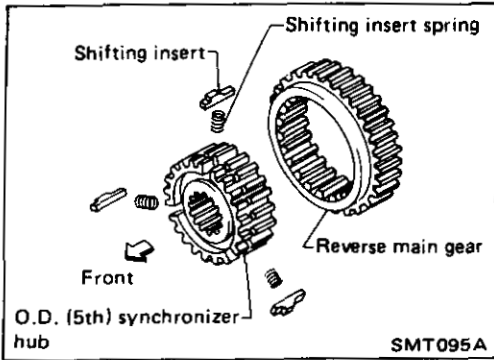
Gear Components (Cont'd)



3rd & 4th synchronizer

Gear Components (Cont'd)

O.D. synchronizer



5. Assemble 2nd main gear, needle bearing and 1st & 2nd synchronizer assembly, then press 1st gear bushing on mainshaft.

Pay attention to direction of 1st & 2nd synchronizer assembly.

6. Install 1st main gear.

7. Install steel ball and thrust washer.

Before installing steel ball and thrust washer, apply grease to them.

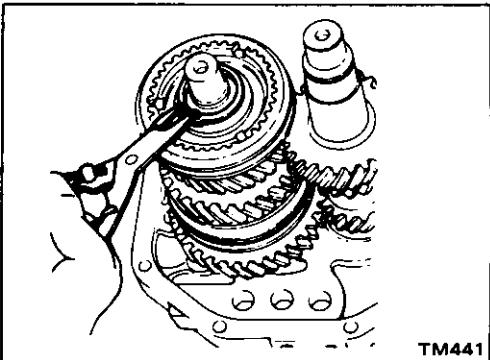
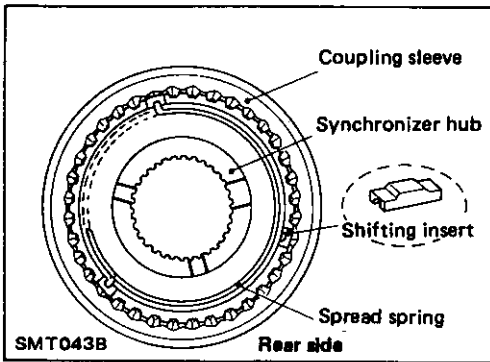
8. Press mainshaft assembly to adapter plate with Tool.

9. Press counter gear into adapter plate with Tool.

10. Install 3rd main gear and then press 3rd & 4th synchronizer assembly.

Gear Components (Cont'd)

Pay attention to direction of 3rd & 4th synchronizer hub.



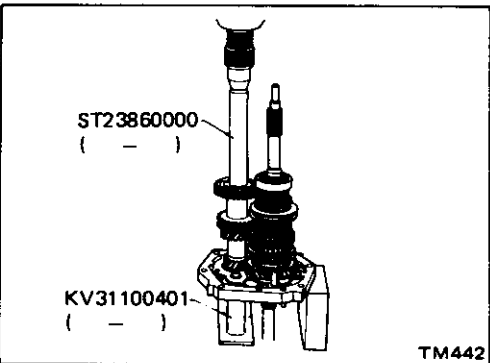
11. Install thrust washer on mainshaft and secure it with mainshaft front snap ring.

Select proper snap ring to minimize clearance of groove in mainshaft.

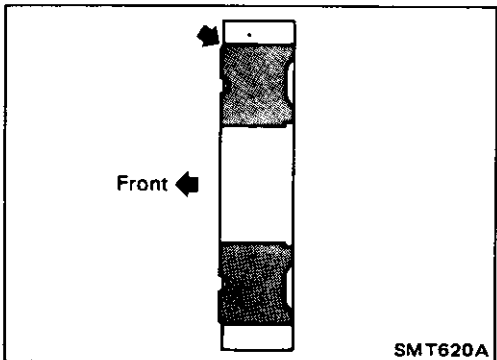
Mainshaft front snap ring:

Refer to S.D.S.

12. Apply gear oil to mainshaft pilot bearing and install it on mainshaft.



13. Press counter drive gear with main drive gear with Tool.



Pay attention to direction of counter drive gear.

14. Install sub-gear components.

- a. Install sub-gear and sub-gear bracket on counter drive gear and then select proper snap ring to minimize clearance of groove in counter gear.

Allowable clearance of groove:

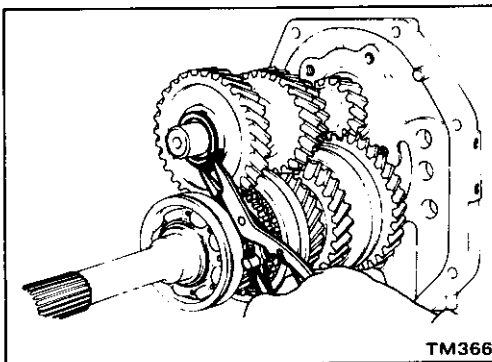
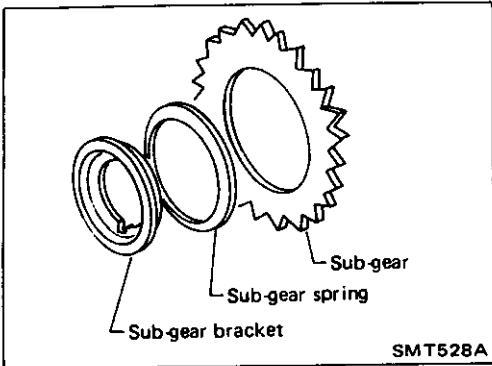
0 - 0.18 mm (0 - 0.0071 in)

Gear Components (Cont'd)

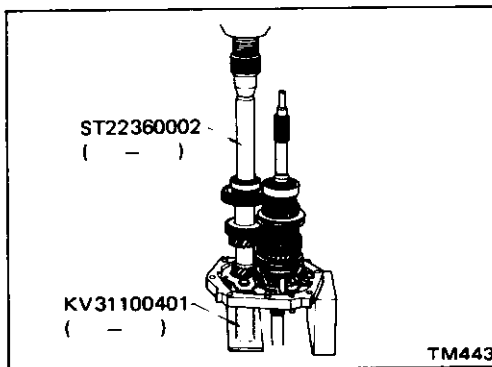
Counter drive gear snap ring:

Parts number	Thickness mm (in)
32215-E9000	1.4 (0.055)
32215-E9001	1.5 (0.059)
32215-E9002	1.6 (0.063)

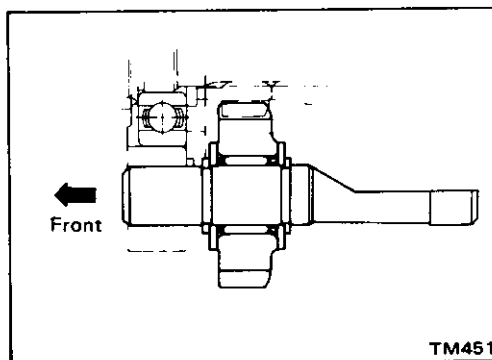
- b. Remove snap ring, sub-gear bracket and sub-gear from counter gear.
- c. Reinstall sub-gear, sub-gear spring and sub-gear bracket.



15. Install selected counter drive gear snap ring.



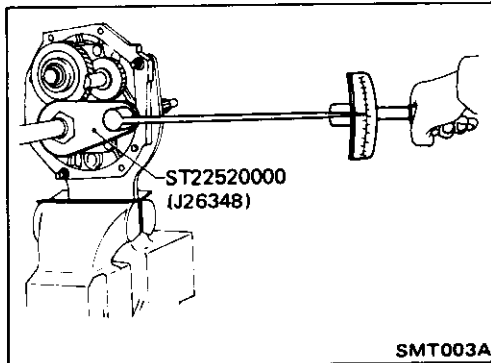
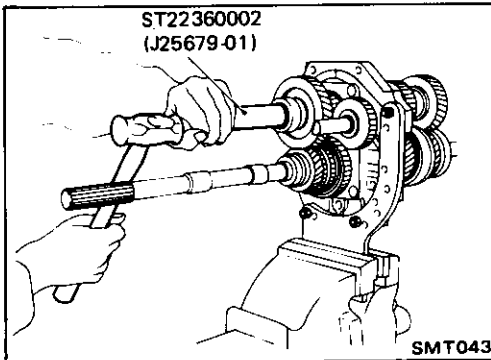
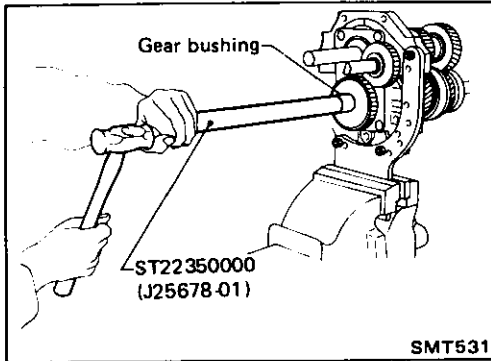
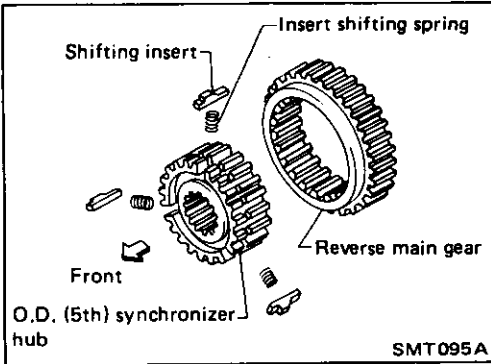
16. Press counter gear front bearing onto counter gear.



- 17. Assemble parts at rear of adapter plate as follows:
 - a. Install reverse idler gear to reverse idler shaft with spacers, snap rings and needle bearing.

Gear Components (Cont'd)

- b. Install insert retainer and O.D. synchronizer to mainshaft.
Pay attention to direction of hub.

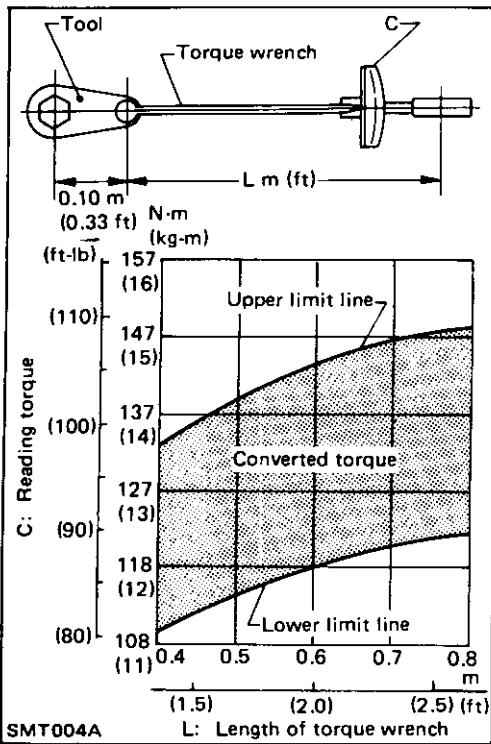


- c. Install O.D. gear bushing with Tool.
- d. Install O.D. main gear and needle bearing.
- e. Install spacer, reverse counter gear and O.D. counter gear.
O.D. main gear and O.D. counter gear should be handled as a matched set.
- f. Install washer, roller bearing, steel roller and thrust washer.
- g. Tighten mainshaft lock nut temporarily.
Always use new lock nut.
- h. Install countershaft rear end bearing with Tool.

18. Mesh 2nd and reverse gears, then tighten mainshaft lock nut with Tool.

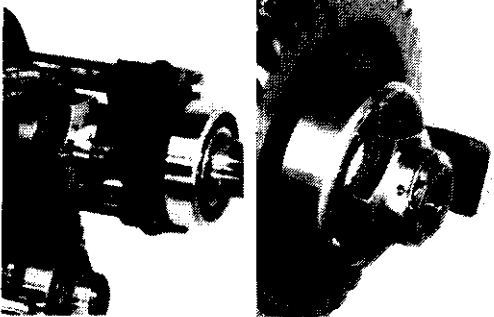
Gear Components (Cont'd)

Use the left chart when deciding the reading torque.
(Length of torque wrench vs. setting or reading torque)



Mainshaft

Countershaft



19. Tighten countershaft lock nut.

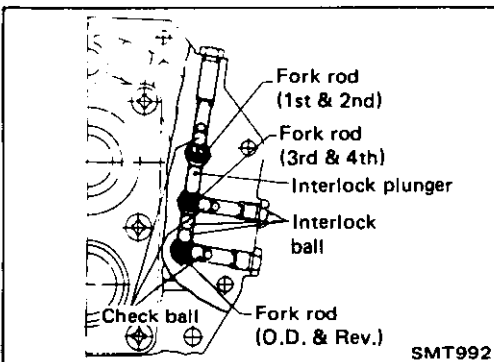
Always use new lock nut.

20. Stake mainshaft lock nut and countershaft lock nut with a punch.

21. Measure gear end play. For the description, refer to Disassembly of Gear Components.

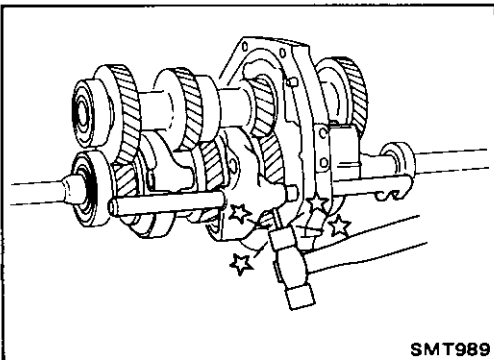
Shift Control Components

1. Install shift rods, interlock plunger, interlock balls and check balls.



SMT992

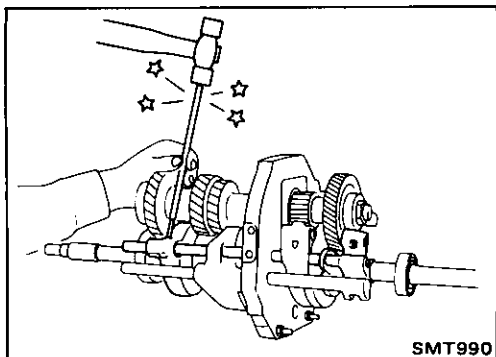
a. 1st-2nd shift fork



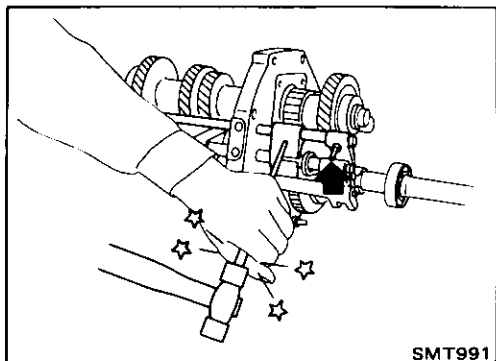
SMT989

Shift Control Components (Cont'd)

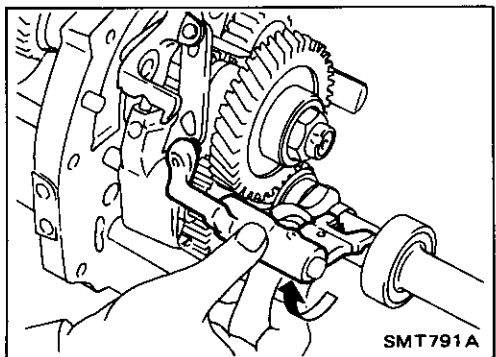
b. 3rd-4th shift fork



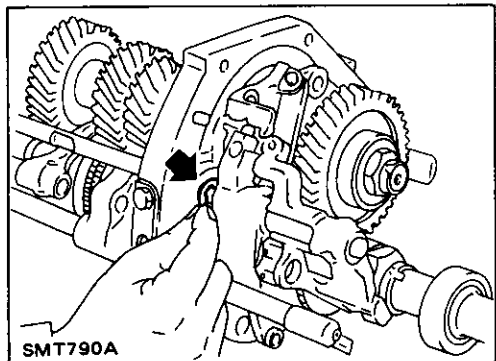
c. O.D.-reverse shift fork



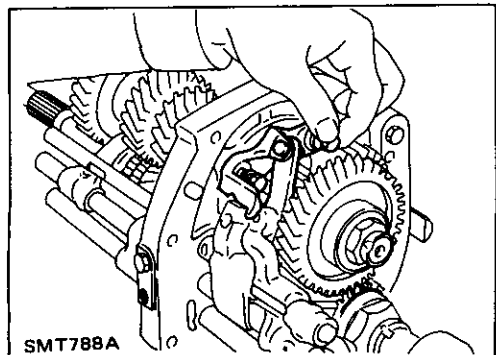
2. Install O.D.-rev. fork shaft by rotating O.D.-rev. bracket clockwise.



3. Install E-ring on O.D.-rev. fork rod.

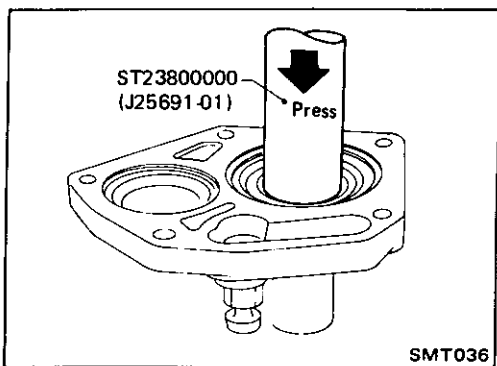


4. Install lever bracket securing bolt.

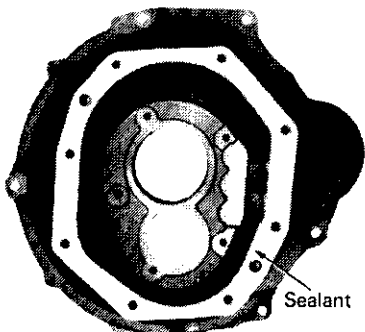


Case Components

1. Install front cover oil seal.
Apply multi-purpose grease to seal lip.



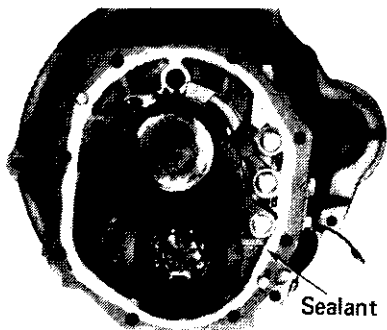
2. Apply sealant to mating surface of transmission case.



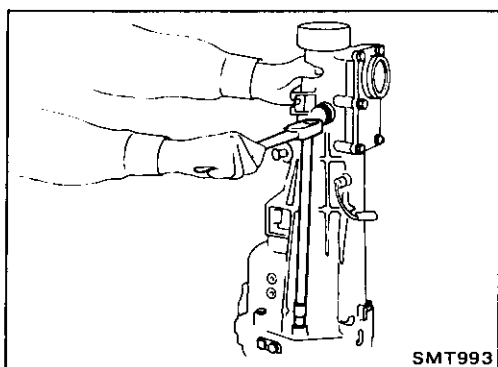
3. Slide gear assembly onto adapter plate by lightly tapping with a soft hammer.



4. Apply sealant to mating surface of adapter plate.



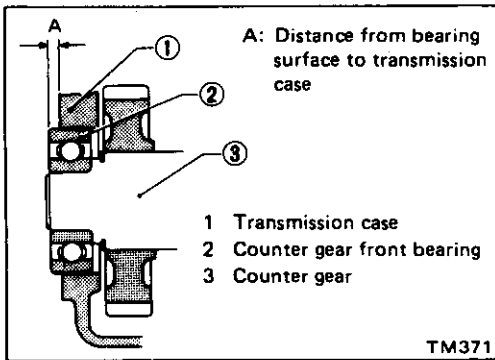
5. Install rear extension.
6. Fit main drive bearing snap ring.



Case Components (Cont'd)

7. Select counter front bearing shim.

Unit: mm (in)

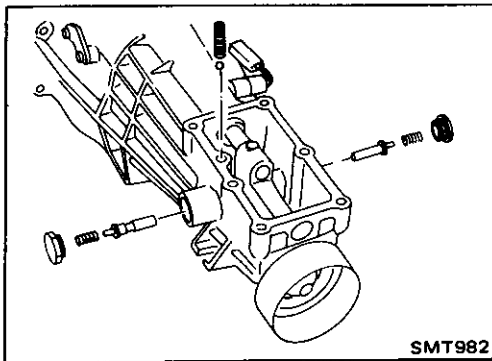


"A"	Thickness of shim	Part number
4.52 - 4.71 (0.1780 - 0.1854)	Not necessary	
4.42 - 4.51 (0.1740 - 0.1776)	0.1 (0.004)	32218-V5000
4.32 - 4.41 (0.1701 - 0.1736)	0.2 (0.008)	32218-V5001
4.22 - 4.31 (0.1661 - 0.1697)	0.3 (0.012)	32218-V5002
4.12 - 4.21 (0.1622 - 0.1657)	0.4 (0.016)	32218-V5003
4.02 - 4.11 (0.1583 - 0.1618)	0.5 (0.020)	32218-V5004
3.92 - 4.01 (0.1543 - 0.1579)	0.6 (0.024)	32218-V5005

8. Install gasket and front cover.

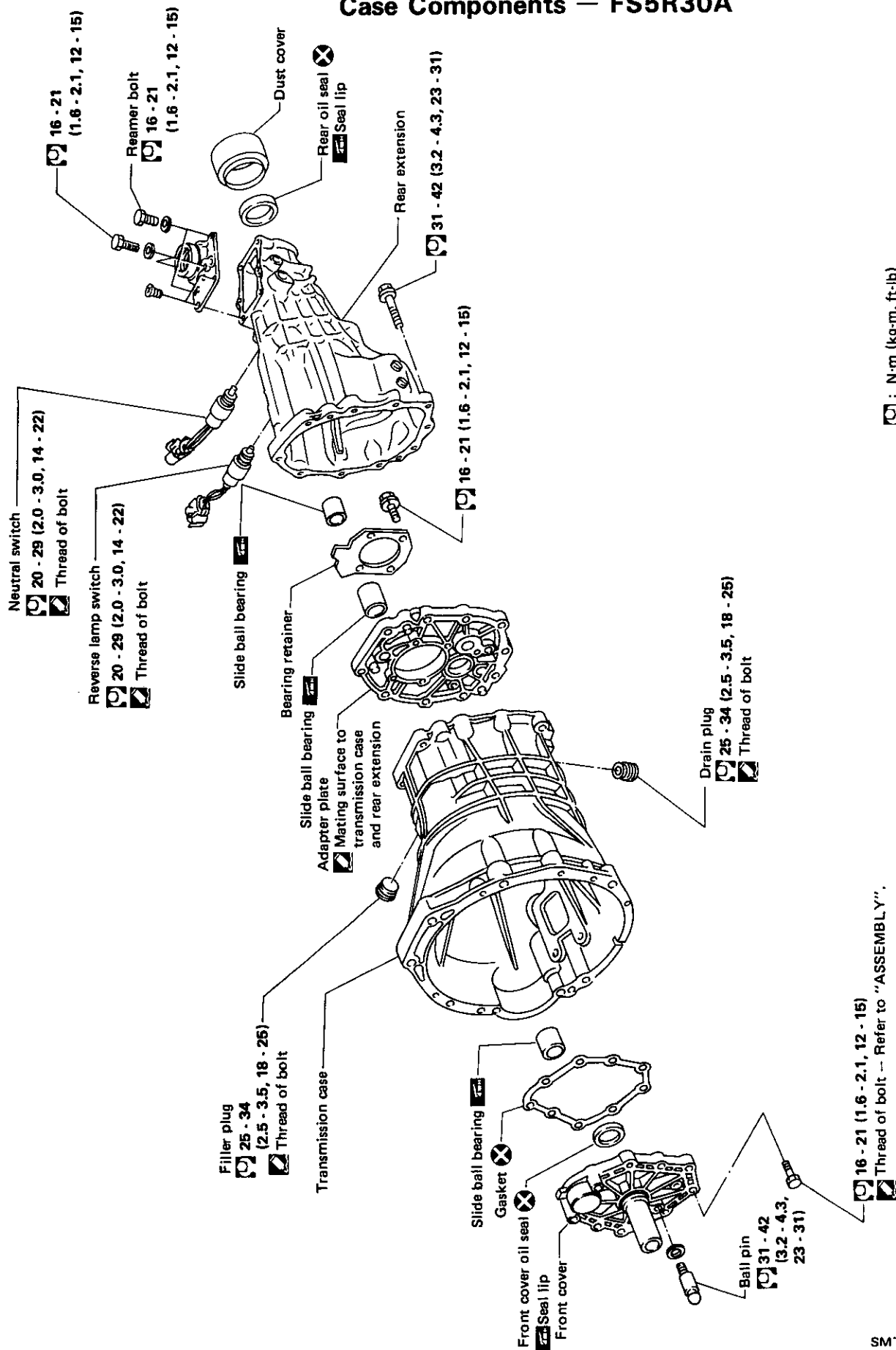
9. Install return spring plugs, check ball, return springs and select check plunger.

10. Install control housing and gasket.



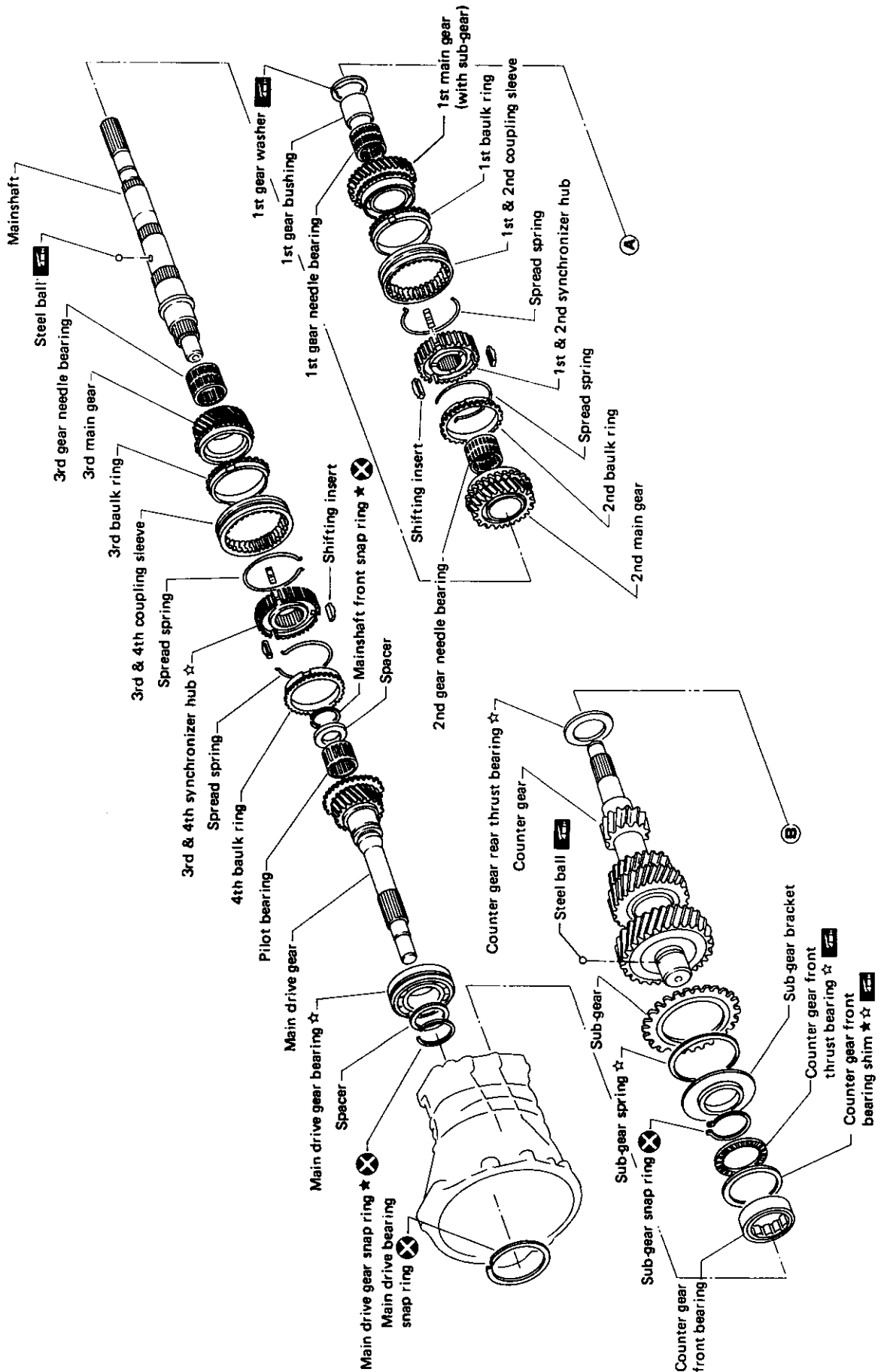
NOTE

Case Components — FS5R30A

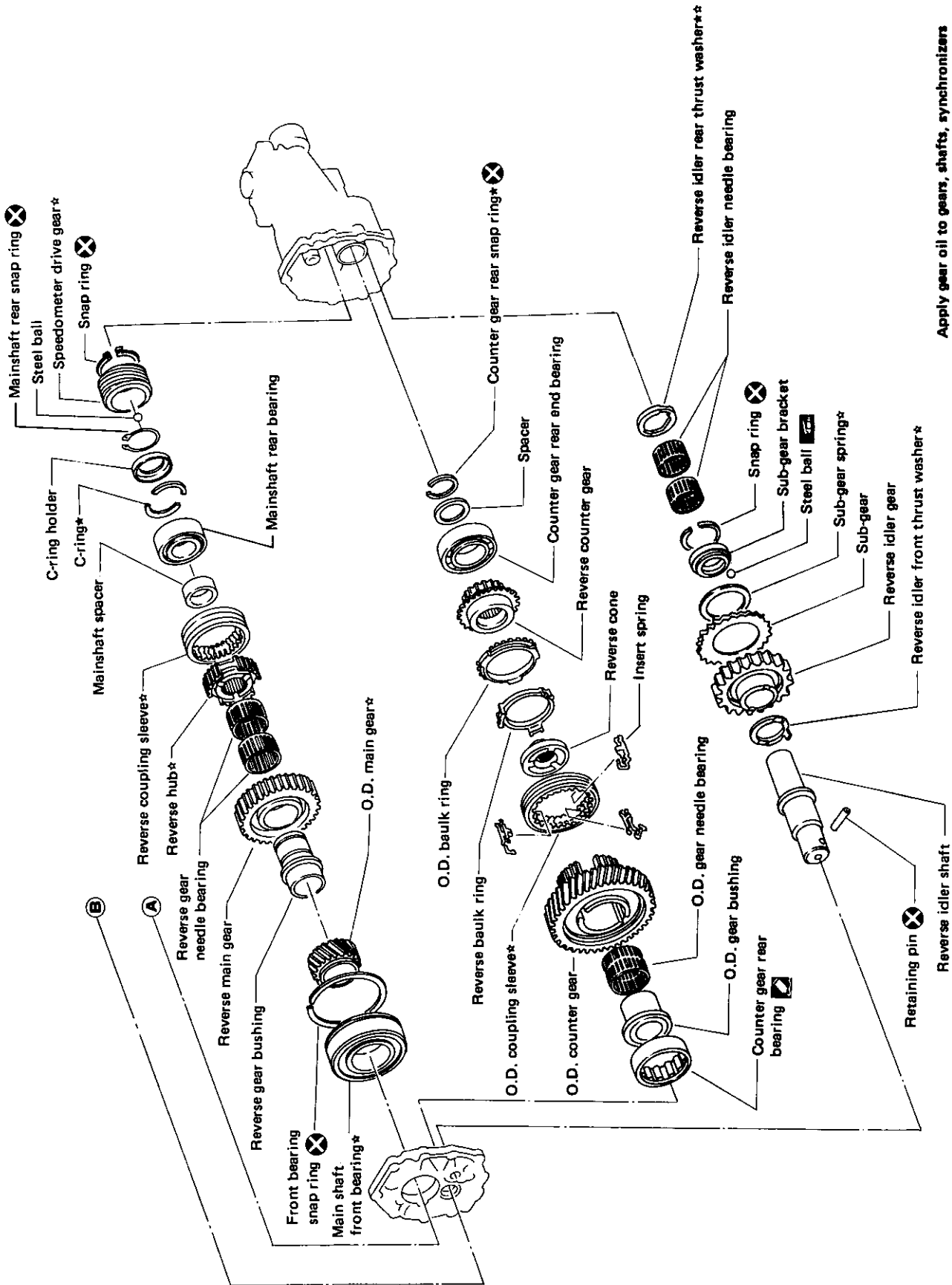


: N·m (kg·m, ft·lb)
 : Apply recommended sealant (Nissan genuine part: KP610-00250) or equivalent.

Gear Components — FS5R30A



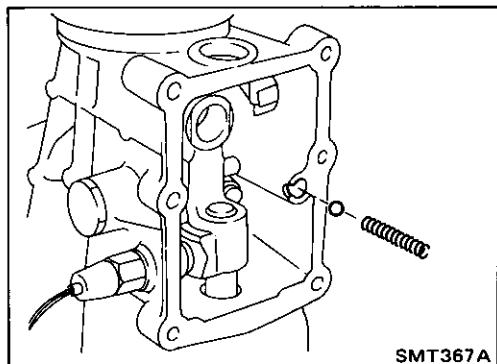
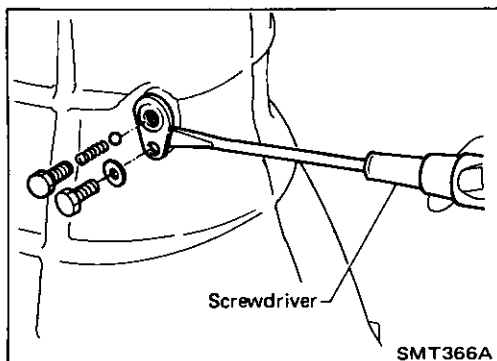
Gear Components — FS5R30A (Cont'd)



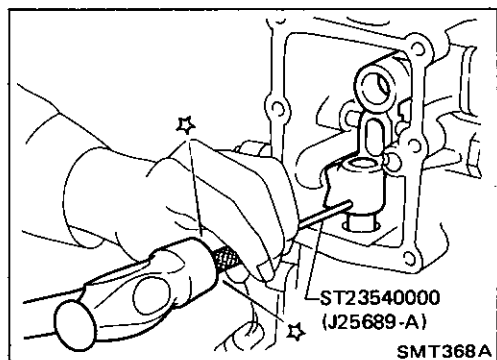
Apply gear oil to gears, shafts, synchronizers and bearings when assembling.
 * : Select with proper thickness
 ☆ : Pay attention to its direction

Case Components

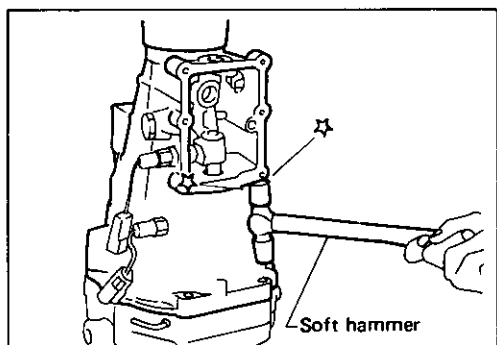
1. Remove check ball plug, check spring and check ball. Then remove interlock stopper.
If interlock assembly is removed as a unit, the check ball can fall into transmission case.



2. Remove control housing, return spring and check ball.



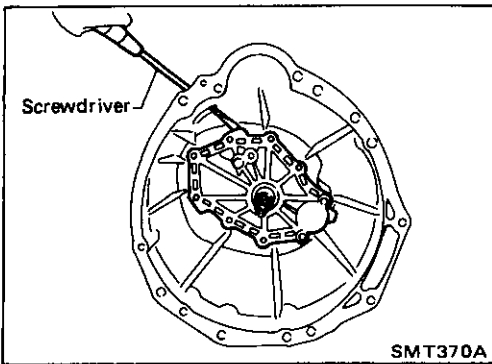
3. Drive out retaining pin from striking arm.



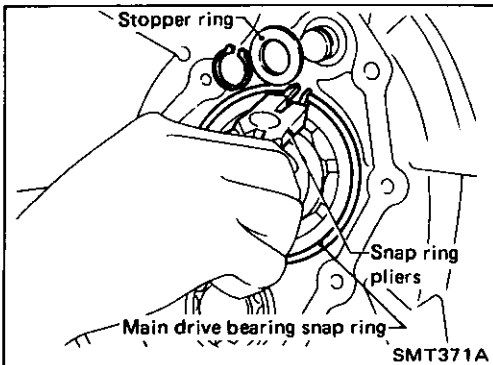
4. Remove rear extension together with striking arm by tapping lightly.

Case Components (Cont'd)

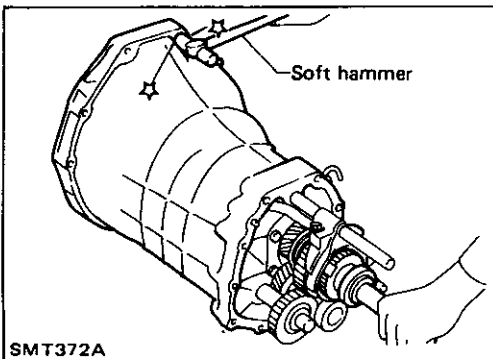
5. Remove front cover and gasket.



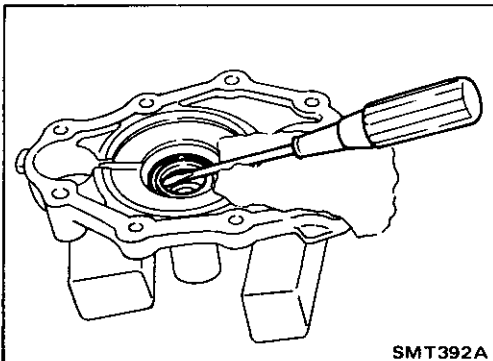
6. Remove stopper ring and main drive bearing snap ring.



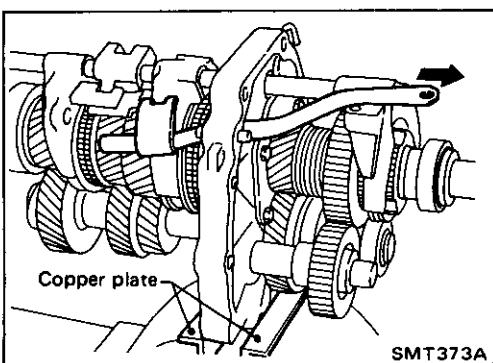
7. Remove transmission case by tapping lightly.



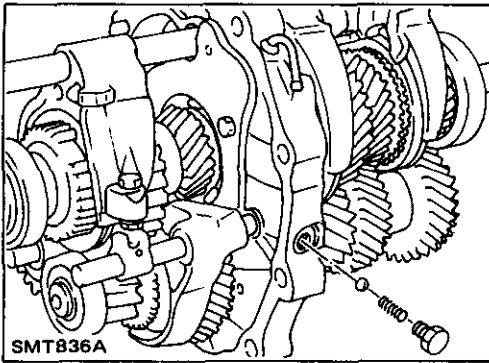
8. Remove front cover oil seal.

**Shift Control Components**

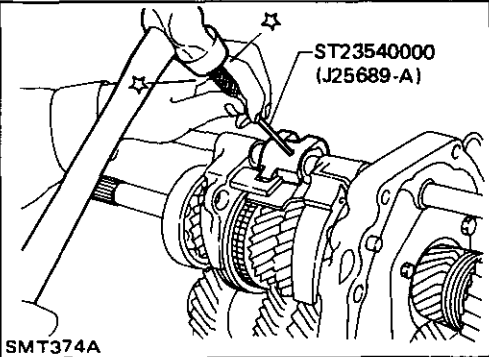
1. Mount adapter plate on vise.
2. Remove O.D. & reverse fork rod.



Shift Control Components (Cont'd)

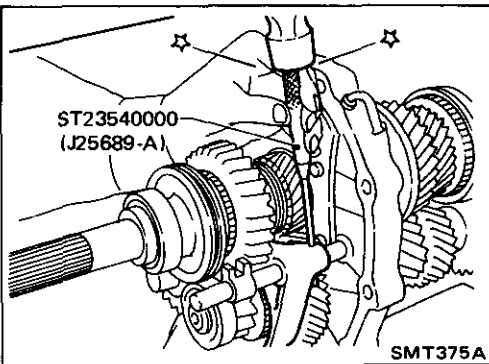


3. Remove check ball plug, check ball and return spring.



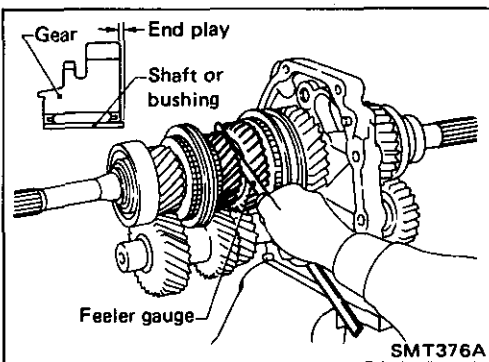
4. Drive out retaining pin from striking lever.

5. While pulling out striking rod, remove striking lever and striking interlock. Then remove 1st & 2nd, 3rd & 4th and reverse shift fork.



6. Drive out retaining pin from O.D. shift fork.

7. Pull out O.D. fork rod and then remove O.D. shift fork.



Gear Components

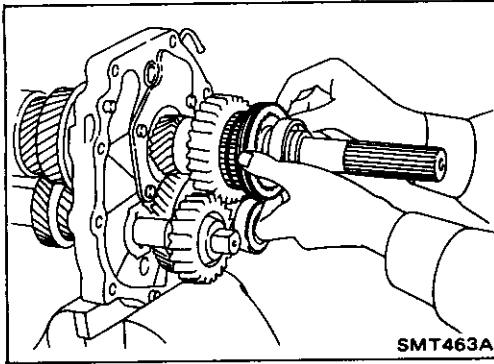
1. Before removing gears and shafts, measure each gear end play.

Gear	End play mm (in)
1st main gear	0.23 - 0.33 (0.0091 - 0.0130)
2nd main gear	0.23 - 0.33 (0.0091 - 0.0130)
3rd main gear	0.23 - 0.33 (0.0091 - 0.0130)
O.D. counter gear	0.23 - 0.33 (0.0091 - 0.0130)
Reverse main gear	0.33 - 0.43 (0.0130 - 0.0169)

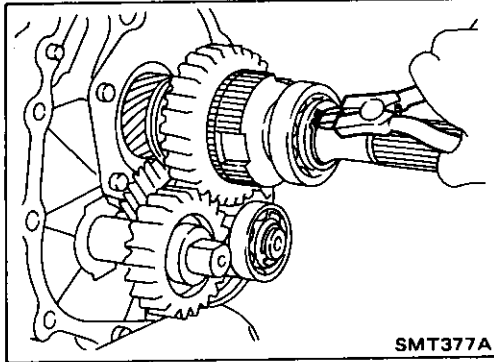
- If not within specification, disassemble and check contact surface of gear to hub, washer, bushing, needle bearing and shaft.

DISASSEMBLY

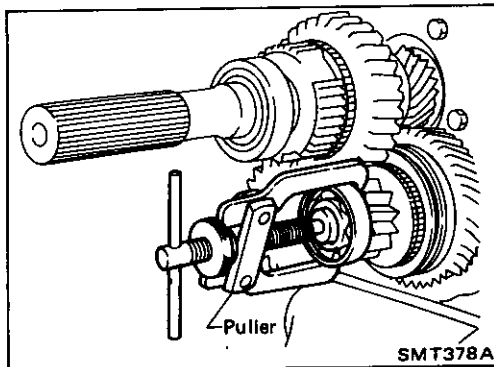
Gear Components (Cont'd)



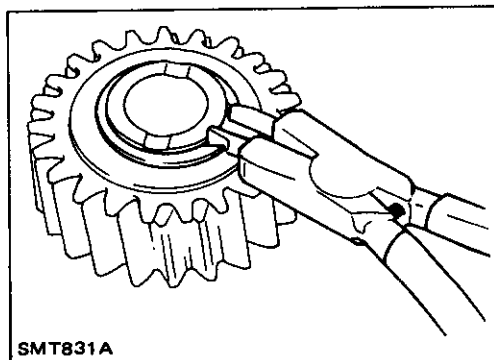
2. Remove rear side components on mainshaft and counter gear.
 - a. Remove snap ring, speedometer drive gear and steel ball.
 - b. Remove reverse coupling sleeve.



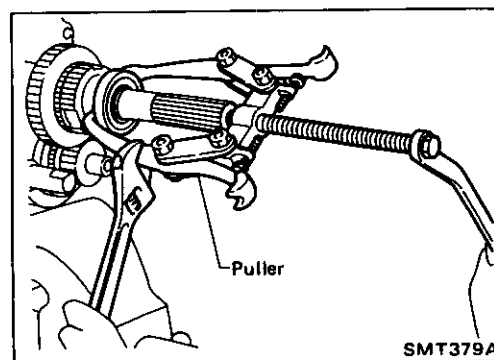
- c. Remove mainshaft rear snap ring and counter gear rear snap ring.
- d. Remove C-ring holder and mainshaft C-rings from mainshaft. Use punch and hammer to remove C-rings.



- e. Pull out counter gear rear end bearing.
- f. Remove reverse idler gear and reverse idler thrust washers.



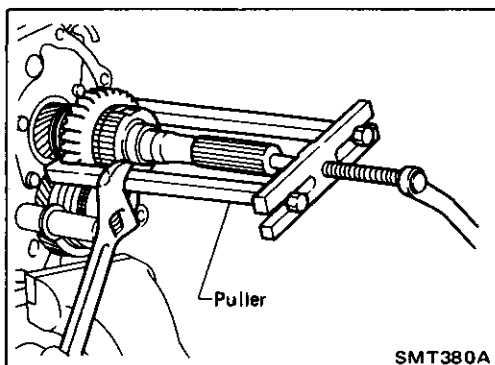
- g. Remove sub-gear from reverse idler gear.



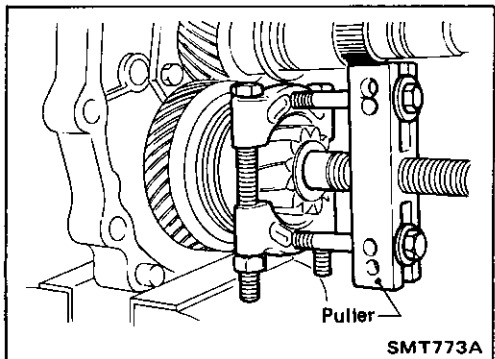
- h. Pull out mainshaft rear bearing (2WD model).

DISASSEMBLY

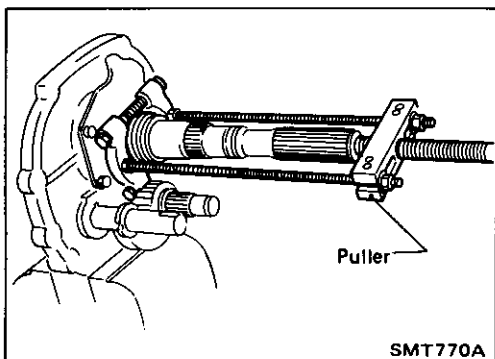
Gear Components (Cont'd)



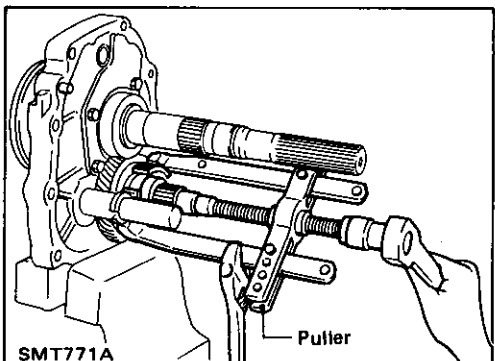
- i. Pull out reverse main gear together with mainshaft spacer and reverse synchronizer hub. Then remove reverse gear needle bearings.



- j. Pull out reverse counter gear.
k. Remove O.D. coupling sleeve together with O.D. baulk ring, reverse baulk ring and spring inserts.



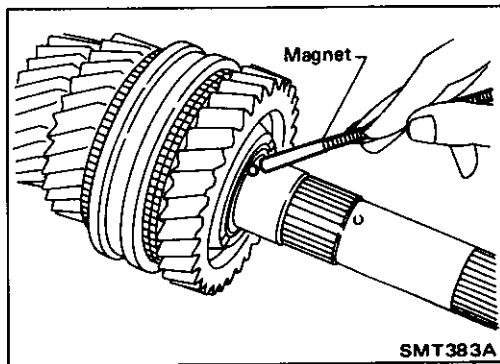
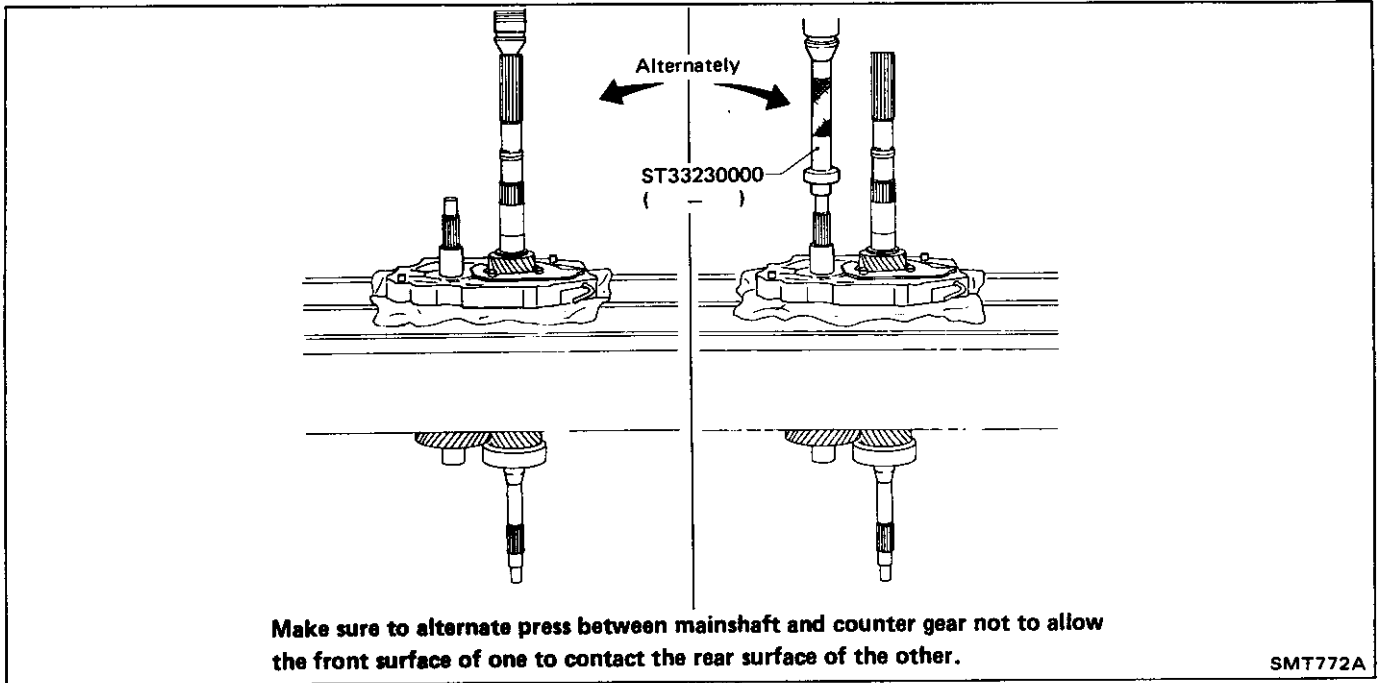
- l. Pull out reverse gear bushing.



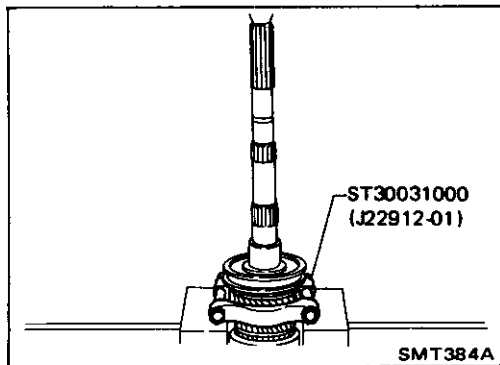
- m. Pull out O.D. counter gear together with reverse cone.

Gear Components (Cont'd)

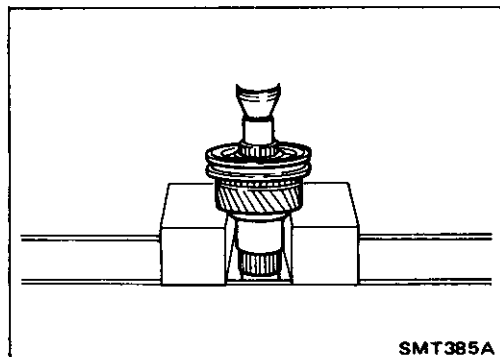
3. Press out mainshaft and counter gear alternately.



4. Remove front side components on mainshaft.
- a. Remove 1st gear washer and steel ball.
 - b. Remove 1st main gear and 1st gear needle bearing.



- c. Press out 2nd main gear together with 1st gear bushing and 1st & 2nd synchronizer assembly.
- d. Remove mainshaft front snap ring.

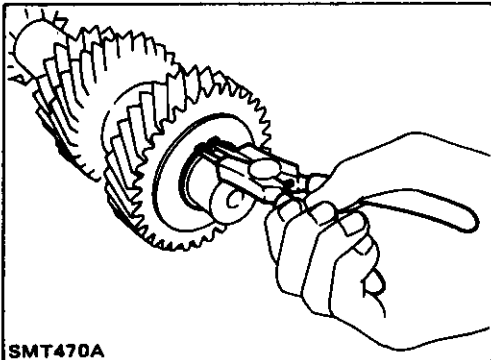
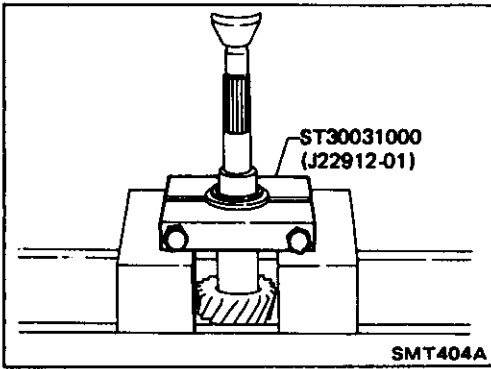


- e. Press out 3rd main gear together with 3rd & 4th synchronizer assembly and 3rd gear needle bearing.

Gear Components (Cont'd)

5. Remove front side components on counter gear.

a. Remove counter gear rear thrust bearing.

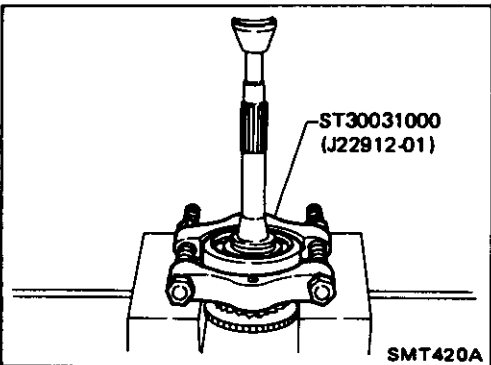


b. Remove sub gear components.

6. Remove main drive gear bearing.

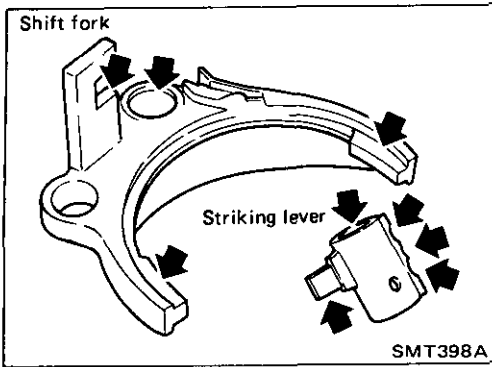
a. Remove main drive gear snap ring and spacer.

b. Press out main drive gear bearing.



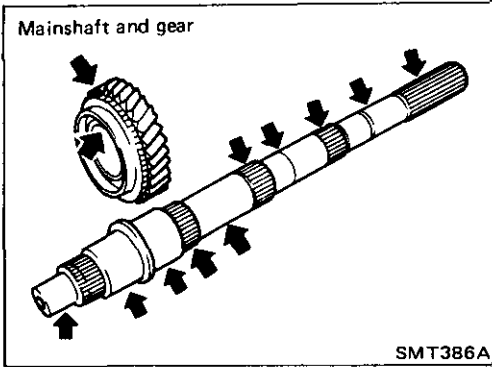
7. Remove bearings from case components.

<p>Counter gear front bearing in transmission case</p> <p>SMT388A</p>	<p>Mainshaft front bearing in adapter plate</p> <p>SMT396A</p>
<p>Counter gear rear bearing in adapter plate</p> <p>SMT394A</p>	



Shift Control Components

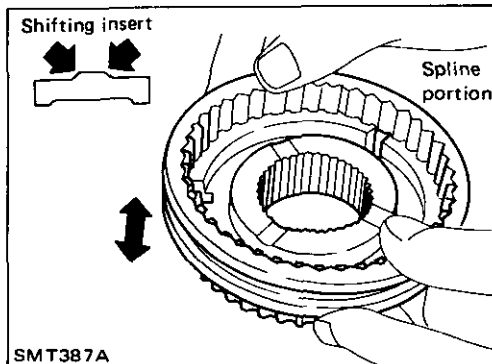
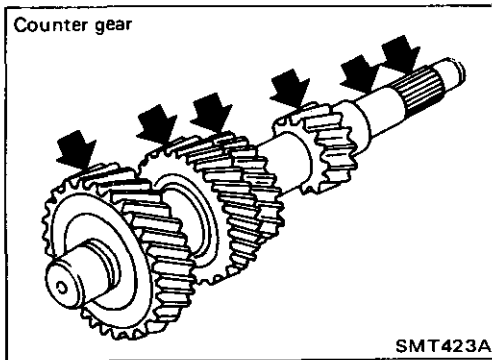
- Check contact surface and sliding surface for wear, scratches, projections or other damage.



Gear Components

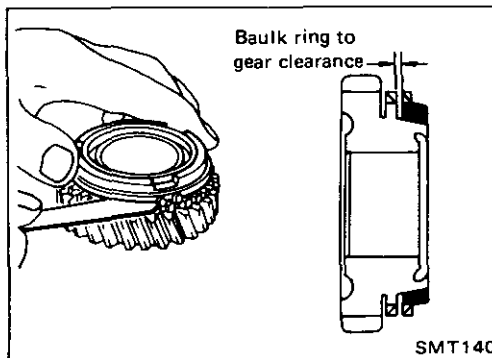
GEARS AND SHAFTS

- Check shafts for cracks, wear or bending.
- Check gears for excessive wear, chips or cracks.



SYNCHRONIZERS

- Check spline portion of coupling sleeves, hubs, and gears for wear or cracks.
- Check baulk rings for cracks or deformation.
- Check shifting inserts for wear or deformation.
- Check insert springs for deformation.



Clearance between baulk ring and gear

Unit: mm (in)

	Standard	Wear limit
1st & 2nd	1.05 - 1.3 (0.0413 - 0.0512)	0.7 (0.028)
3rd & main drive	1.05 - 1.3 (0.0413 - 0.0512)	0.7 (0.028)
O.D.	1.05 - 1.3 (0.0413 - 0.0512)	0.7 (0.028)

If the clearance is smaller than the wear limit, replace baulk ring.

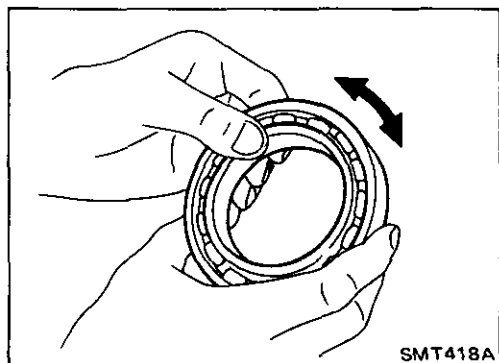
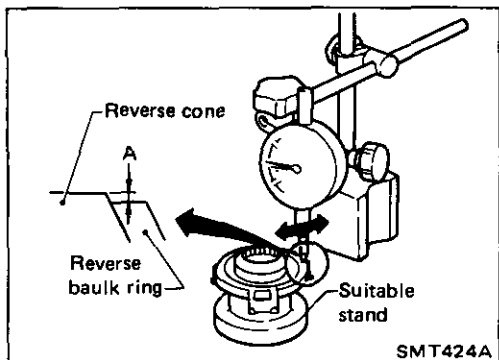
Gear Components (Cont'd)

- Measure wear of reverse baulk ring.
 - a. Place baulk ring in position on reverse cone.
 - b. While holding baulk ring against reverse cone as far as it will go, measure dimension "A" with dial indicator.

Unit: mm (in)

	Standard	Wear limit
Dimension "A"	-0.1 to 0.35 (-0.0039 to 0.0138)	0.7 (0.028)

- c. If dimension "A" is larger than the wear limit, replace baulk ring.



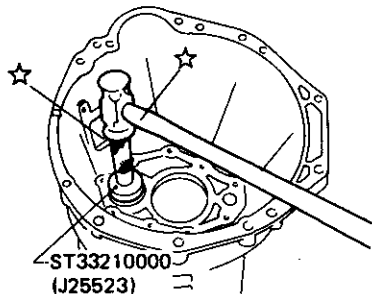
BEARINGS

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

Gear Components

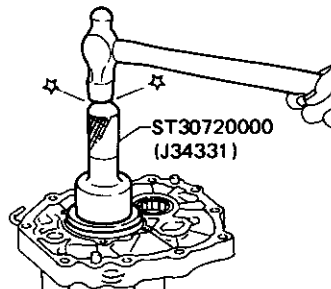
1. Install bearings into case components.

Counter gear front bearing in transmission case



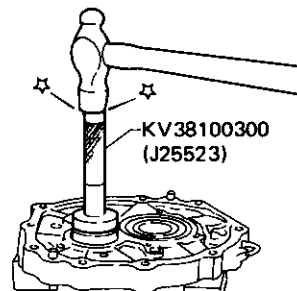
SMT389A

Mainshaft front bearing in adapter plate



SMT397A

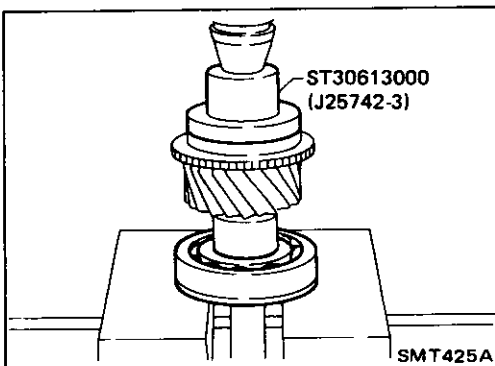
Counter gear rear bearing in adapter plate



SMT395A

2. Install main drive gear bearing.

- a. Press main drive gear bearing.
- b. Install main drive gear spacer.



SMT425A

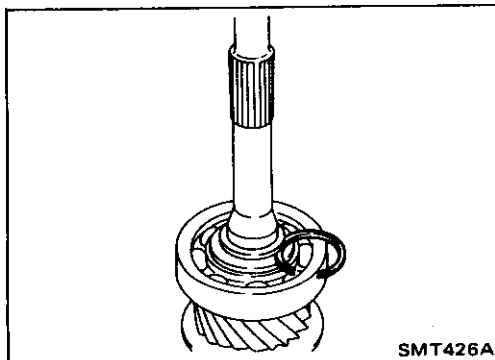
- c. Select proper main drive gear snap ring to minimize clearance of groove.

Allowable clearance of groove:

0 - 0.1 mm (0 - 0.004 in)

Main drive gear snap ring

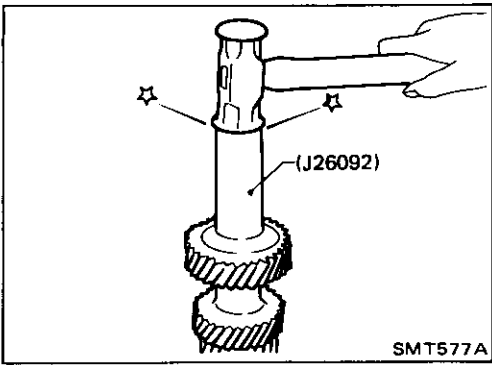
Thickness mm (in)	Part number
1.89 (0.0744)	32204-01G00
1.98 (0.0780)	32204-01G01
2.05 (0.0807)	32204-01G02
2.12 (0.0835)	32204-01G03
2.19 (0.0862)	32204-01G04



SMT426A

- d. Install selected snap ring on main drive gear.

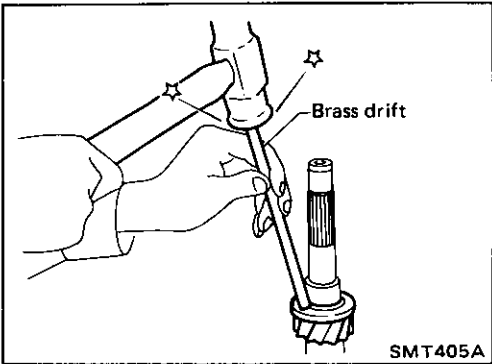
Gear Components (Cont'd)



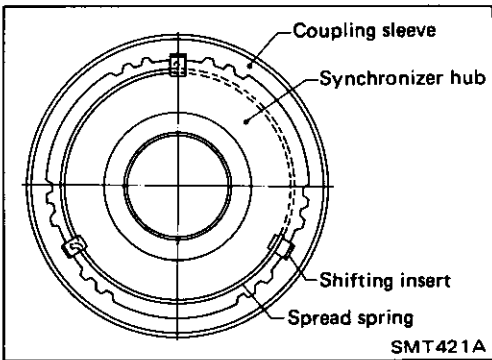
3. Install components on counter gear.

a. Install sub-gear components.

When installing sub-gear snap ring, tap sub-gear snap ring into position on counter gear.

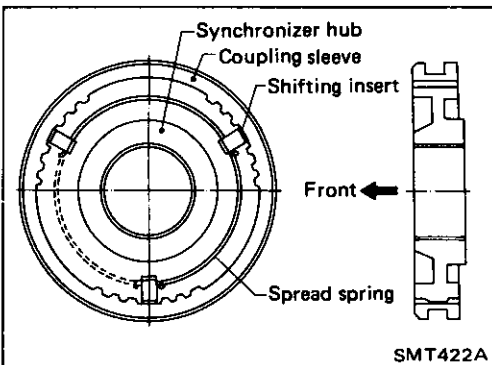


b. Install counter gear rear thrust bearing.

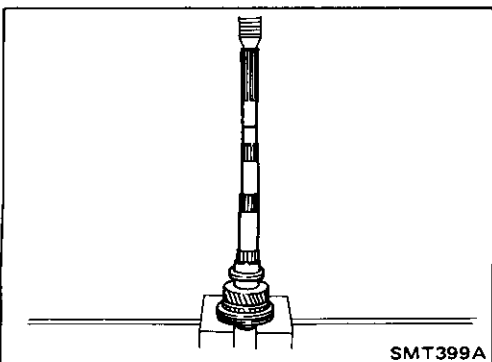


4. Install front side components on mainshaft.

a. Assemble 1st & 2nd synchronizer.



b. Assemble 3rd & 4th synchronizer.



c. Press on 3rd & 4th synchronizer assembly together with 3rd main gear and 3rd gear needle bearing.

Pay attention to direction of synchronizer assembly.

Gear Components (Cont'd)

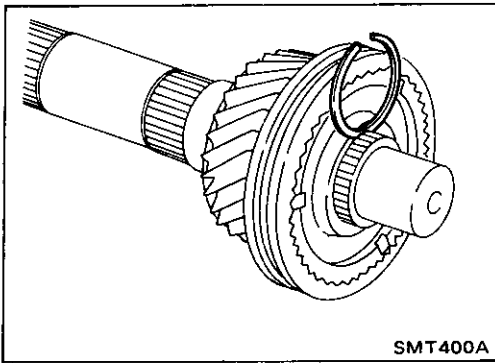
d. Select proper snap ring to minimize clearance of groove.

Allowable clearance of groove:

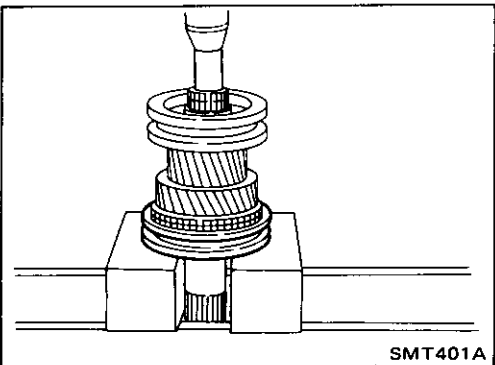
0 - 0.1 mm (0 - 0.004 in)

Mainshaft front snap ring

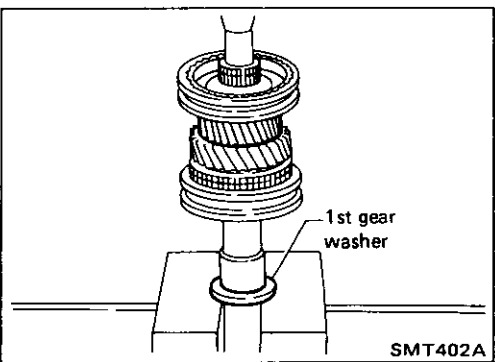
Thickness mm (in)	Part number
1.89 (0.0744)	32204-01G00
1.98 (0.0780)	32204-01G01
2.05 (0.0807)	32204-01G02
2.12 (0.0835)	32204-01G03
2.19 (0.0862)	32204-01G04



e. Install selected snap ring on mainshaft.

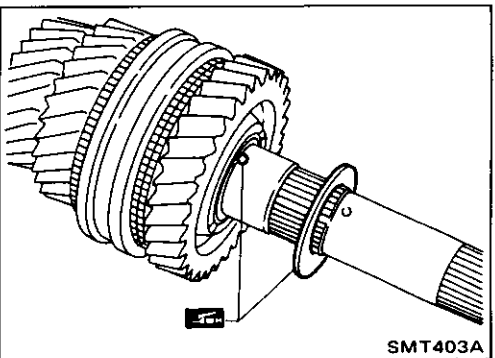


f. Press on 1st & 2nd synchronizer assembly together with 2nd main gear and 2nd gear needle bearing.



g. Press on 1st gear bushing using 1st gear washer.

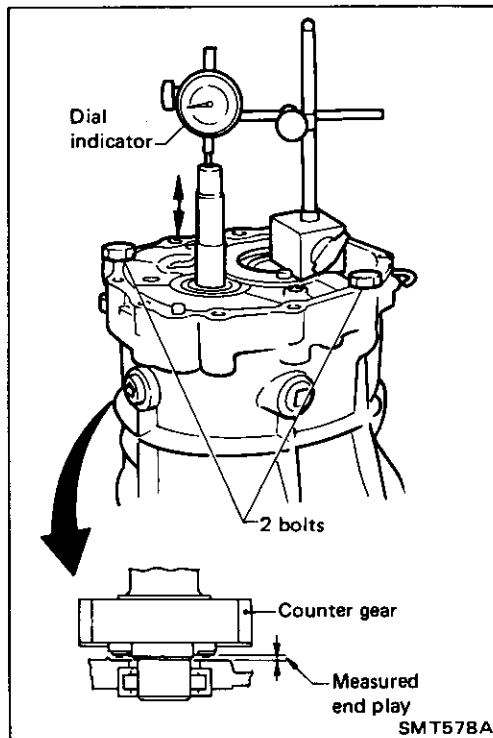
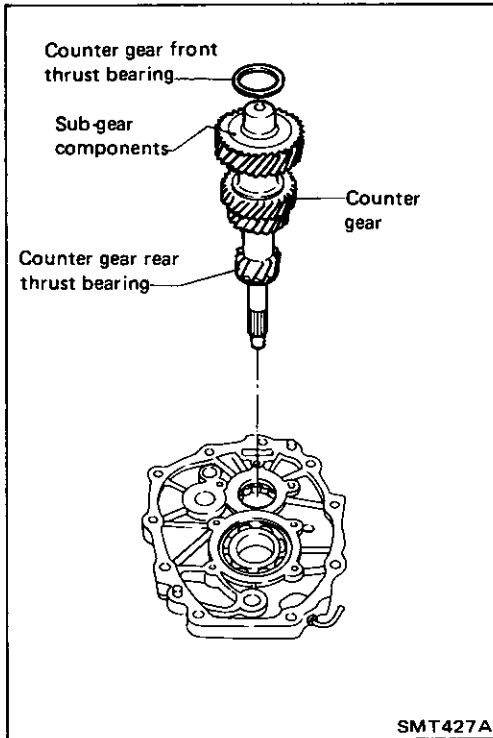
h. Install 1st main gear and needle bearing.



i. Install steel ball and 1st gear washer.

Apply multi-purpose grease to steel ball and 1st gear washer before installing.

Gear Components (Cont'd)



5. Select proper counter gear front bearing shim when replacing transmission case, counter gear, counter gear thrust bearing or sub-gear components.
 - a. Install counter gear with sub-gear components, counter gear front and rear thrust bearing on adapter plate.
 - b. Remove counter gear front bearing shim from transmission case.
 - c. Place adapter plate and counter gear assembly in transmission case (case inverted).
 - d. Tighten adapter plate to transmission case using 2 bolts.
 - e. Place dial indicator on rear end of counter gear.
 - f. Move counter gear up and down and measure dial indicator deflection.
 - g. Select proper shim using table below as a guide.

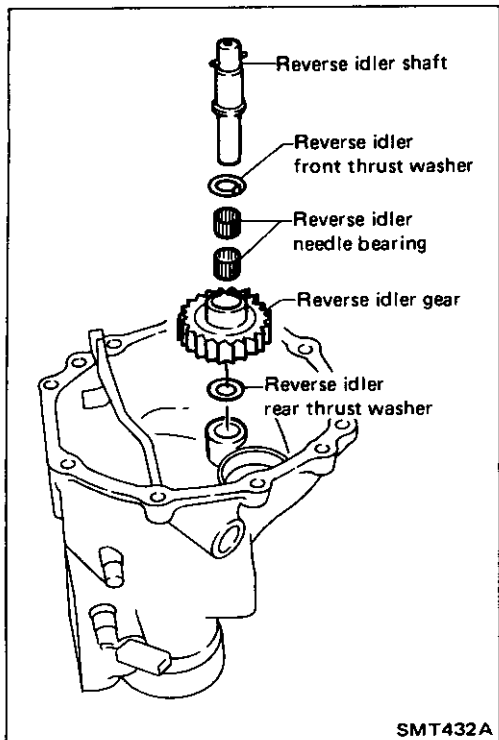
Counter gear end play:

0.10 - 0.25 mm (0.0039 - 0.0098 in)

Table for selecting proper counter gear front bearing shim

Dial indicator deflection mm (in)	Thickness of proper washer mm (in)	Part number
0.93 - 1.02 (0.0366 - 0.0402)	0.8 (0.031)	32218-01G00
1.03 - 1.12 (0.0406 - 0.0441)	0.9 (0.035)	32218-01G01
1.13 - 1.22 (0.0445 - 0.0480)	1.0 (0.039)	32218-01G02
1.23 - 1.32 (0.0484 - 0.0520)	1.1 (0.043)	32218-01G03
1.33 - 1.42 (0.0524 - 0.0559)	1.2 (0.047)	32218-01G04
1.43 - 1.52 (0.0563 - 0.0598)	1.3 (0.051)	32218-01G05
1.53 - 1.62 (0.0602 - 0.0638)	1.4 (0.055)	32218-01G06

Gear Components (Cont'd)

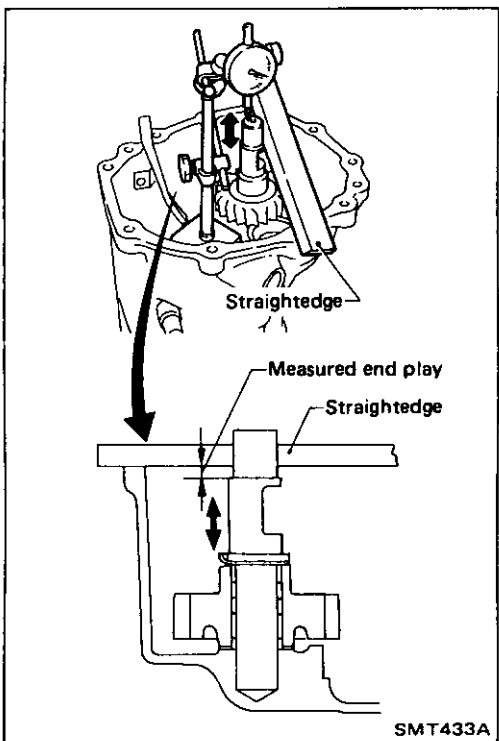


6. Select proper reverse idler rear thrust washer when replacing rear extension, reverse idler gear, reverse idler shaft or reverse idler thrust washer.
 - a. Install reverse idler gear, reverse idler needle bearings, reverse idler thrust washers and reverse idler shaft into rear extension.

When replacing reverse idler rear washer, install either A or B.

Reverse idler rear thrust washer

	Thickness mm (in)	Part number
A	1.97 (0.0776)	32284-01G10
B	2.07 (0.0815)	32284-01G11



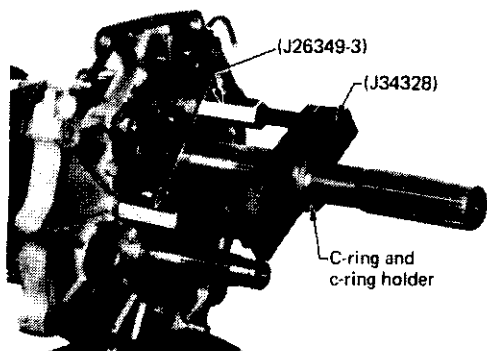
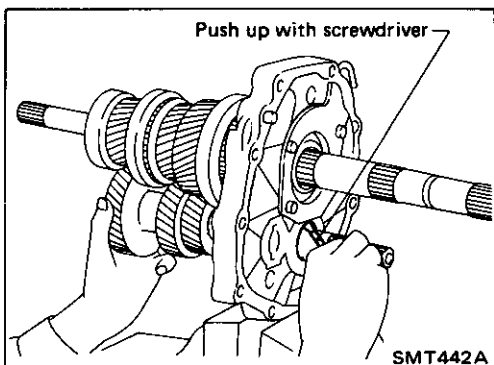
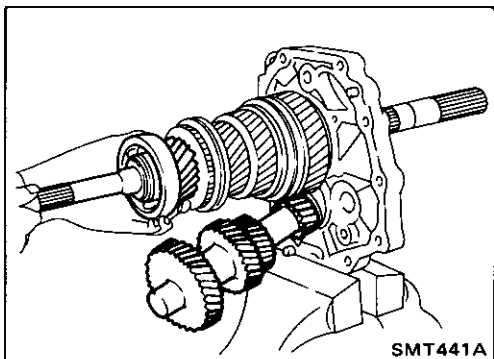
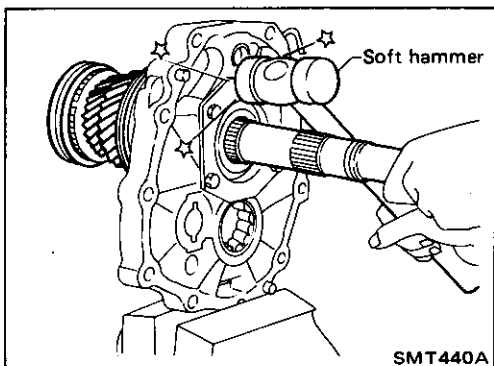
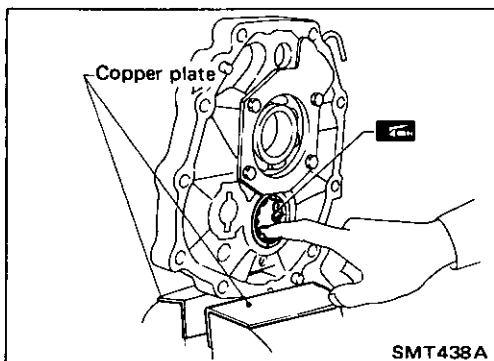
- b. Place dial indicator on front end of reverse idler shaft.
- c. Put straightedge on front surface of rear extension as a stopper of reverse idler shaft.
- d. Move reverse idler shaft up and down and measure reverse idler gear end play.

Reverse idler gear end play:

0.30 - 0.53 mm (0.0118 - 0.0209 in)

- e. If not within specification, replace reverse idler rear thrust washer with the other (A or B) and check again.

Gear Components (Cont'd)

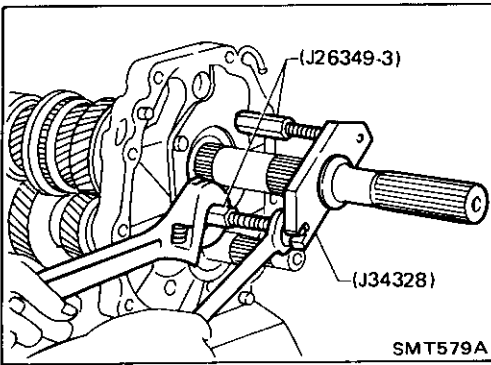


7. Install mainshaft and counter gear on adapter plate and main drive gear on mainshaft.
 - a. Mount adapter plate on vise and apply multi-purpose grease to counter gear rear bearing.
 - b. Install mainshaft a little on mainshaft front bearing. **To allow for installation of counter gear, do not install mainshaft completely.**
 - c. Install counter gear on counter gear rear bearing and install main drive gear, pilot bearing and spacer on mainshaft.

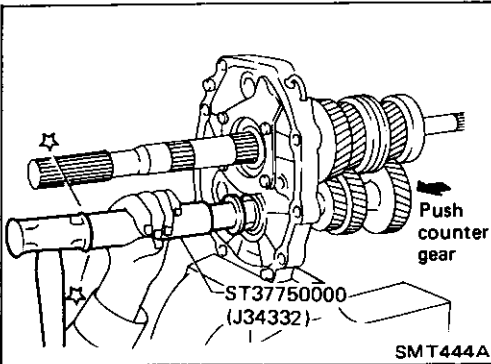
When installing counter gear into counter gear rear bearing, push up on upper roller of counter gear rear bearing with screwdriver.

- d. Install Tools (J26349-3) onto adapter plate and C-ring and C-ring holder on mainshaft.
- e. Install Tool (J34328) on mainshaft.

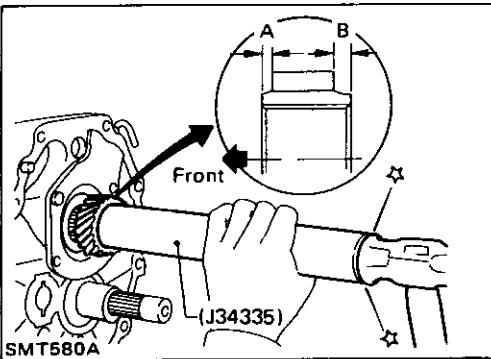
Gear Components (Cont'd)



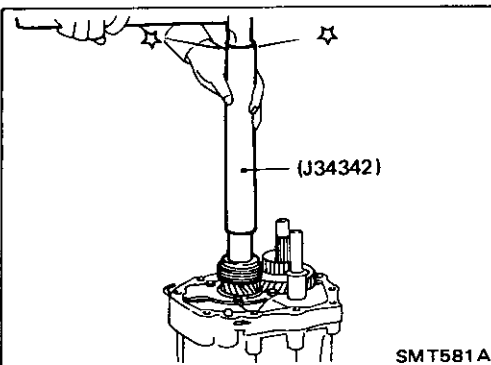
- f. Install mainshaft and counter gear completely by extending length of J26349-3.



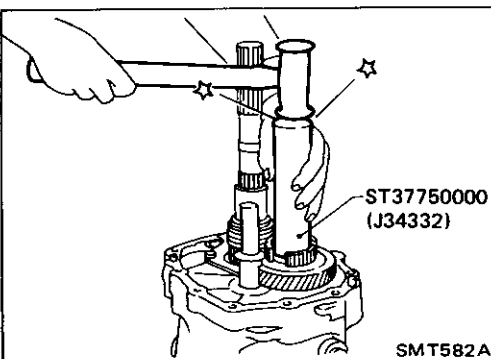
8. Install rear side components on mainshaft and counter gear.
a. Install O.D. gear bushing while pushing on the front of counter gear.



- b. Install O.D. main gear.
Pay attention to direction of O.D. main gear. (B is wider than A as shown at left.)
c. Install adapter plate with gear assembly onto transmission case.
d. Install O.D. gear needle bearing and then install O.D. counter gear and reverse idler shaft.

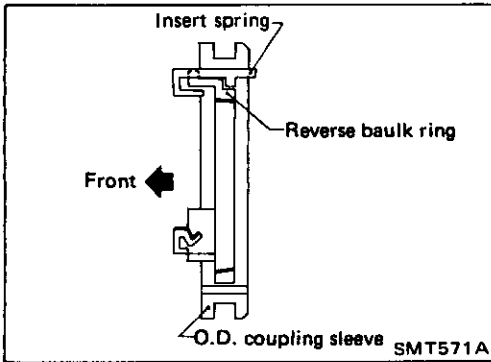


- e. Install reverse gear bushing.



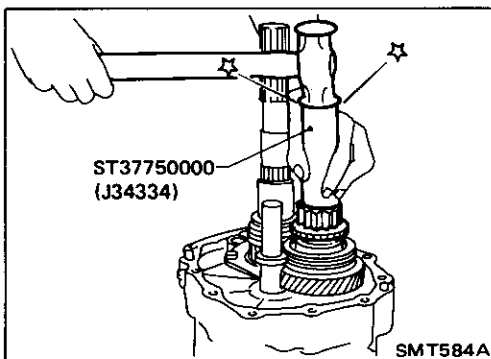
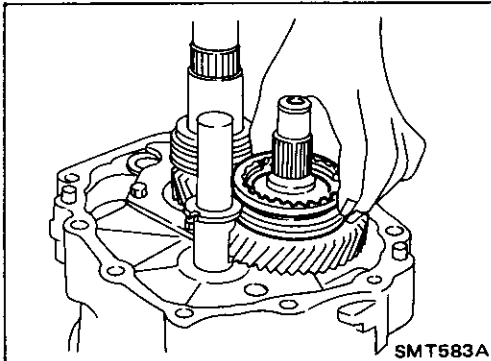
- f. Install reverse cone.

Gear Components (Cont'd)

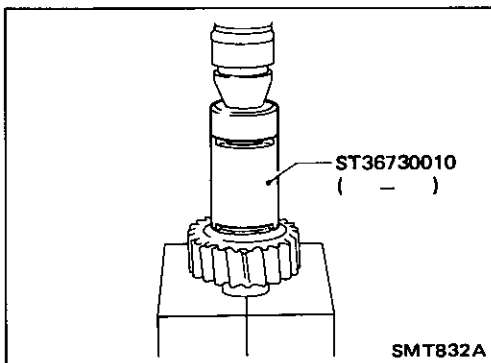


- g. Install insert springs and reverse baulk ring on O.D. coupling sleeve. Then install them and O.D. baulk ring on O.D. counter gear.

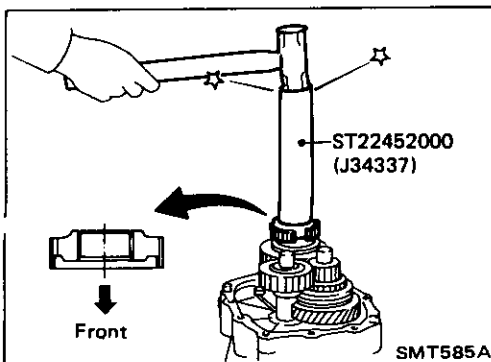
Pay attention to direction of O.D. coupling sleeve.



- h. Install reverse counter gear.



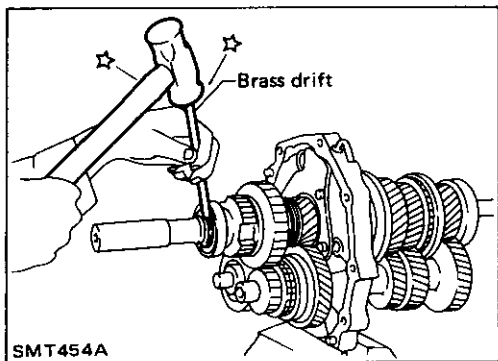
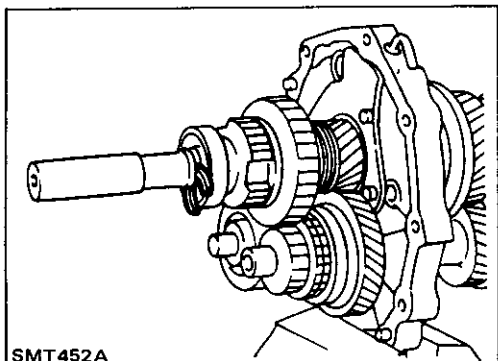
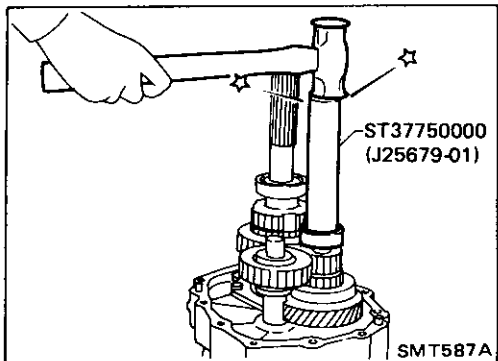
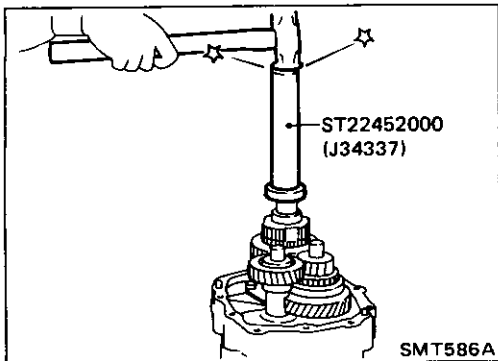
- i. Install sub-gear on reverse idler gear.
j. Install reverse gear needle bearing and then install reverse main gear, reverse idler gear and reverse idler thrust washers.



- k. Install reverse hub.
Pay attention to its direction.

Gear Components (Cont'd)

- l. Install mainshaft spacer and mainshaft rear bearing.
- m. Install speedometer drive gear.



- n. Install counter gear rear end bearing.
- o. Separate adapter plate from transmission case and Mount adapter plate on vice again.

- p. Select proper mainshaft C-ring to minimize clearance of groove.

**Allowable clearance of groove:
0 - 0.1 mm (0 - 0.004 in)**

Mainshaft C-ring

Thickness mm (in)	Part number	Thickness mm (in)	Part number
2.63 (0.1035)	32348-01G15	3.19 (0.1256)	32348-01G07
2.70 (0.1063)	32348-01G00	3.26 (0.1283)	32348-01G08
2.77 (0.1091)	32348-01G01	3.33 (0.1311)	32348-01G09
2.84 (0.1118)	32348-01G02	3.40 (0.1339)	32348-01G10
2.91 (0.1146)	32348-01G03	3.47 (0.1366)	32348-01G11
2.98 (0.1173)	32348-01G04	3.54 (0.1394)	32348-01G12
3.05 (0.1201)	32348-01G05	3.61 (0.1421)	32348-01G13
3.12 (0.1228)	32348-01G06	3.68 (0.1449)	32348-01G14

- q. Install selected C-ring, C-ring holder and mainshaft rear snap ring.

ASSEMBLY

Gear Components (Cont'd)

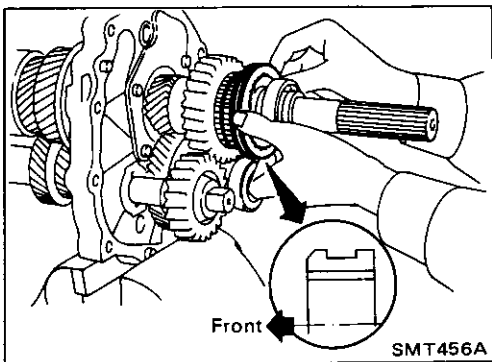
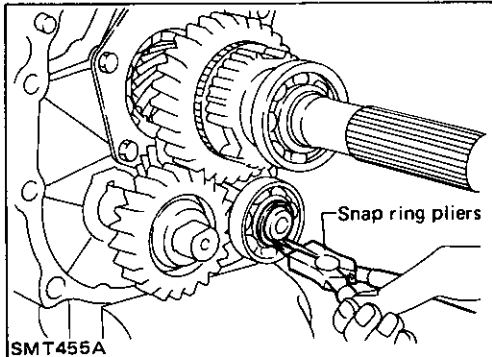
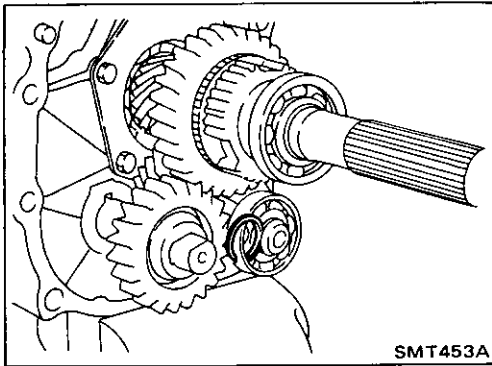
- r. Install spacer and then select proper counter gear rear snap ring to minimize clearance of groove.

Allowable clearance of groove:

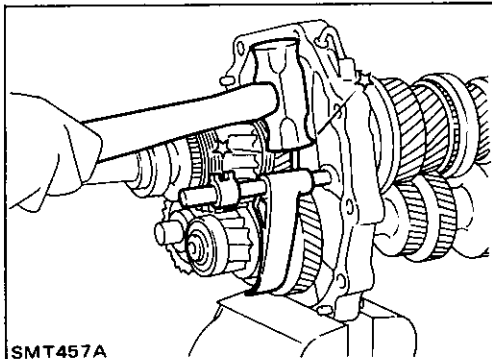
0 - 0.1 mm (0 - 0.004 in)

Counter gear rear snap ring

Thickness mm (in)	Part number
1.26 (0.0496)	32236-01G08
1.32 (0.0520)	32236-01G00
1.38 (0.0543)	32236-01G01
1.44 (0.0567)	32236-01G02
1.50 (0.0591)	32236-01G03
1.56 (0.0614)	32236-01G04
1.62 (0.0638)	32236-01G05
1.68 (0.0661)	32236-01G06
1.74 (0.0685)	32236-01G07

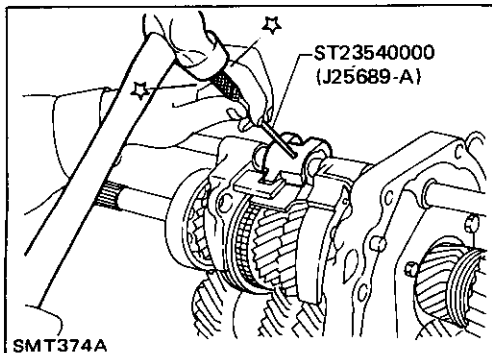


- s. Install selected counter gear rear snap ring.
- t. Install reverse coupling sleeve.
Pay attention to its direction.
- u. Measure each gear end play as a final check – Refer to "DISASSEMBLY".



Shift Control Components

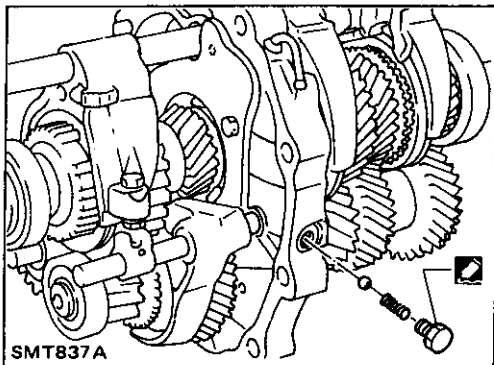
1. Install O.D. fork rod and O.D. shift fork. Then install retaining pin into O.D. shift fork.
2. Install 1st & 2nd, 3rd & 4th and reverse shift fork onto coupling sleeve.



3. Install striking rod into hole of shift forks, striking lever and interlock and then install retaining pin into striking lever.
Make sure that striking rod moves smoothly.

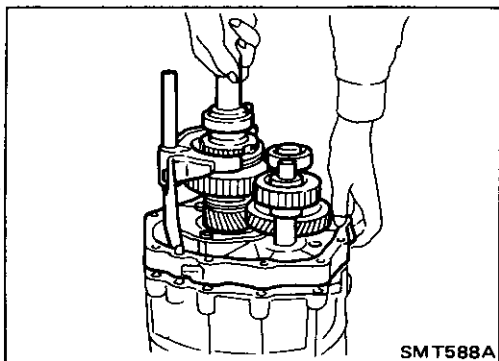
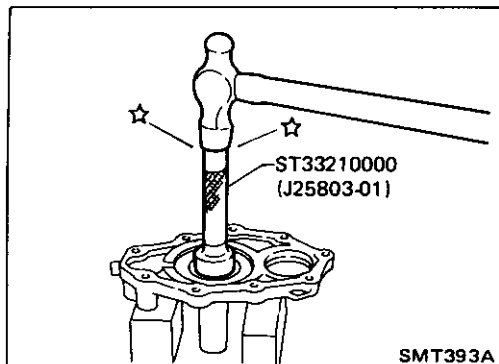
Shift Control Components (Cont'd)

4. Install check ball, return spring and check ball plug.
Apply sealant to thread of check ball plug.

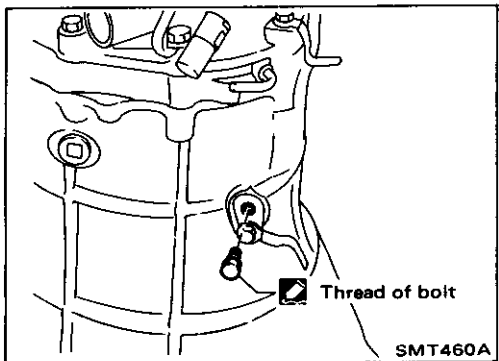


Case Components

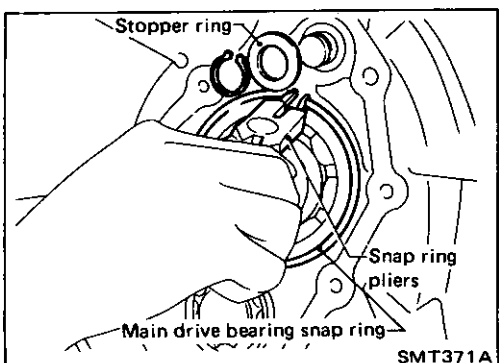
1. Install front cover oil seal.
Apply multi-purpose grease to seal lip.
2. Install selected counter gear front bearing shim onto transmission case.
Apply multi-purpose grease.
3. Apply sealant to mating surface of transmission case.
4. Install gear assembly onto transmission case.
5. Install check spring and check ball into interlock stopper.
Apply multi-purpose grease to check ball.



6. Install interlock stopper assembly and then tighten check ball plug.
Apply sealant to thread of check ball plug.



7. Install stopper ring and main drive bearing snap ring.

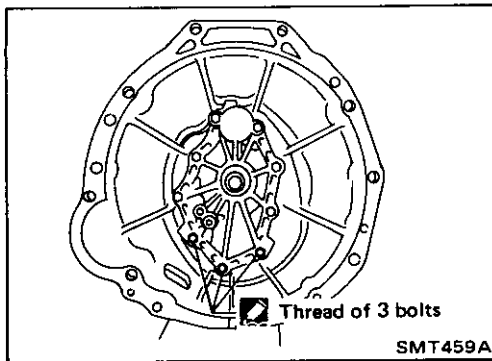


Case Components (Cont'd)

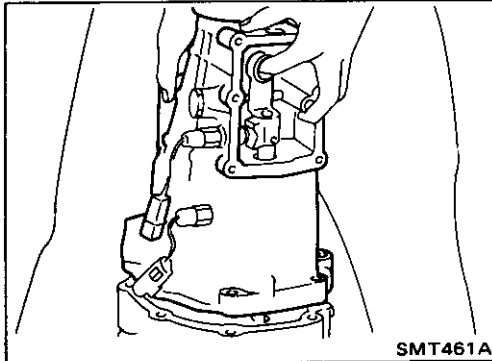
8. Install front cover and gasket.

Apply sealant to thread of 3 bolts shown left.

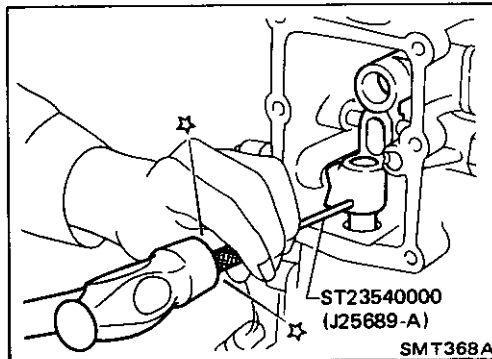
9. Apply sealant to mating surface of adapter plate.



10. Install rear extension together with striking arm.

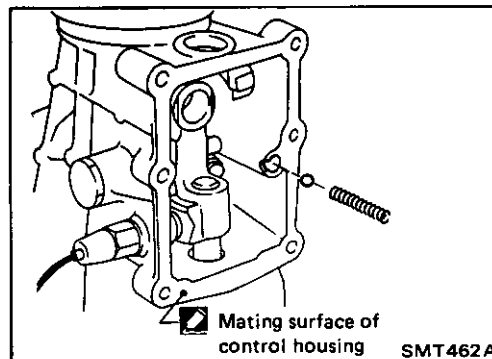


11. Install retaining pin into striking arm.



12. Install return spring and check ball and then install control housing.

Apply sealant to mating surface of rear extension.



13. Tighten control housing bolts.

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

General Specifications

Engine	VG30E	
Transmission model	FS5W71C	
Shift pattern		
Synchromesh type	Warner	
Gear ratio		
1st		3.321
2nd		1.902
3rd		1.308
4th		1.000
O.D.		0.759
Reverse		3.382
Number of teeth		
Main drive gear		22
Main gear		
1st		33
2nd		27
3rd		26
O.D.		21
Reverse		36
Counter drive gear		31
Counter gear		
1st		14
2nd		20
3rd		28
O.D.		39
Reverse		15
Reverse idler gear		21
Oil capacity	liter (US pt, Imp pt)	2.0 (4-1/4, 3-1/2)

Engine	VG30ET	
Transmission model	FS5R30A	
Shift pattern		
Synchromesh type	Warner	
Gear ratio		
1st		3.324
2nd		2.077
3rd		1.360
4th		1.000
O.D.		0.711
Reverse		3.636
Number of teeth		
Main drive gear		22
Main gear		
1st		32
2nd		30
3rd		29
O.D.		22
Reverse		30
Counter drive gear		32
Counter gear		
1st		14
2nd		21
3rd		31
O.D.		45
Reverse		12
Reverse idler gear		22
Oil capacity	liter (US pt, Imp pt)	2.4 (5-1/8, 4-1/4)

Inspection and Adjustment — FS5W71C

GEAR END PLAY

Gear	End play mm (in)
1st gear	0.31 - 0.41 (0.0122 - 0.0161)
2nd gear	0.11 - 0.21 (0.0043 - 0.0083)
3rd gear	0.11 - 0.21 (0.0043 - 0.0083)
O.D. gear	0.24 - 0.41 (0.0094 - 0.0161)

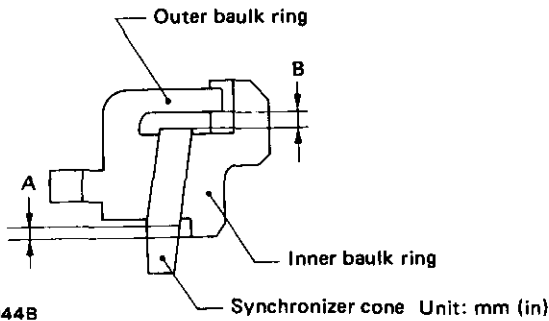
CLEARANCE BETWEEN BAULK RING AND GEAR

1st, 3rd, main drive and O.D. baulk ring

Unit: mm (in)

	Standard	Wear limit
1st	1.2 - 1.6 (0.047 - 0.063)	0.8 (0.031)
3rd		
Main drive		
O.D.		

2nd baulk ring



Dimension	Standard	Wear limit
A	0.7 - 0.9 (0.028 - 0.035)	0.2 (0.008)
B	0.6 - 1.1 (0.024 - 0.043)	0.2 (0.008)

AVAILABLE SNAP RINGS

Main drive gear bearing

Allowable clearance		0 - 0.13 mm (0 - 0.0051 in)	
Thickness mm (in)	Part number		
1.73 (0.0681)	32204-78005		
1.80 (0.0709)	32204-78000		
1.87 (0.0736)	32204-78001		
1.94 (0.0764)	32204-78002		
2.01 (0.0791)	32204-78003		
2.08 (0.0819)	32204-78004		

Mainshaft front

Allowable clearance		0 - 0.18 mm (0 - 0.0071 in)	
Thickness mm (in)	Part number		
2.4 (0.094)	32263-V5200		
2.5 (0.098)	32263-V5201		
2.6 (0.102)	32263-V5202		

Mainshaft rear end bearing

Allowable clearance		0 - 0.14 mm (0 - 0.0055 in)	
Thickness mm (in)	Part number		
1.1 (0.043)	32228-20100		
1.2 (0.047)	32228-20101		
1.3 (0.051)	32228-20102		
1.4 (0.055)	32228-20103		

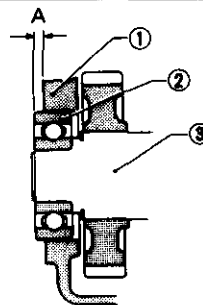
Counter drive gear

Allowable clearance		0 - 0.18 mm (0 - 0.0071 in)	
Thickness mm (in)	Part number		
1.4 (0.055)	32215-E9000		
1.5 (0.059)	32215-E9001		
1.6 (0.063)	32215-E9002		

AVAILABLE SHIMS

Counter front bearing

Unit: mm (in)



A: Distance from bearing surface to transmission case

- 1 Transmission case
- 2 Counter gear front bearing
- 3 Counter gear

"A"	Thickness of shim	Part number
4.52 - 4.71 (0.1780 - 0.1854)	Not necessary	
4.42 - 4.51 (0.1740 - 0.1776)	0.1 (0.004)	32218-V5000
4.32 - 4.41 (0.1701 - 0.1736)	0.2 (0.008)	32218-V5001
4.22 - 4.31 (0.1661 - 0.1697)	0.3 (0.012)	32218-V5002
4.12 - 4.21 (0.1622 - 0.1657)	0.4 (0.016)	32218-V5003
4.02 - 4.11 (0.1583 - 0.1618)	0.5 (0.020)	32218-V5004
3.92 - 4.01 (0.1543 - 0.1579)	0.6 (0.024)	32218-V5005

Inspection and Adjustment — FS5R30A

GEAR END PLAY

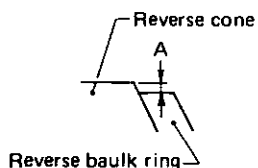
Gear	End play mm (in)
1st main gear	0.23 - 0.33 (0.0091 - 0.0130)
2nd main gear	0.23 - 0.33 (0.0091 - 0.0130)
3rd main gear	0.23 - 0.33 (0.0091 - 0.0130)
O.D. counter gear	0.23 - 0.33 (0.0091 - 0.0130)
Reverse main gear	0.33 - 0.43 (0.0130 - 0.0169)
Counter gear	0.10 - 0.25 (0.0039 - 0.0098)
Reverse idler gear	0.30 - 0.53 (0.0118 - 0.0209)

CLEARANCE BETWEEN BAULK RING AND GEAR

Unit: mm (in)

	Standard	Wear limit
1st & 2nd	1.05 - 1.3 (0.0413 - 0.0512)	0.7 (0.028)
3rd & main drive	1.05 - 1.3 (0.0413 - 0.0512)	0.7 (0.028)
O.D.	1.05 - 1.3 (0.0413 - 0.0512)	0.7 (0.028)

DISTANCE BETWEEN REAR SURFACE OF REVERSE CONE AND REVERSE BAULK RING



Unit: mm (in)

	Standard	Wear limit
Dimension "A"	-0.1 to 0.35 (-0.0039 to 0.0138)	0.7 (0.028)

AVAILABLE SNAP RING

Main drive gear snap ring

Allowable clearance 0 - 0.1 mm (0 - 0.004 in)	
Thickness mm (in)	Part number
1.89 (0.0744)	32204-01G00
1.98 (0.0780)	32204-01G01
2.05 (0.0807)	32204-01G02
2.12 (0.0835)	32204-01G03
2.19 (0.0862)	32204-01G04

Mainshaft front snap ring

Allowable clearance 0 - 0.1 mm (0 - 0.004 in)	
Thickness mm (in)	Part number
1.89 (0.0744)	32204-01G00
1.98 (0.0780)	32204-01G01
2.05 (0.0807)	32204-01G02
2.12 (0.0835)	32204-01G03
2.19 (0.0862)	32204-01G04

Counter gear rear snap ring

Allowable clearance 0 - 0.1 mm (0 - 0.004 in)	
Thickness mm (in)	Part number
1.26 (0.0496)	32236-01G08
1.32 (0.0520)	32236-01G00
1.38 (0.0543)	32236-01G01
1.44 (0.0567)	32236-01G02
1.50 (0.0591)	32236-01G03
1.56 (0.0614)	32236-01G04
1.62 (0.0638)	32236-01G05
1.68 (0.0661)	32236-01G06
1.74 (0.0685)	32236-01G07

AVAILABLE C-RING

Mainshaft C-ring

Allowable clearance 0 - 0.1 mm (0 - 0.004 in)			
Thickness mm (in)	Part number	Thickness mm (in)	Part number
2.63 (0.1035)	32348-01G15	3.19 (0.1256)	32348-01G07
2.70 (0.1063)	32348-01G00	3.26 (0.1283)	32348-01G08
2.77 (0.1091)	32348-01G01	3.33 (0.1311)	32348-01G09
2.84 (0.1118)	32348-01G02	3.40 (0.1339)	32348-01G10
2.91 (0.1146)	32348-01G03	3.47 (0.1366)	32348-01G11
2.98 (0.1173)	32348-01G04	3.54 (0.1394)	32348-01G12
3.05 (0.1201)	32348-01G05	3.61 (0.1421)	32348-01G13
3.12 (0.1228)	32348-01G06	3.68 (0.1449)	32348-01G14

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

Inspection and Adjustment — FS5R30A (Cont'd)

AVAILABLE SHIM AND WASHER Table for selecting proper counter gear front bearing shim

Dial indicator deflection mm (in)	Thickness of proper washer mm (in)	Part number
0.93 - 1.02 (0.0366 - 0.0402)	0.8 (0.031)	32218-01G00
1.03 - 1.12 (0.0406 - 0.0441)	0.9 (0.035)	32218-01G01
1.13 - 1.22 (0.0445 - 0.0480)	1.0 (0.039)	32218-01G02
1.23 - 1.32 (0.0484 - 0.0520)	1.1 (0.043)	32218-01G03
1.33 - 1.42 (0.0524 - 0.0559)	1.2 (0.047)	32218-01G04
1.43 - 1.52 (0.0563 - 0.0598)	1.3 (0.051)	32218-01G05
1.53 - 1.62 (0.0602 - 0.0638)	1.4 (0.055)	32218-01G06

Reverse idler rear thrust washer

Thickness mm (in)	Part number
1.97 (0.0776)	32284-01G10
2.07 (0.0815)	32284-01G11

Tightening Torque

TRANSMISSION INSTALLATION

Unit	N-m	kg-m	ft-lb
Clutch operating cylinder	30 - 40	3.1 - 4.1	22 - 30
Transmission securing bolt	Refer to Removal and Installation.		
Engine gusset to engine	29 - 39	3.0 - 4.0	22 - 29
Rear mounting insulator to rear extension	Refer to section EM.		
Starter motor fixing bolt	Refer to section EM.		

GEAR ASSEMBLY — FS5W71C

Unit	N-m	kg-m	ft-lb
Rear extension to transmission case	16 - 20	1.6 - 2.0	12 - 14
Front cover to transmission case	16 - 21	1.6 - 2.1	12 - 15
Control housing to rear extension	14 - 18	1.4 - 1.8	10 - 13
Ball pin	20 - 34	2.0 - 3.5	14 - 25
Filler plug	25 - 34	2.5 - 3.5	18 - 25
Drain plug	25 - 34	2.5 - 3.5	18 - 25
Speedometer sleeve installation	4 - 5	0.4 - 0.5	2.9 - 3.6
Return spring plug	20 - 29	2.0 - 3.0	14 - 22
Reverse check sleeve to rear extension	4 - 5	0.4 - 0.5	2.9 - 3.6
Check ball plug	19 - 25	1.9 - 2.5	14 - 18
Mainshaft lock nut (without Tool)	137 - 167	14.0 - 17.0	101 - 123
Countershaft lock nut	98 - 127	10.0 - 13.0	72 - 94
Striking lever lock nut	9 - 12	0.9 - 1.2	6.5 - 8.7
Bearing retainer to adapter plate	19 - 25	1.9 - 2.5	14 - 18
Reverse lamp switch	20 - 29	2.0 - 3.0	14 - 22
Neutral switch	20 - 29	2.0 - 3.0	14 - 22

SERVICE DATA AND SPECIFICATIONS (S.D.S.)**Tightening Torque (Cont'd)****GEAR ASSEMBLY – FS5R30A**

Unit	N-m	kg-m	ft-lb
Rear extension to transmission case	31 - 42	3.2 - 4.3	23 - 31
Front cover to transmission case	16 - 21	1.6 - 2.1	12 - 15
Control housing to rear extension	16 - 21	1.6 - 2.1	12 - 15
Ball pin	31 - 42	3.2 - 4.3	23 - 31
Filter plug	25 - 34	2.5 - 3.5	18 - 25
Drain plug	25 - 34	2.5 - 3.5	18 - 25
Speedometer pinion installation	4 - 5	0.4 - 0.5	2.9 - 3.6
Interlock stopper fixing bolt	31 - 42	3.2 - 4.3	23 - 31
Check ball plug	19 - 25	1.9 - 2.6	14 - 19
Select check plug	20 - 29	2.0 - 3.0	14 - 22
Reverse check sleeve fixing bolt	6.3 - 8.3	0.64 - 0.85	4.6 - 6.1
O.D. & reverse fork rod to reverse shift fork	25 - 29	2.5 - 3.0	18 - 22
O.D. and reverse shift fork connecting bolt	29 - 34	3.0 - 3.5	22 - 25
Guide plate to rear extension	6.3 - 8.3	0.64 - 0.85	4.6 - 6.1
Bearing retainer to adopter plate	16 - 21	1.6 - 2.1	12 - 15
Reverse lamp switch	20 - 29	2.0 - 3.0	14 - 22
Neutral switch	20 - 29	2.0 - 3.0	14 - 22