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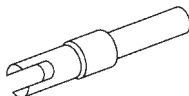
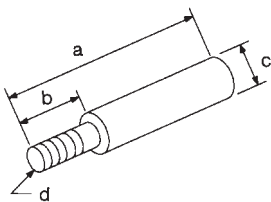
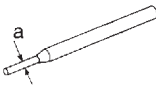

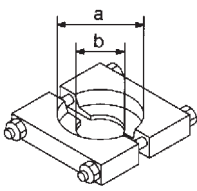
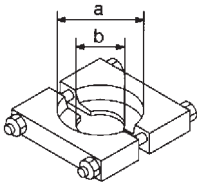
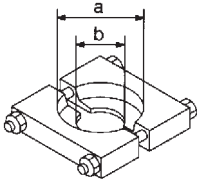
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PREPARATION

Special Service Tools

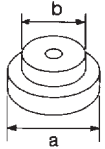
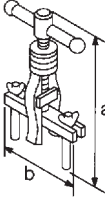
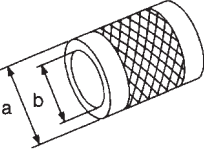
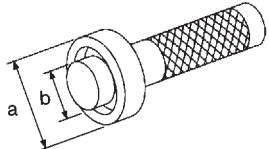
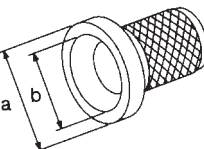
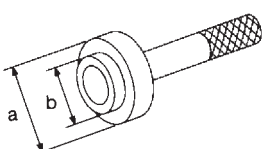
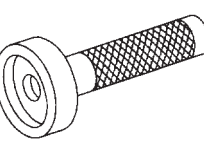
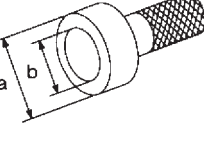
Special Service Tools

NCMT0001

Tool number Tool name	Description
KV38107700 Preload adapter	 <p>NT087</p> <p>Measuring turning torque of final drive assembly Measuring total turning torque Measuring clearance between side gear and differential case with washer Selecting differential side bearing adjusting shim (Use with KV38106000.)</p>
KV38106000 Height gauge adapter (differential side bearing)	 <p>NT418</p> <p>Selecting differential side bearing adjusting shim (Use with KV38107700 or KV38105900.) a: 140 mm (5.51 in) b: 40 mm (1.57 in) c: 16 mm (0.63 in) dia. d: M8 × 1.25P</p>
KV32101000 Pin punch	 <p>NT410</p> <p>Removing and installing retaining pin Removing and installing lock pin Removing selector shaft Removing welch plug a: 4 mm (0.16 in) dia.</p>
KV31100300 Pin punch	 <p>NT410</p> <p>Removing and installing retaining pin a: 4.5 mm (0.177 in) dia.</p>
ST30031000 Puller	 <p>NT411</p> <p>Removing 3rd, 5th input gear Removing 3rd & 4th and 5th & Rev synchronizer hub Removing mainshaft rear bearing Removing 2nd gear, 5th gear bushing Removing 1st & 2nd synchronizer hub, 1st and 4th main gear Removing and installing differential side bearing a: 90 mm (3.54 in) dia. b: 50 mm (1.97 in) dia.</p>
ST30021000 Puller	 <p>NT411</p> <p>Removing input shaft front and rear bearing Installing input shaft front and rear bearing Installing 5th input gear, 3rd main gear and 4th main gear Installing 1st & 2nd, 3rd & 4th and 5th & Rev synchronizer hub Installing 2nd gear bush, 5th gear bush, Rev gear bushing Installing mainshaft rear bearing a: 110 mm (4.33 in) dia. b: 68 mm (2.68 in) dia.</p>
ST22730000 Puller	 <p>NT411</p> <p>Removing mainshaft front and rear bearing inner race (F31A) Removing 5th main gear a: 82 mm (3.23 in) dia. b: 30 mm (1.18 in) dia.</p>

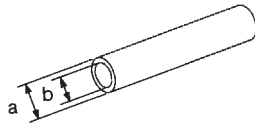
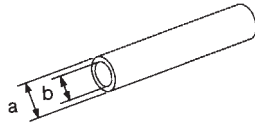
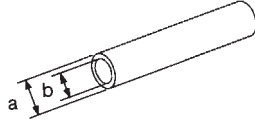
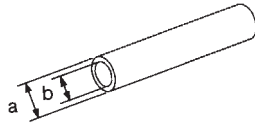
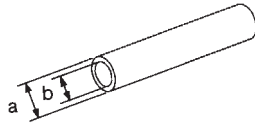
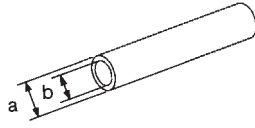
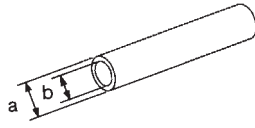
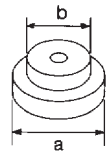
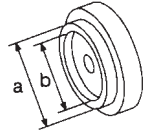
PREPARATION

Special Service Tools (Cont'd)

Tool number Tool name	Description	
ST35321000 Drift		Removing differential side bearing a: 49 mm (1.93 in) dia. b: 41 mm (1.61 in) dia.
KV381054S0 Puller		<ul style="list-style-type: none"> ● Removing idler gear bearing outer race a: 250 mm (9.84 in) b: 160 mm (6.30 in)
ST33200000 Drift		Installing mainshaft front bearing outer race (F31A) Installing mainshaft front bearing (F32A) a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia.
ST33230000 Drift		Removing differential oil seal Installing differential side bearing a: 51 mm (2.01 in) dia. b: 28.5 mm (1.122 in) dia.
ST33400001 Drift		Installing differential oil seal (F31A) a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.
KV38102100 Drift		Installing differential oil seal a: 44 mm (1.73 in) dia. b: 24.5 mm (0.965 in) dia.
KV38100200 Drift		Installing differential oil seal a: 65 mm (2.56 in) dia. b: 49 mm (1.93 in) dia.
ST3072000 Drift		Installing side bearing outer race a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.

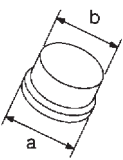
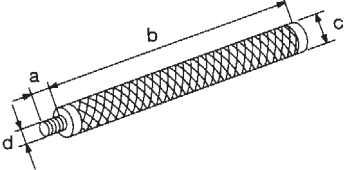
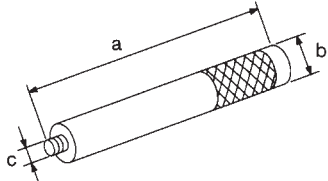
PREPARATION

Special Service Tools (Cont'd)

Tool number Tool name	Description
ST22350000 Drift	 <p>Installing input shaft front and rear bearing a: 34 mm (1.34 in) dia. b: 28 mm (1.10 in) dia.</p> <p>NT065</p>
ST22360002 Drift	 <p>Installing mainshaft rear bearing inner race (F31A) a: 29 mm (1.14 in) dia. b: 23 mm (0.91 in) dia.</p> <p>NT065</p>
ST22452000 Drift	 <p>Installing 3rd and 4th main gear Installing 5th gear bush Installing 5th & Rev synchronizer hub Installing Rev gear bush Installing mainshaft rear bearing a: 45 mm (1.77 in) dia. b: 36 mm (1.42 in) dia.</p> <p>NT065</p>
ST37750000 Drift	 <p>Installing input shaft oil seal Installing 5th synchronizer Installing mainshaft rear bearing Installing 5th main gear Installing 3rd & 4th synchronizer hub Installing striking rod oil seal Installing clutch housing dust seal a: 40 mm (1.57 in) dia. b: 31 mm (1.22 in) dia.</p> <p>NT065</p>
ST23860000 Drift	 <p>Installing 2nd gear bush a: 38 mm (1.50 in) dia. b: 33 mm (1.30 in) dia.</p> <p>NT065</p>
ST01530000 Drift	 <p>Installing 3rd & 4th and 1st & 2nd synchronizer hub Installing mainshaft front bearing a: 50 mm (1.97 in) dia. b: 41 mm (1.61 in) dia.</p> <p>NT065</p>
KV38100130 Drift	 <p>Installing input shaft oil seal Installing 5th input gear a: 39 mm (1.54 in) dia. b: 30 mm (1.18 in) dia.</p> <p>NT065</p>
ST30621000 Drift	 <p>Installing differential side bearing outer race (Use with ST30611000.) a: 79 mm (3.11 in) dia. b: 59 mm (2.32 in) dia.</p> <p>NT073</p>
KV31103000 Drift	 <p>Installing differential oil seal (F32A) Right and left sides (Use with ST35325000.) a: 56 mm (2.20 in) dia. b: 49 mm (1.93 in) dia.</p> <p>NT105</p>

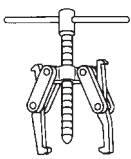
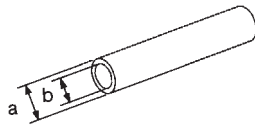
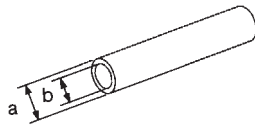
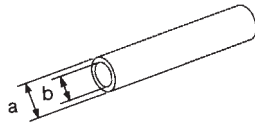
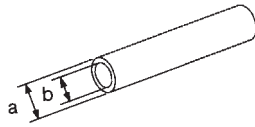
PREPARATION

Special Service Tools (Cont'd)

Tool number Tool name	Description	
ST33052000 Drift		Removing input shaft rear bearing Removing mainshaft rear bearing a: 22 mm (0.87 in) dia. b: 28 mm (1.10 in) dia.
NT431		
ST30611000 Drift handle		Installing differential side bearing outer race (Use with ST30621000.) a: 15 mm (0.59 in) b: 335 mm (13.19 in) c: 25 mm (0.98 in) dia. d: M12 × 1.5P
NT419		
ST35325000 Drift handle		Installing differential oil seal (F32A) (Use with KV31103000.) a: 215 mm (8.46 in) b: 25 mm (0.98 in) dia. c: M12 × 1.5P
NT417		

Commercial Service Tools

NCMT0002

Tool name	Description	
Puller		Removing input shaft front bearing (F31A) Removing mainshaft rear bearing (F32A)
NT077		
Drift		Installing differential side bearing inner race a: 12 mm (0.47 in) dia. b: 10 mm (0.39 in) dia.
NT065		
Drift		Installing mainshaft front bearing inner race a: 26 mm (1.02 in) dia. b: 21 mm (0.83 in) dia. (F30A) a: 31 mm (1.22 in) dia. b: 26 mm (1.02 in) dia. (F32A)
NT065		
Drift		Installing differential side bearing inner race (F31A and F32A) a: 56 mm (2.20 in) dia. b: 50.5 mm (1.988 in) dia.
NT065		
Drift		Installing striking rod oil seal (F31A and F32A) a: 38 mm (1.50 in) dia. b: 32 mm (1.26 in) dia.
NT065		

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NCM70003

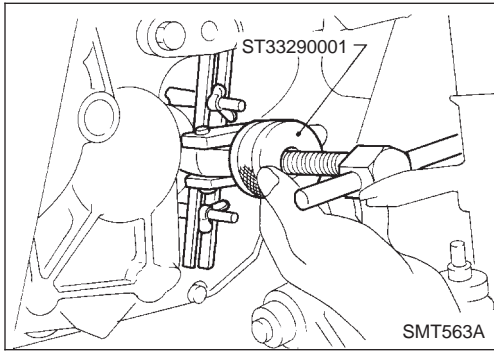
NVH Troubleshooting Chart

NVH Troubleshooting Chart

NCM70003S07

Use the chart below to help you find the cause of the symptom. The numbers indicate the order of the inspection. If necessary, repair or replace these parts.

Symptom	SUSPECTED PARTS (Possible cause)		Reference page
	Noise		
Symptom	Oil leakage		Refer to MA section ("Checking M/T Oil", "CHASSIS AND BODY MAINTENANCE").
	Hard to shift or will not shift		
	Jumps out of gear		
		1 (Oil level is low.)	
		2 (Wrong oil)	
		1 (Oil level is high.)	
		2 GASKET (Damaged)	MT-15, 48
		2 OIL SEAL (Worn or damaged)	MT-15, 48
		2 O-RING (Worn or damaged)	MT-15, 48
		2 CONTROL ROD (Worn)	MT-14, 47
		2 CHECK PLUG RETURN SPRING AND CHECK BALL (Worn or damaged)	MT-17, 50
		3 SHIFT FORK (Worn)	MT-17, 50
		3 GEAR (Worn or damaged)	MT-16, 49
	3 BEARING (Worn or damaged)	MT-16, 49	
	3 BAULK RING (Worn or damaged)	MT-16, 49	
	3 INSERT SPRING, SHIFTING INSERT (Damaged)	MT-16, 49	



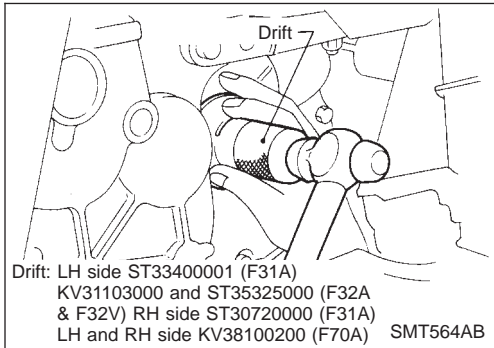
Replacing Oil Seal

NCMT0005

DIFFERENTIAL OIL SEAL

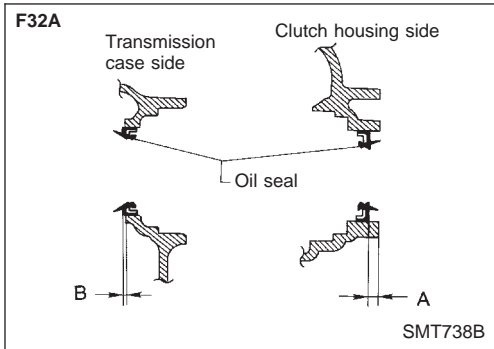
NCMT0005S01

1. Drain gear oil from transaxle.
2. Remove drive shafts — Refer to section FA.
3. Remove differential oil seal.



Drift: LH side ST33400001 (F31A)
KV31103000 and ST35325000 (F32A & F32V) RH side ST30720000 (F31A)
LH and RH side KV38100200 (F70A)

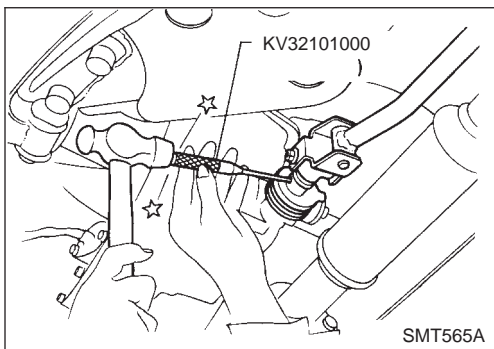
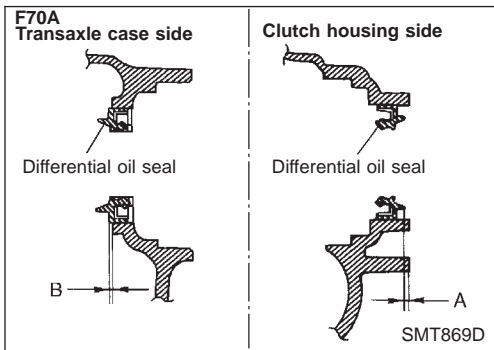
4. Install differential oil seal.
 - **Apply multi-purpose grease to seal lip of oil seal before installing.**
5. Install drive shafts — Refer to section FA.



- **Install differential oil seal so that dimension “A” and “B” are within specifications.**

Unit: mm (in)

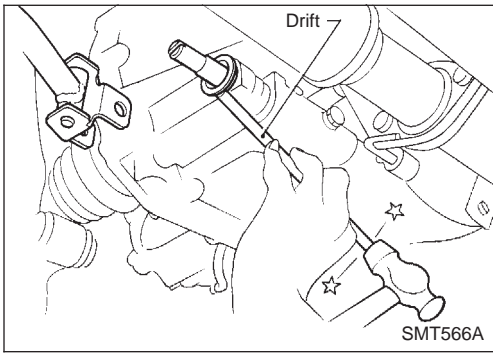
Item	A	B
F32A	5.9 - 6.1 (0.232 - 0.240)	0.5 (0.020) or less
F70A	0.5 (0.020) or less	



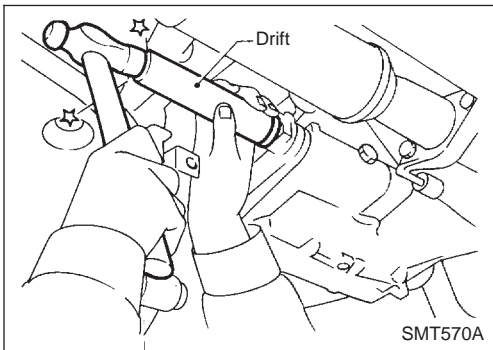
STRIKING ROD OIL SEAL

NCMT0005S02

1. Remove transaxle control rod from yoke.
2. Remove retaining pin of yoke.
 - **Be careful not to damage boot.**

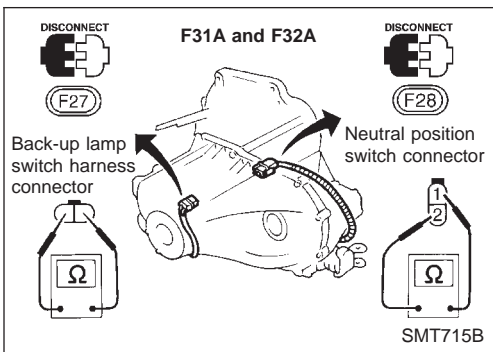


3. Remove striking rod oil seal.



4. Install striking rod oil seal.

- Apply multi-purpose grease to seal lip of oil seal before installing.



Position Switch Check

NCMT0006

BACK-UP LAMP SWITCH

NCMT0006S01

- Check continuity

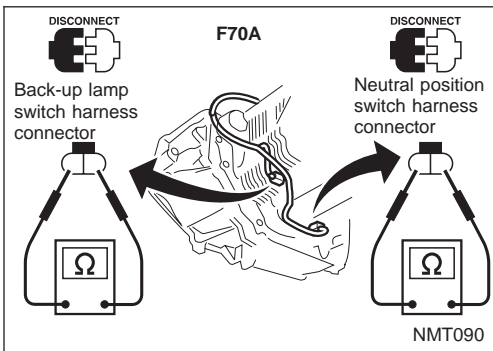
Gear Position	Continuity
Reverse	Yes
Except reverse	No

NEUTRAL POSITION SWITCH

NCMT0006S02

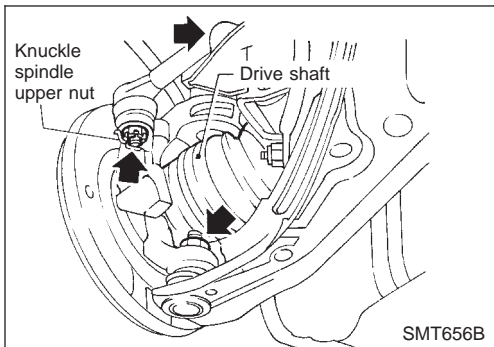
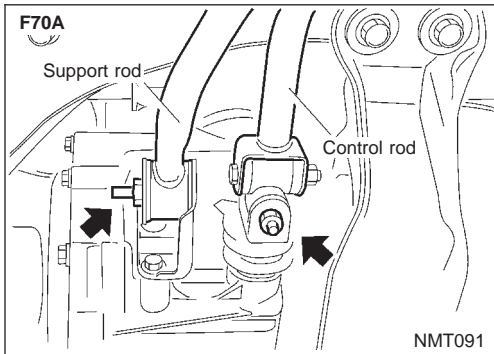
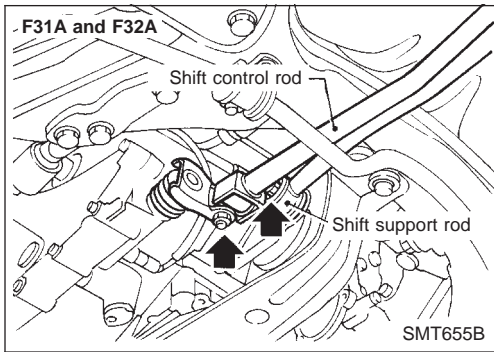
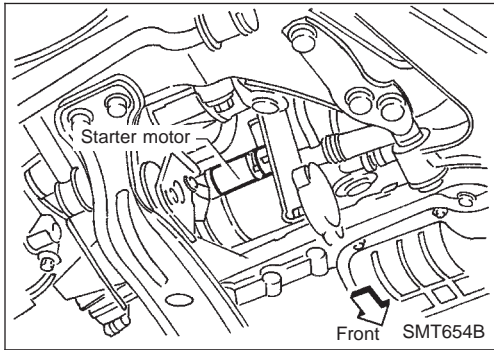
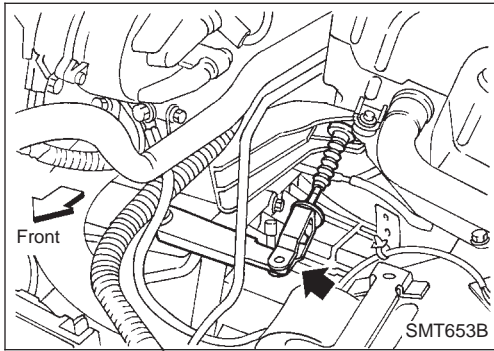
- Check continuity.

Gear position	Continuity
Neutral	Yes
Except neutral	No



REMOVAL AND INSTALLATION

Removal



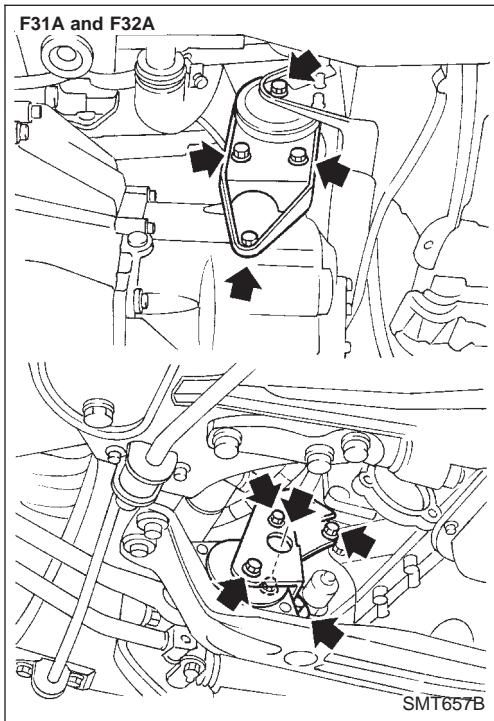
Removal

NCMT0007S01

1. Remove battery negative terminal.
2. Remove air duct.
3. Disconnect clutch control cable from transaxle (GA16 models).
4. Remove clutch operating cylinder from transaxle (except GA16 models).
5. Disconnect back-up lamp switch, speedometer sensor, neutral position switch and ground harness connectors.
6. Remove starter motor from transaxle.
7. Remove shift control rod and support rod from transaxle.
8. Drain gear oil from transaxle.
9. Remove exhaust front tube.
10. Draw out drive shafts from transaxle — Refer to section FA.

REMOVAL AND INSTALLATION

Removal (Cont'd)

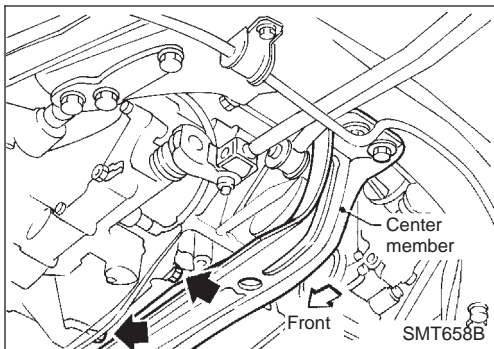
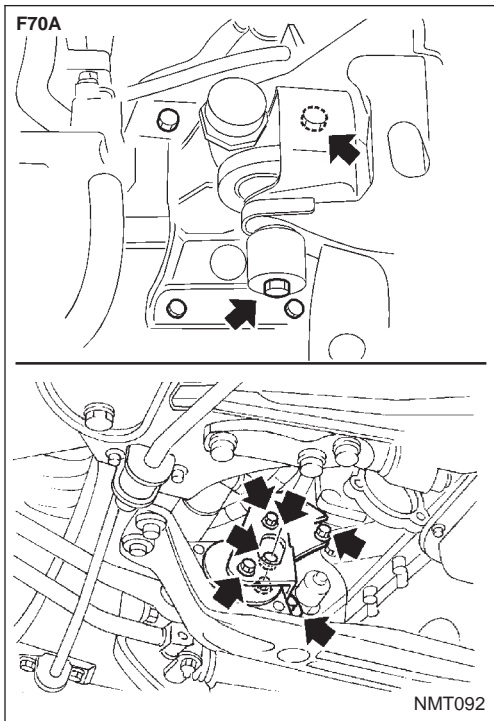


11. Support engine by placing a jack under oil pan.

CAUTION:

Do not place jack under oil pan drain plug.

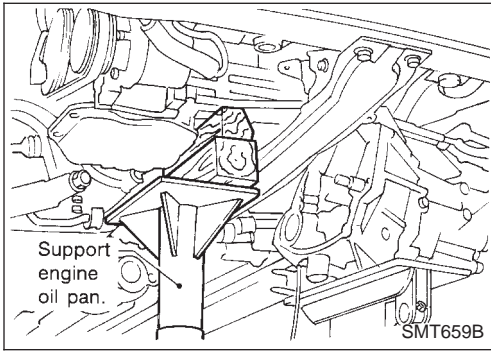
12. Remove rear and LH mounts.



13. Raise jack for access to lower housing bolts. Remove bolts. Lower jack.

REMOVAL AND INSTALLATION

Installation



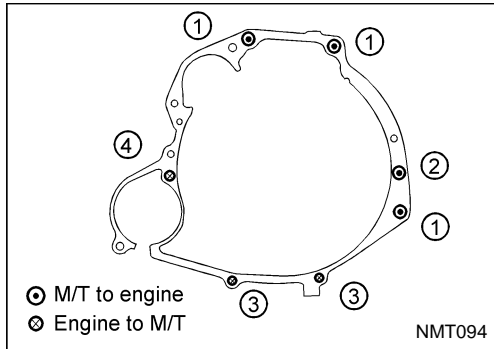
14. Remove bolts securing transaxle.
15. Lower transaxle while supporting it with a jack.

Installation

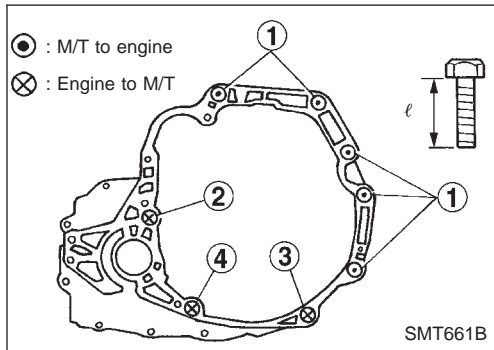
NCMT0007S02

- Tighten bolts securing transaxle.

QG engine models:

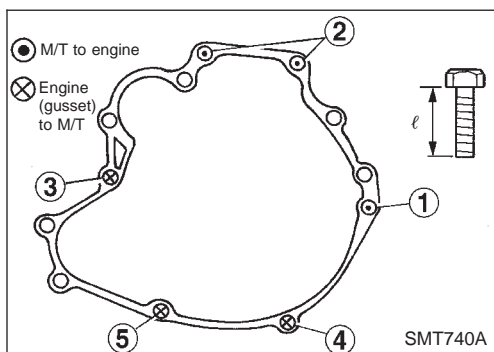


Bolt No.	Tightening torque N-m (kg-m, ft-lb)	ℓ in mm (in)
1	30 - 40 (3.1 - 4.1, 22 - 30)	70 (2.76)
2	30 - 40 (3.1 - 4.1, 22 - 30)	80 (3.15)
3	16 - 21 (1.6 - 2.1, 12 - 15)	25 (0.98)
4	30 - 40 (3.1 - 4.1, 22 - 30)	30 (1.18)



SR engine models:

Bolt No.	Tightening torque N-m (kg-m, ft-lb)	ℓ in mm (in)
1	70 - 79 (7.1 - 8.1, 51 - 59)	55 (2.17)
2	70 - 79 (7.1 - 8.1, 51 - 59)	65 (2.56)
3	30 - 40 (3.1 - 4.1, 22 - 30)	35 (1.38)
4	30 - 40 (3.1 - 4.1, 22 - 30)	45 (1.77)

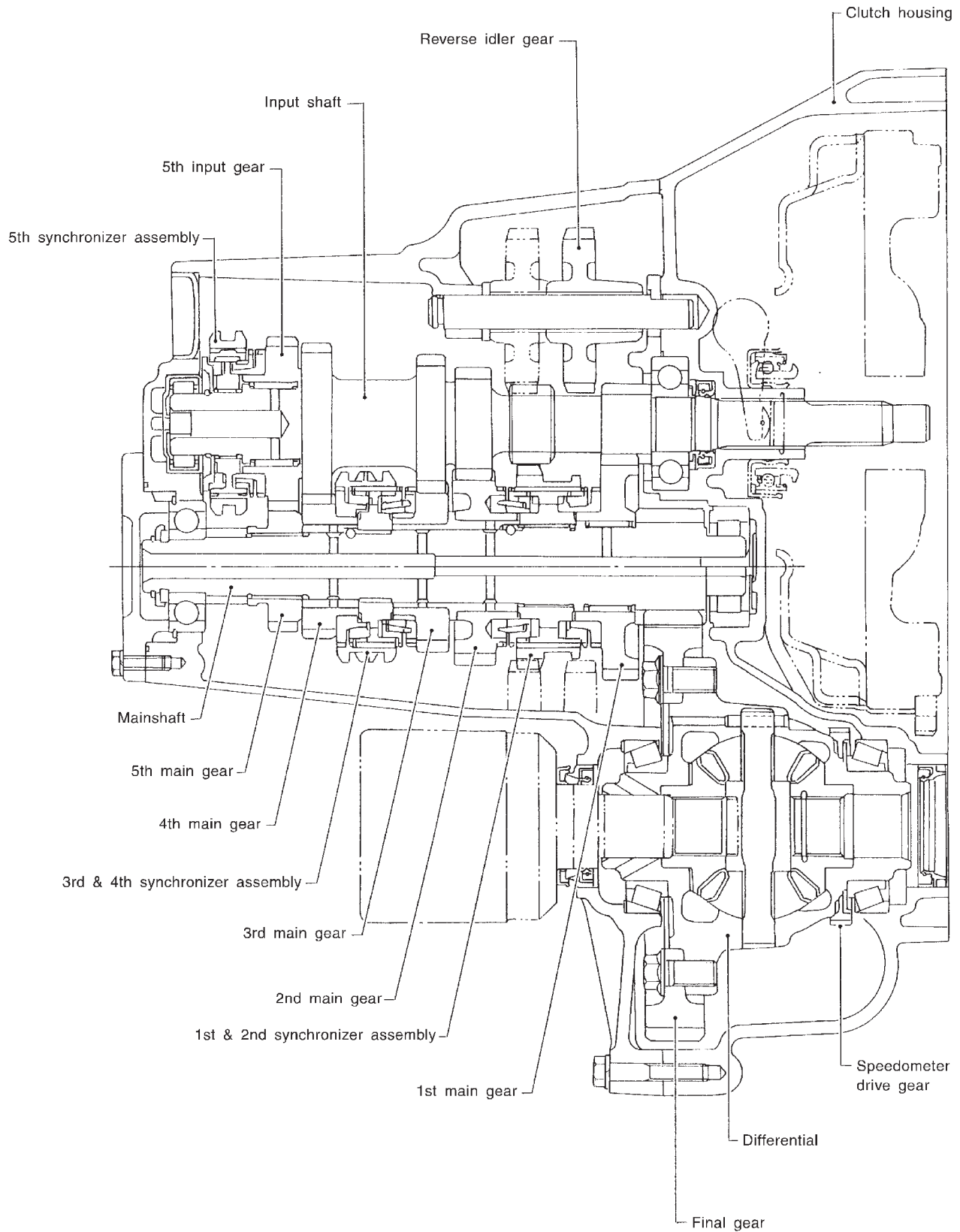


CD20T engine models:

Bolt No.	Tightening torque N-m (kg-m, ft-lb)	ℓ in mm (in)
1	30 - 40 (3.1 - 4.1, 22 - 30)	120 (4.72)
2	30 - 40 (3.1 - 4.1, 22 - 30)	85 (3.35)
3	64 - 74 (6.5 - 7.5, 47.2 - 54.6)	75 (2.95)
4	16 - 21 (1.6 - 2.1, 12 - 15)	30 (1.18)
5	16 - 21 (1.6 - 2.1, 12 - 15)	25 (0.98)
Front gusset to engine	30 - 40 (3.1 - 4.1, 22 - 30)	35 (1.38)
Rear gusset to engine	30 - 40 (3.1 - 4.1, 22 - 30)	M10 × 1.25 (nut)

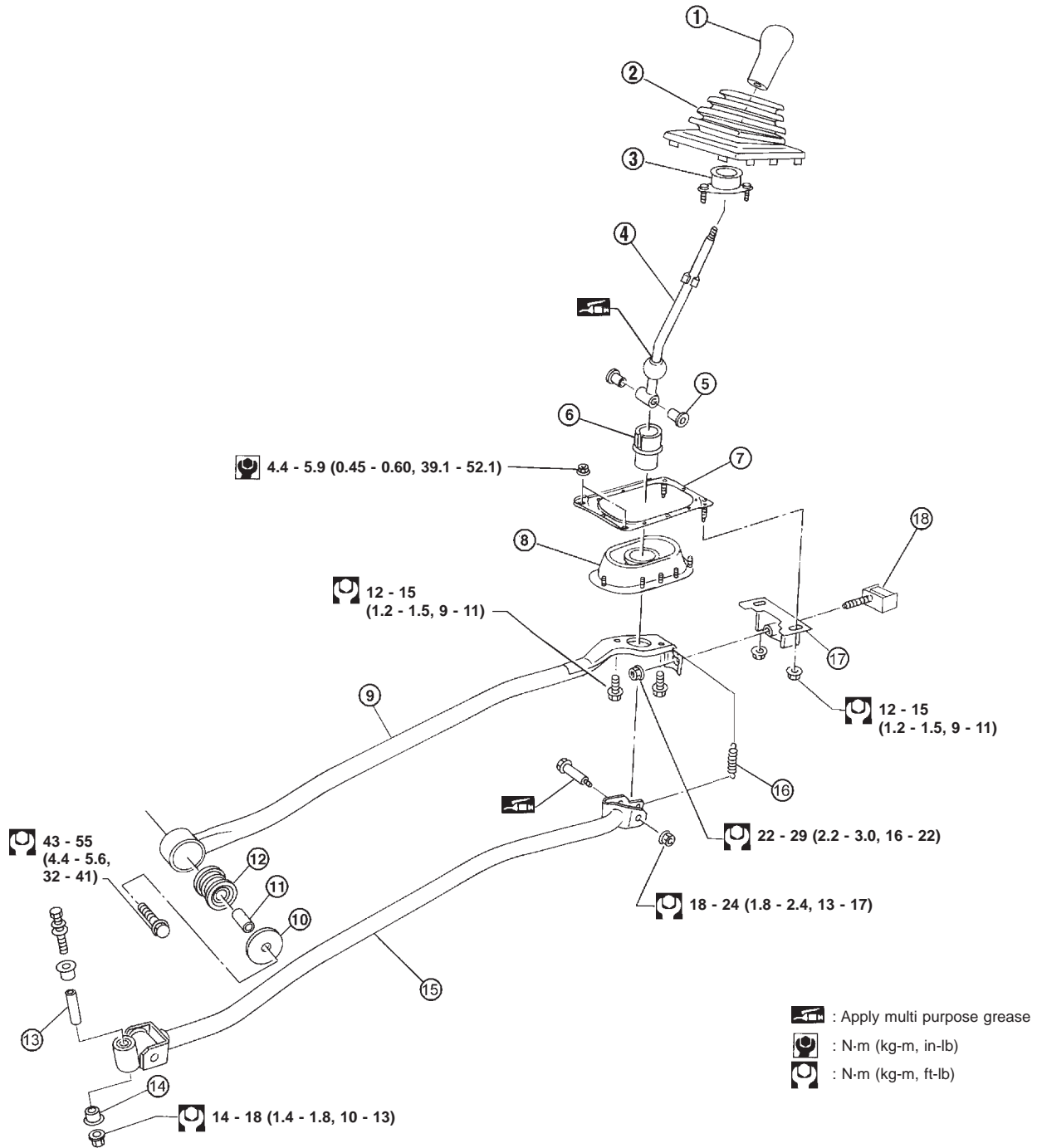
Cross-sectional View

RS5F32A



Transaxle Gear Control

SEC. 341



NMT097

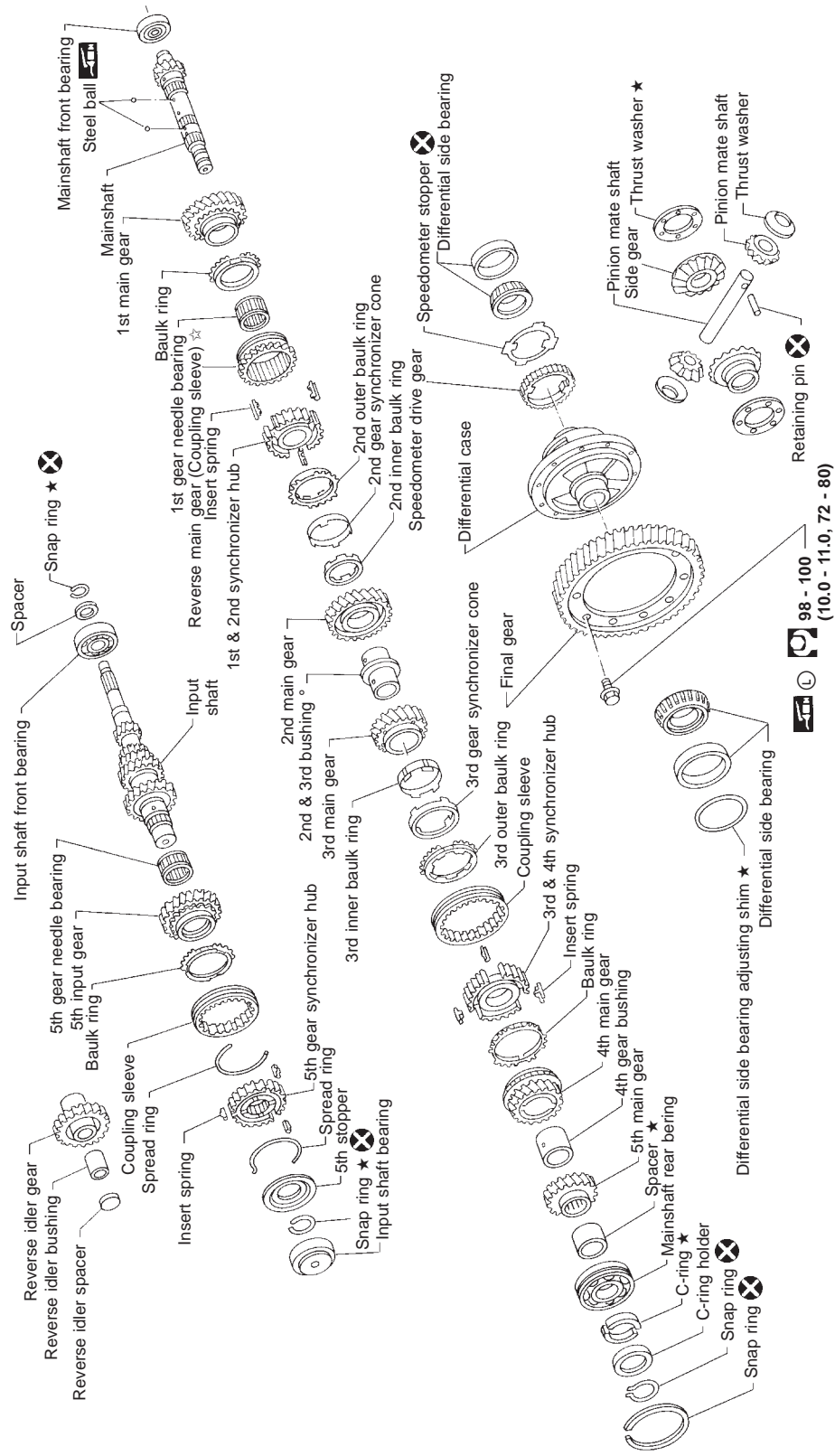
- ① Control lever knob
- ② Boot
- ③ Control lever socket
- ④ Control lever
- ⑤ Bushing
- ⑥ Hand lever socket

- ⑦ Plate bolt
- ⑧ Transaxle hole cover
- ⑨ Support rod
- ⑩ Plate
- ⑪ Collar
- ⑫ Bushing

- ⑬ Collar
- ⑭ Bushing
- ⑮ Control rod
- ⑯ Return spring
- ⑰ Holder bracket
- ⑱ Dynamic damper

Gear Components

SEC. 322

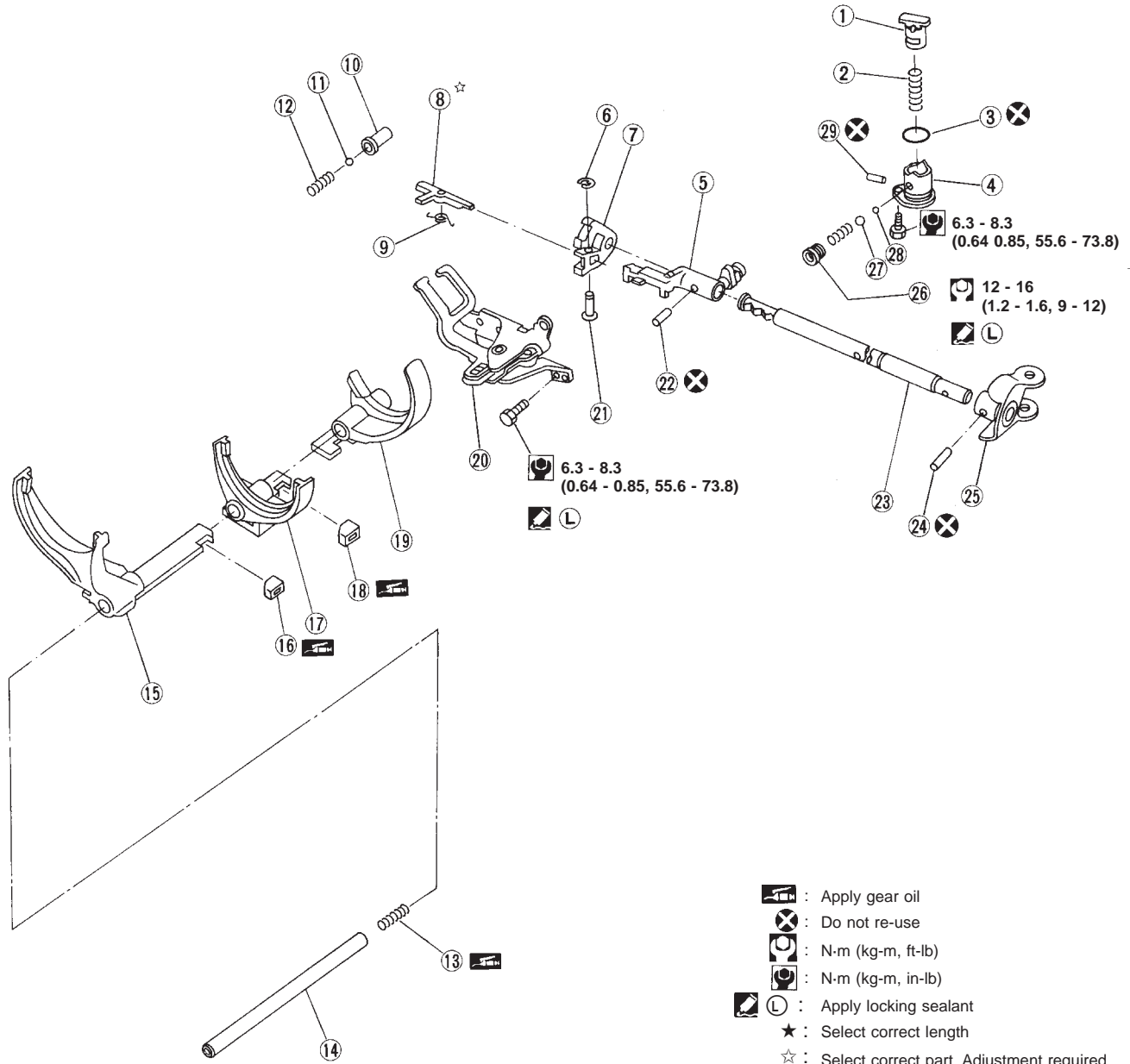


- : N·m (kg-m, ft-lb)
- : Select correct thickness
- : Apply locking sealant
- : Ensure correct direction
- : Apply gear oil
- : Do not re-use
- : Apply gear oil

98 - 100
(10.0 - 11.0, 72 - 80)

Shift Control Components

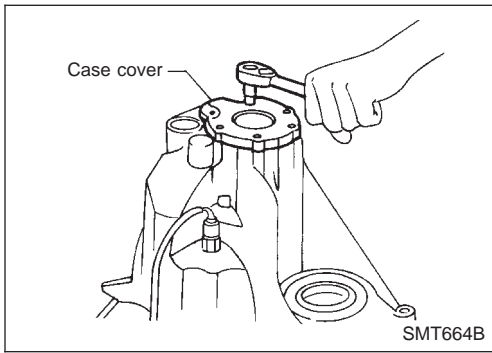
SEC. 328



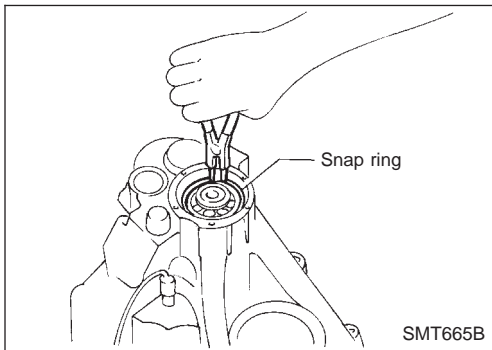
- : Apply gear oil
- : Do not re-use
- : N-m (kg-m, ft-lb)
- : N-m (kg-m, in-lb)
- : Apply locking sealant
- ★ : Select correct length
- ☆ : Select correct part. Adjustment required

NMT025

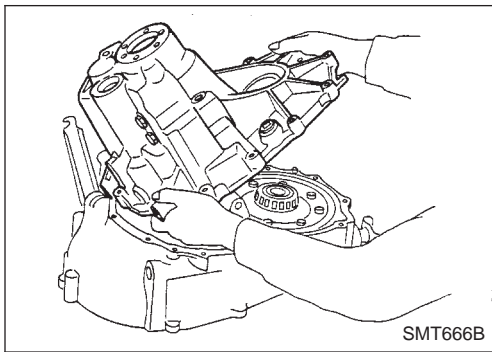
- | | | |
|----------------------------|-----------------------------|-----------------------|
| ① Check plunger | ⑪ Shift check ball | ⑳ Control bracket |
| ② Select return spring | ⑫ Check spring | ㉑ Control bracket pin |
| ③ O-ring | ⑬ Fork shaft support spring | ㉒ Retaining pin |
| ④ Check sleeve | ⑭ Fork shaft | ㉓ Striking rod |
| ⑤ Striking lever | ⑮ 5th shift fork | ㉔ Retaining pin |
| ⑥ Snap ring | ⑯ Shifter cap | ㉕ Yoke |
| ⑦ Striking interlock | ⑰ 3rd & 4th shift fork | ㉖ Reverse check plug |
| ⑧ Reverse brake cam | ⑱ Shifter cap | ㉗ Check ball (Large) |
| ⑨ Reverse brake cam spring | ㉒ 1st & 2nd shift fork | ㉘ Check ball (Small) |
| ⑩ Check ball plug | ㉓ Control bracket | ㉙ Stopper pin |



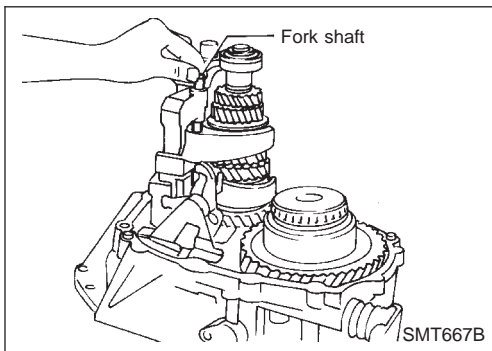
1. Remove case cover.



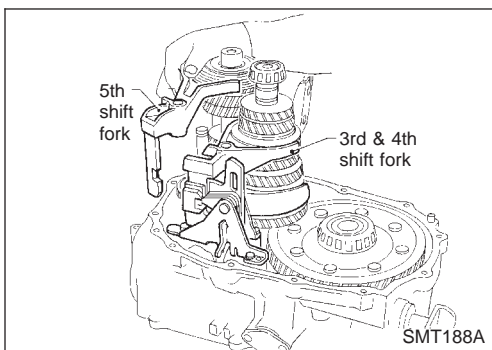
2. Remove mainshaft bearing snap ring.



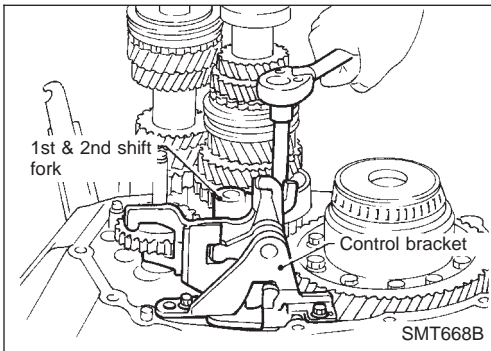
3. Remove transmission case while slightly tilting it to prevent 5th shift fork from interfering with case.



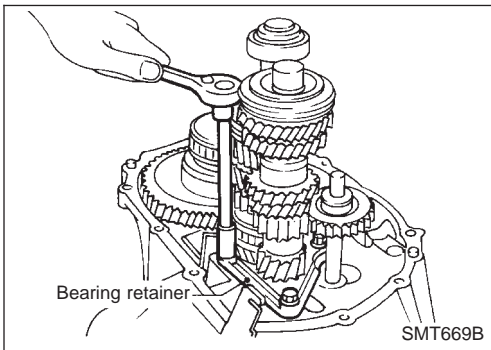
4. Draw out reverse idler spacer and fork shaft.



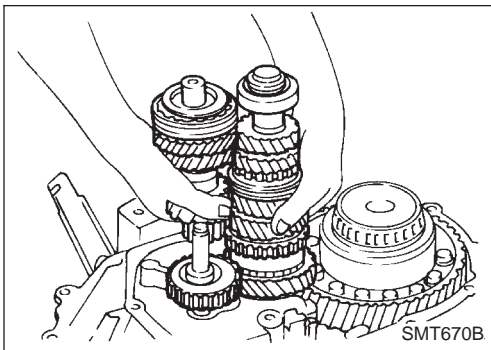
5. Remove 5th and 3rd & 4th shift forks.
 ● Be careful not to lose shifter cap.



6. Remove control bracket with 1st & 2nd shift fork.

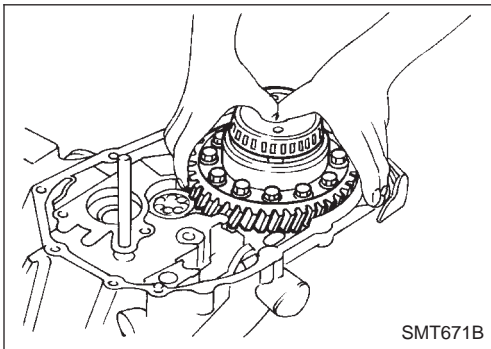


7. Remove gear components from clutch housing.
a. Remove input shaft front bearing retainer securing bolts.

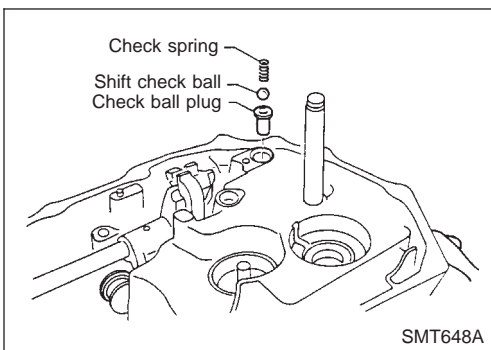


b. Remove input shaft with bearing retainer, mainshaft assembly and reverse idler gear.

- **Always withdraw mainshaft straight out. Failure to do so can damage resin oil channel on clutch housing side.**
- **Do not draw out reverse idler shaft from clutch housing because these fittings will be loose.**
When removing input shaft, be careful not to scratch oil seal lip with shaft spline.

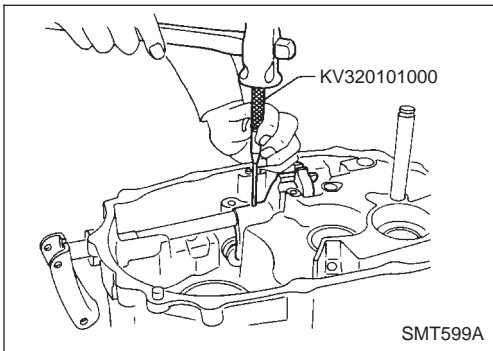


c. Remove final drive assembly.

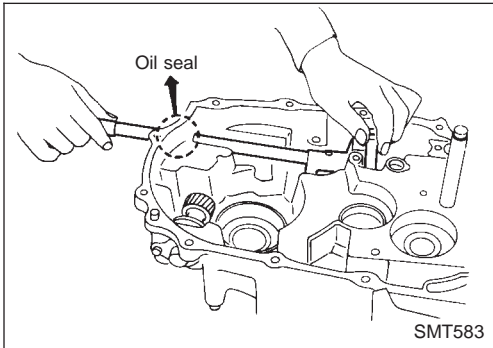


8. Remove oil pocket, shift check ball, check spring and check ball plug.

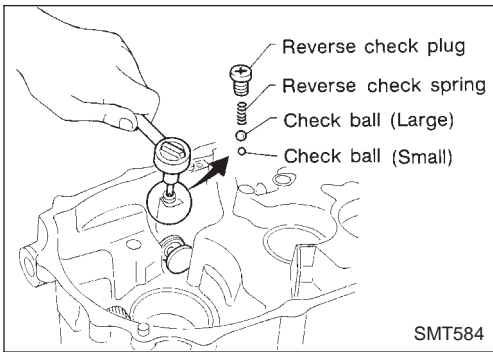
- **Be careful not to lose check ball.**



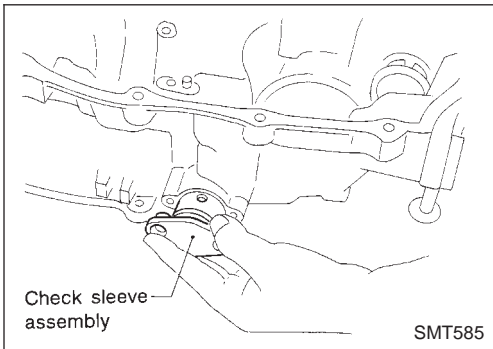
9. Drive retaining pin out of striking lever, then remove striking rod, striking lever and striking interlock.
 - **Ensure striking lever is positioned so that retaining pin does not foul clutch housing during removal.**



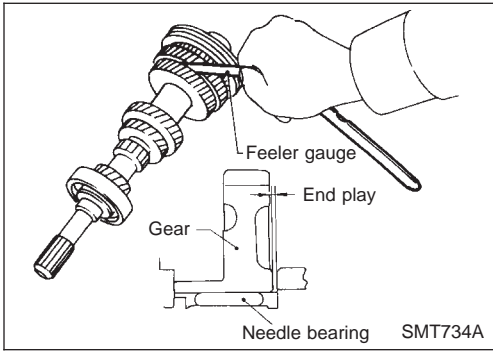
- **Be careful not to damage oil seal lip, when removing striking rod. If necessary, tape edges of striking rod.**



10. Remove reverse check plug, then detach reverse check spring and check balls.
 - **Be careful not to lose check balls.**
 - **If the smaller ball does not come out, remove it together with check sleeve assembly.**



11. Remove check sleeve assembly.



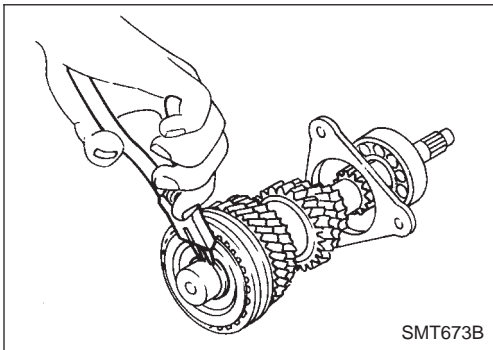
Input Shaft and Gears

DISASSEMBLY

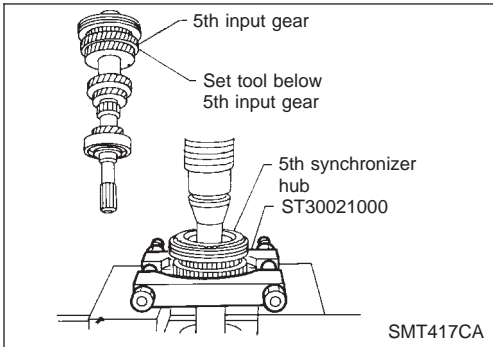
1. Before disassembly, check 5th input gear end play.

Gears	End play mm (in)
5th input gear	0.18 - 0.31 (0.0071 - 0.0122)

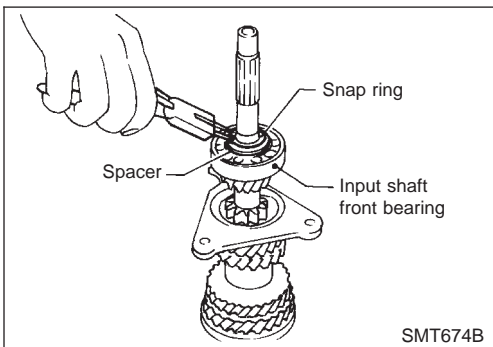
- If not within specification, disassemble and check contact surface of gear, shaft and hub. Then check clearance of snap ring groove — Refer to “Assembly”.



2. Remove snap ring and 5th stopper.

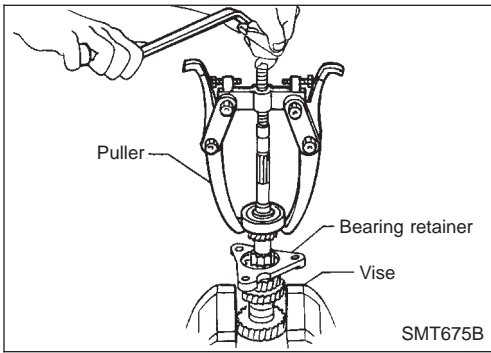


3. Remove 5th synchronizer, 5th input gear and 5th gear needle bearing.

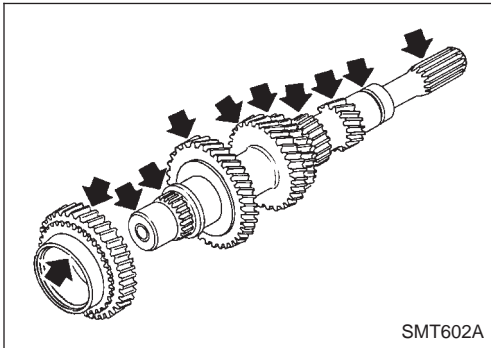


4. Remove snap ring of input shaft front bearing and input gear spacer.

Input Shaft and Gears (Cont'd)



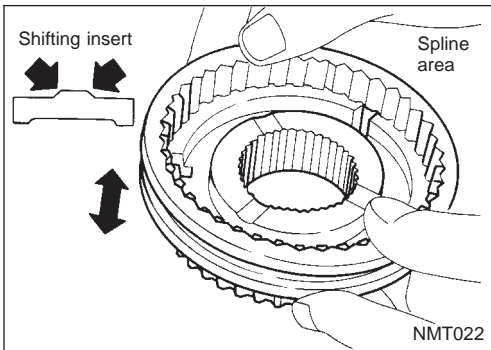
5. Pull out input shaft front bearing.
6. Remove bearing retainer.



INSPECTION

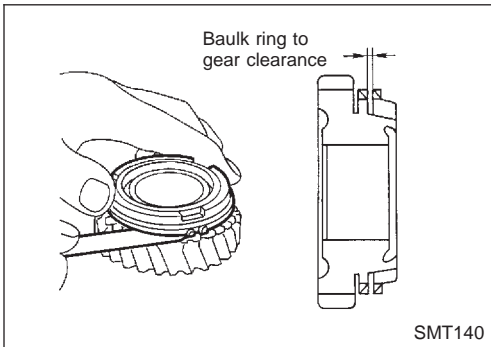
Gear and shaft

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



Synchronizer

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



- Measure clearance between baulk ring and gear.

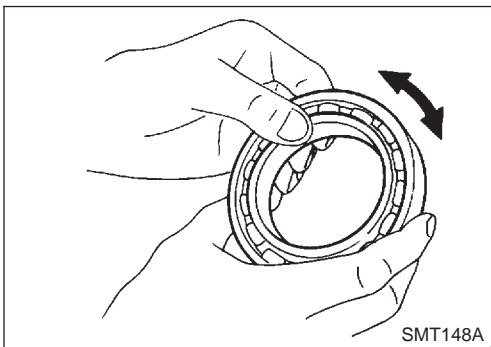
Clearance between baulk ring and 5th input gear:

Standard

1.0 - 1.35 mm (0.0394 - 0.0531 in)

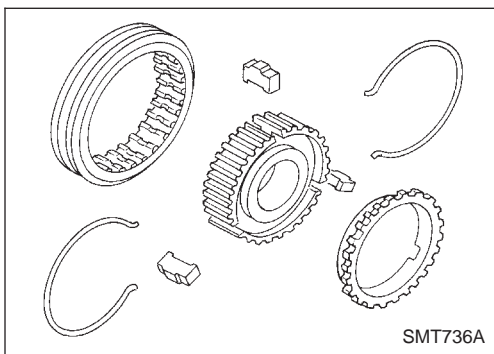
Wear limit

0.7 mm (0.028 in)



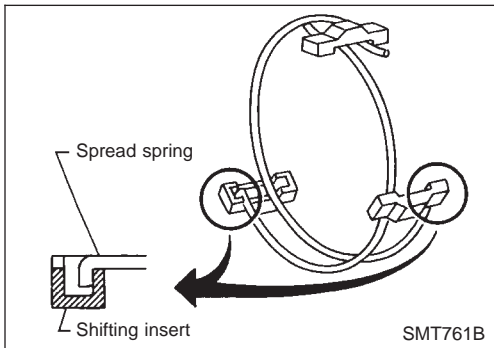
Bearing

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

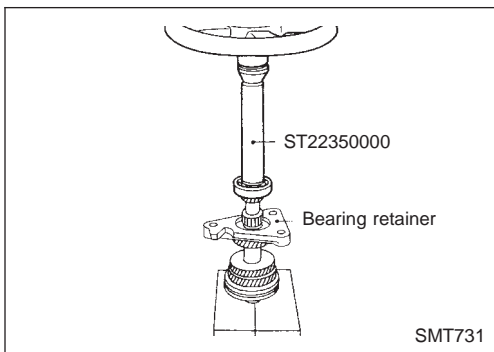


ASSEMBLY

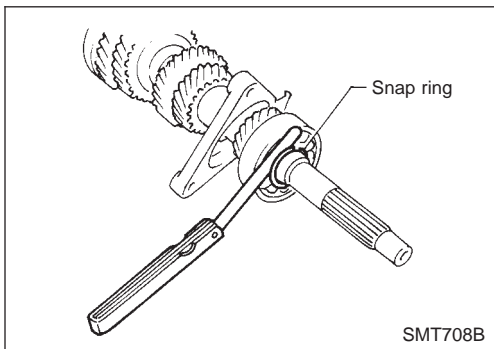
1. Assemble 5th synchronizer.



- Be careful not to hook front and rear ends of spread spring to the same shifting insert.



2. Install bearing retainer.
3. Press on input shaft front bearing.
4. Install input gear spacer.



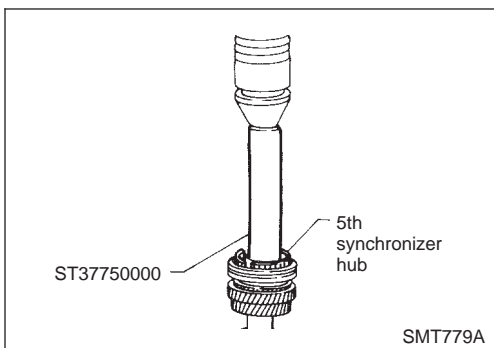
5. Select correct snap ring of input shaft front bearing to minimize clearance of groove in input shaft and then install it.

Allowable clearance of groove:

0 - 0.1 mm (0 - 0.004 in)

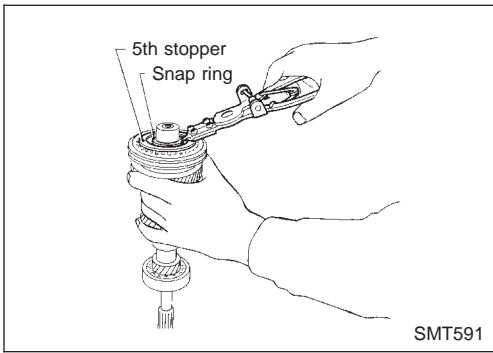
Snap rings of input shaft front bearing:

Refer to SDS, MT-87.



6. Install 5th gear needle bearing, 5th input gear, 5th synchronizer and 5th stopper.
7. Measure gear end play as a final check — Refer to "Disassembly".

Input Shaft and Gears (Cont'd)



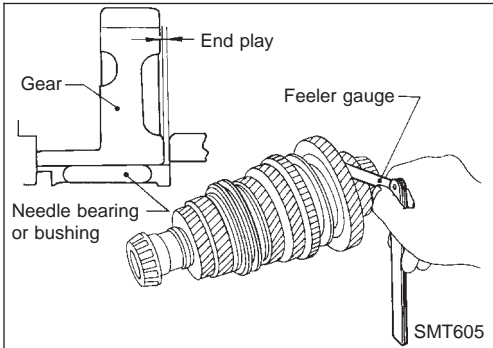
8. Select correct snap ring of 5th synchronizer hub to minimize clearance of groove in input shaft and install it.

Allowable clearance of groove:

0 - 0.1 mm (0 - 0.004 in)

Snap rings of 5th synchronizer:

Refer to SDS, MT-87.



Mainshaft and Gears

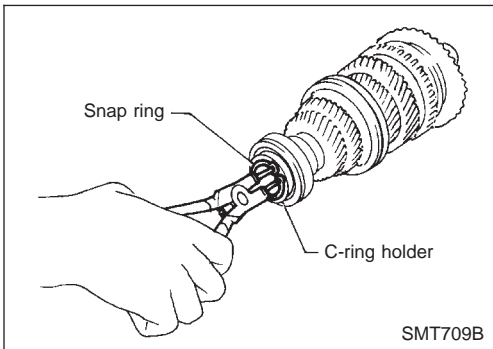
DISASSEMBLY

1. Before disassembly, measure gear end play.

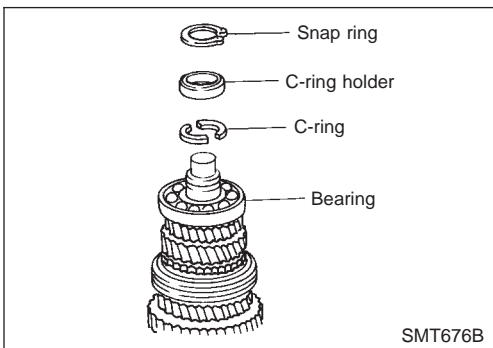
Gear end play:

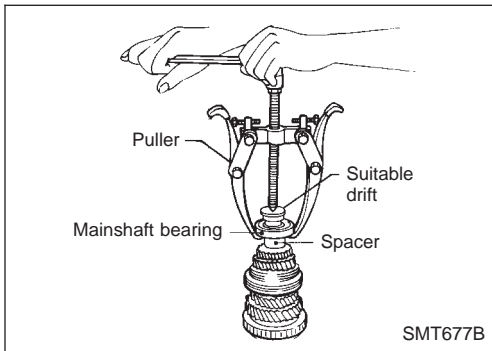
Gears	End play mm (in)
1st main gear	0.18 - 0.31 (0.0071 - 0.0122)
2nd-4th main gear	0.20 - 0.30 (0.0079 - 0.0118)

- If end play is not within the specified limit, disassemble and check the parts.

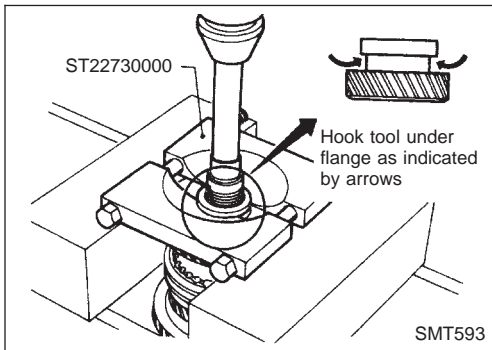


2. Remove mainshaft rear bearing snap ring, C-ring holder and C-rings.

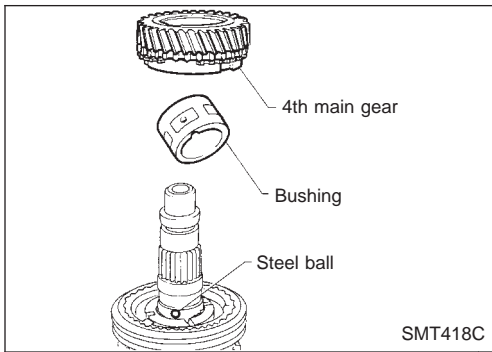




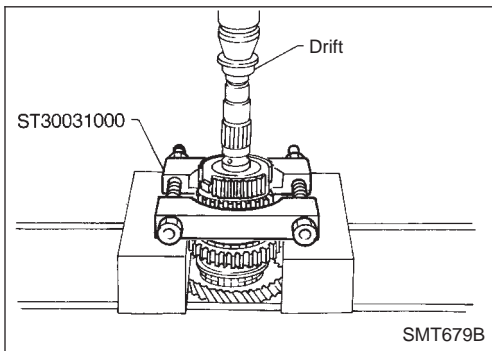
3. Remove mainshaft bearing and spacer.



4. Remove 5th main gear.

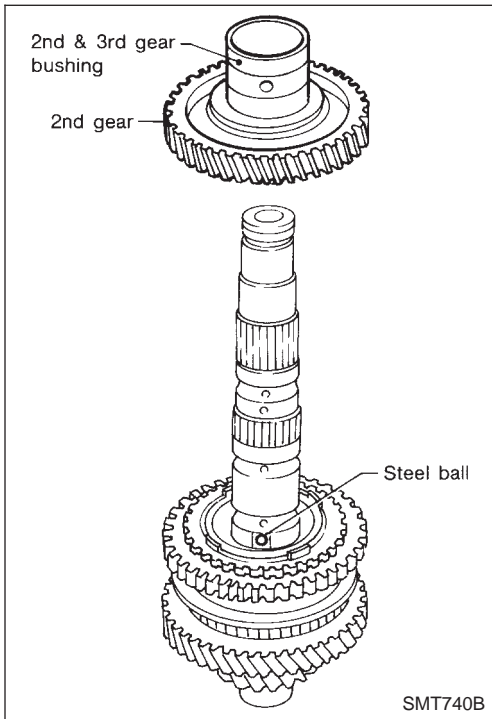


5. Remove 4th main gear, 4th gear bushing and steel ball.
● **Take care not to lose steel ball.**

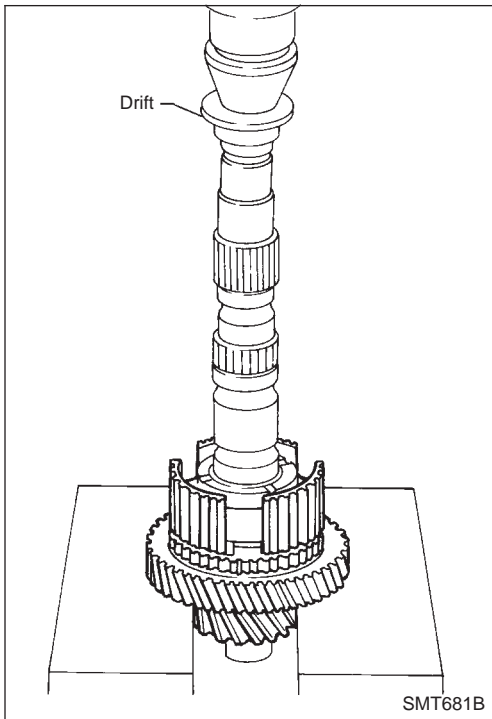


6. Remove 3rd & 4th synchronizer and 3rd main gear.

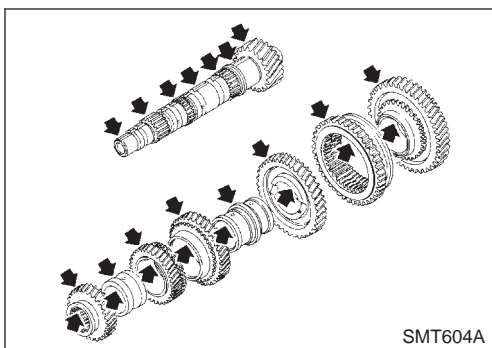
Mainshaft and Gears (Cont'd)



7. Remove 2nd & 3rd bushing and 2nd gear.
 - Take care not to lose the steel ball.



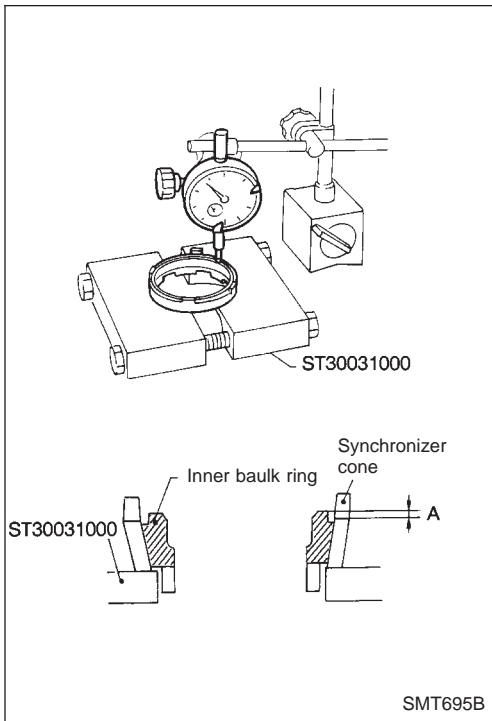
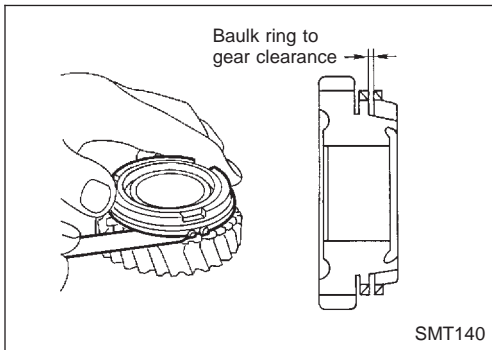
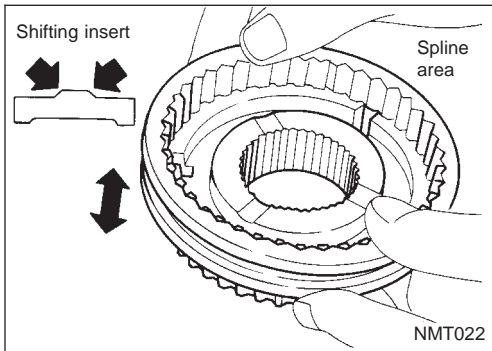
8. Remove 1st & 2nd synchronizer hub and 1st main gear.



INSPECTION

Gear and shaft

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



Synchronizer

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

- Measure clearance between baulk ring and gear.

**Clearance between baulk rings and gears,
for 1st and 4th gears only:**

Standard

1.0 - 1.35 mm (0.0394 - 0.0531 in)

Wear limit

0.7 mm (0.028 in)

- 2nd and 3rd gears have inner and outer baulk rings and so have different measurements.

- Measure wear of 2nd and 3rd baulk ring.

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

Standard:

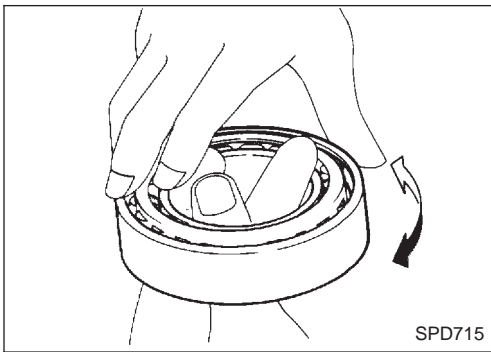
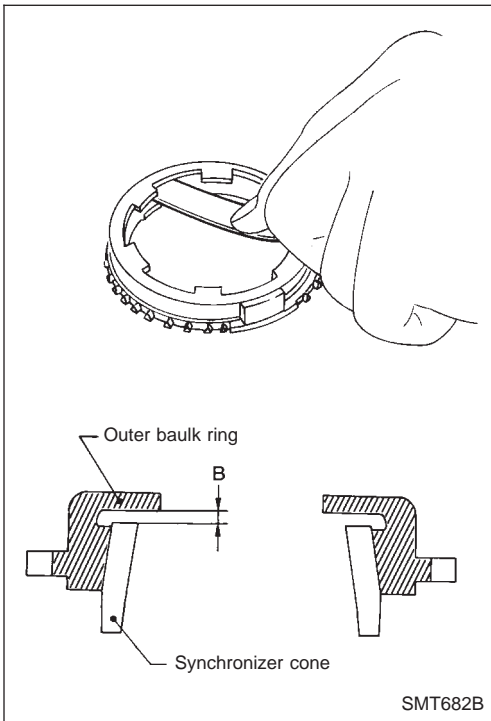
A 0.7 - 0.9 mm (0.028 - 0.035 in)

B 0.6 - 1.1 mm (0.024 - 0.043 in)

Wear limit:

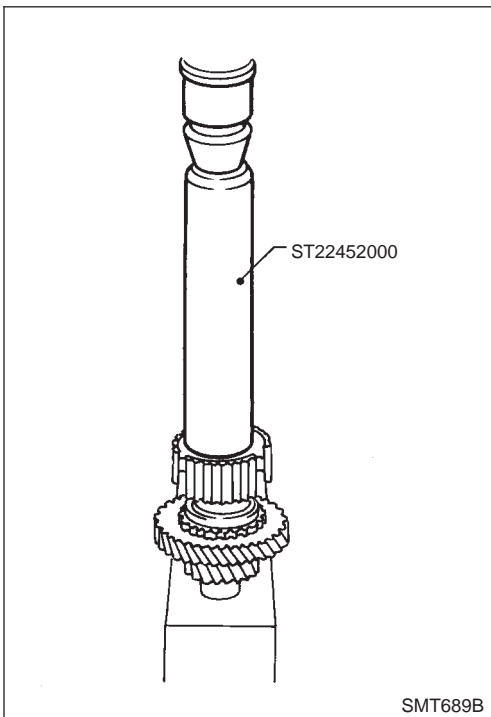
0.2 mm (0.008 in)

- c. If dimension "A" or "B" is smaller than the wear limit, replace outer baulk ring, inner baulk ring and synchronizer cone as a set.



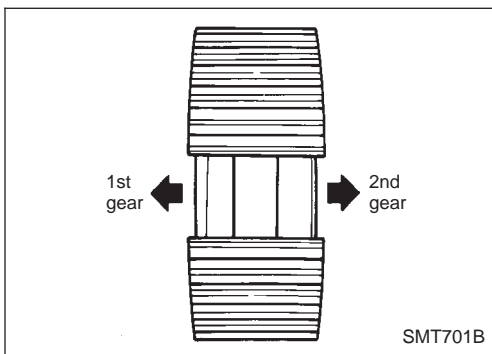
Bearing

- Make sure bearings roll freely and are free from noise, cracks, pitting or wear.
- **The mainshaft front bearing cannot be re-used. It must be replaced once removed.**

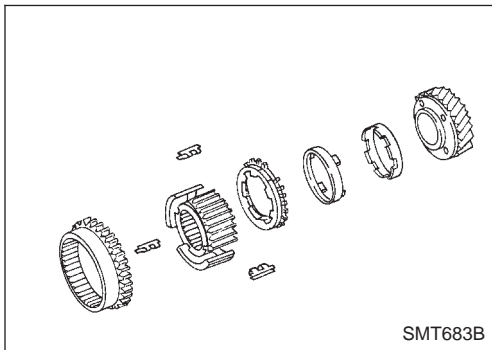


ASSEMBLY

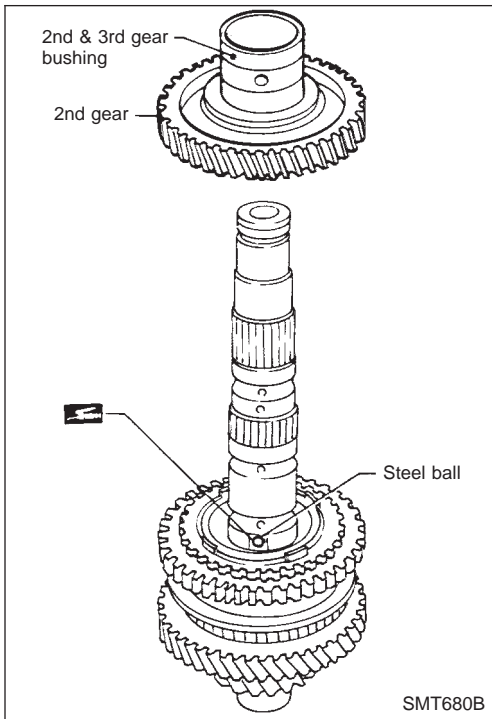
1. Install 1st gear needle bearing, 1st main gear and baulk ring.
2. Press on 1st & 2nd synchronizer hub.



- Ensure correct fitting of 1st & 2nd synchronizer hub.

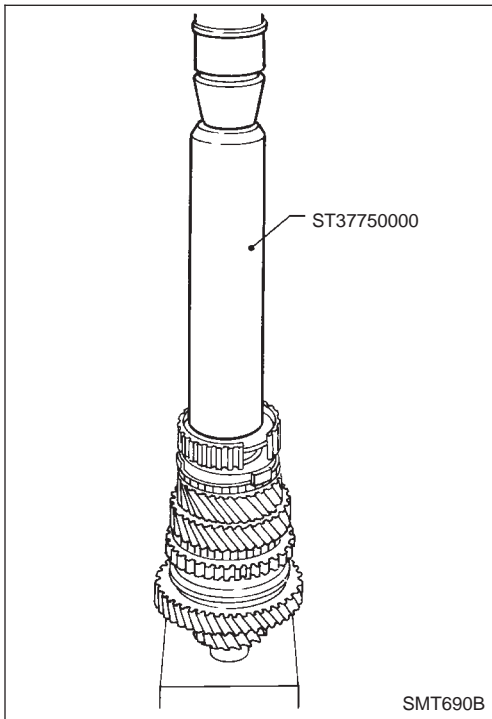


3. Install 2nd synchronizer cone, outer & inner baulk ring and 1st & 2nd coupling sleeve.

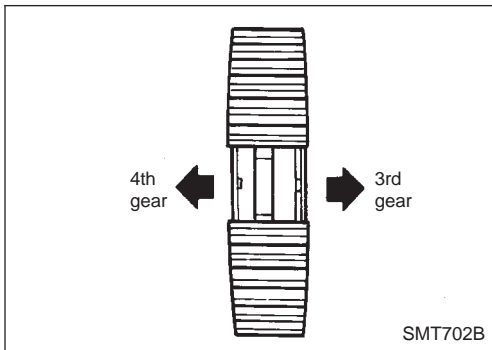


4. Install steel ball, 2nd main gear, 2nd & 3rd bushing.
 - Apply gear oil to 2nd & 3rd gear bushing.
 - Apply multi-purpose grease to steel ball before installing it.
 - 2nd & 3rd bushing has a groove in which steel ball fits.

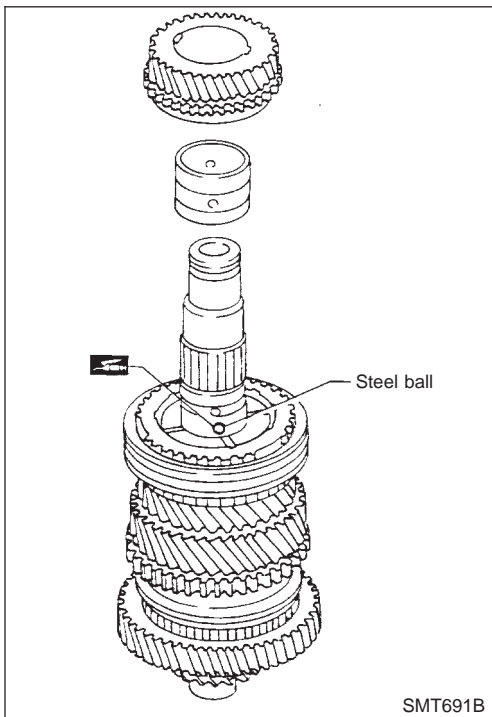
Mainshaft and Gears (Cont'd)



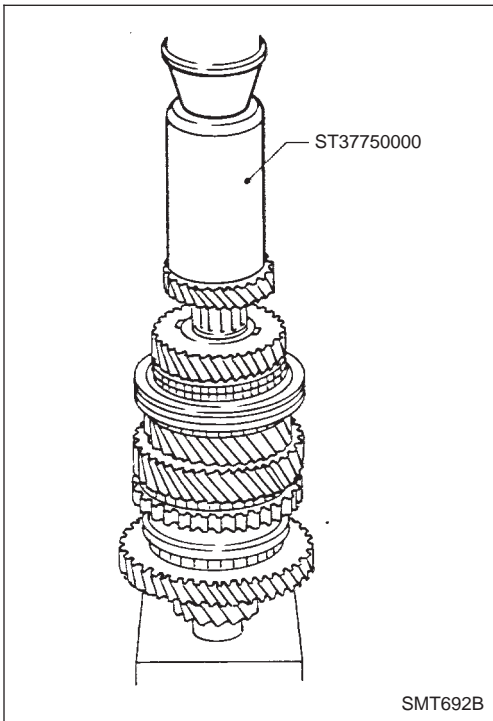
5. Install 3rd main gear, synchronizer cone, and outer & inner baulk ring.
6. Press on 3rd & 4th synchronizer hub.



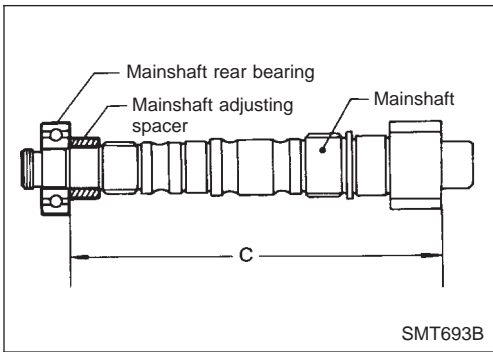
7. Install 3rd & 4th coupling sleeve and 4th baulk ring.
 - **Ensure correct fitting of 3rd & 4th synchronizer hub.**



8. Install steel ball, 4th bushing and 4th main gear.
 - **Apply multi-purpose grease to steel ball before installing it.**
 - **4th bushing has a groove in which steel ball fits.**



9. Press on 5th main gear.

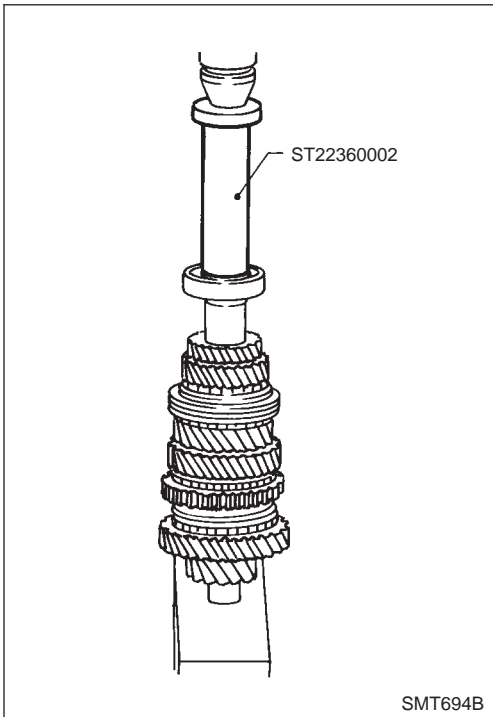


10. Install spacer and measure distance "C".

11. Select proper mainshaft bearing spacer to give correct bearing distance.

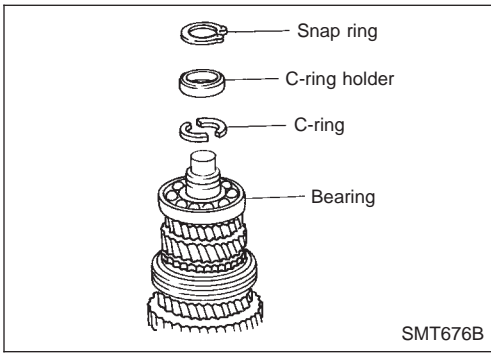
Bearing distance "C":
230.15 - 230.25 mm (9.0610 - 9.0649 in)

Spacers available:
Refer to SDS, MT-88.



12. Press on mainshaft rear bearing.

Mainshaft and Gears (Cont'd)



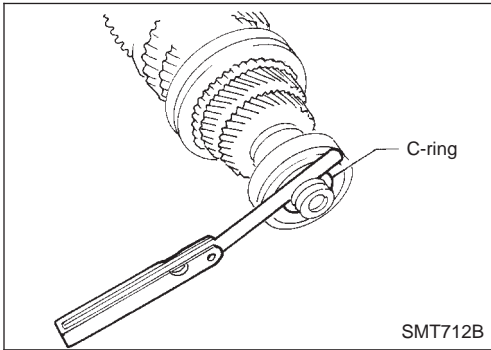
13. Select proper C-ring to minimize clearance of groove in mainshaft and install it.

Allowable clearance of groove:

0 - 0.1 mm (0 - 0.004 in)

Mainshaft C-rings:

Refer to SDS, MT-87.

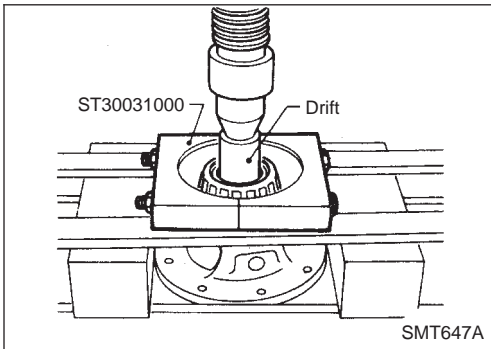


14. Install C-ring holder and snap ring.
15. Measure gear end play as a final check — Refer to “Disassembly”.

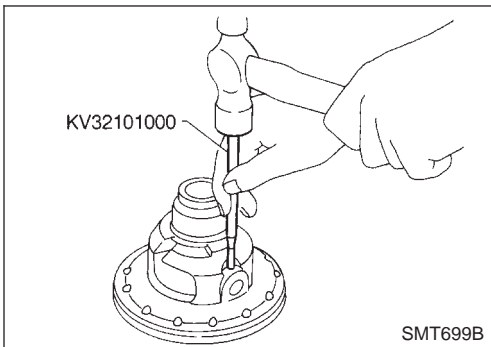
Final Drive

DISASSEMBLY

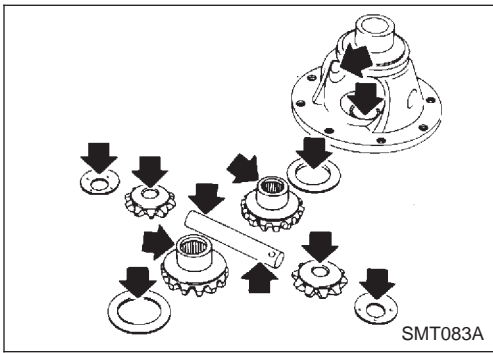
1. Remove final gear.



2. Remove speedometer drive gear by cutting it.
3. Press out differential side bearings.
- **Be careful not to mix up the right and left bearings.**



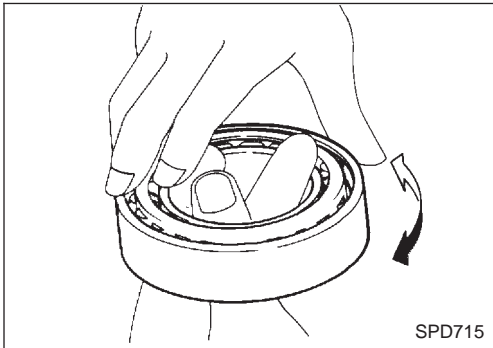
4. Drive out retaining pin and draw out pinion mate shaft.
5. Remove pinion mate gears and side gears.



INSPECTION

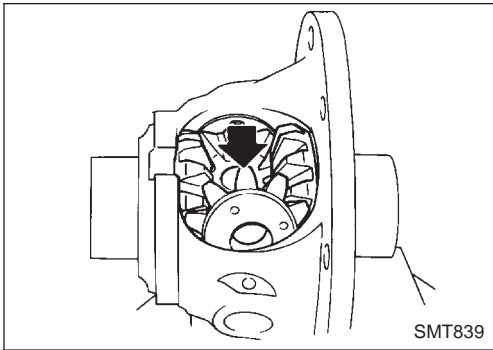
Gear, washer, shaft and case

- Check mating surfaces of differential case, side gears and pinion mate gears.
- Check washers for wear.



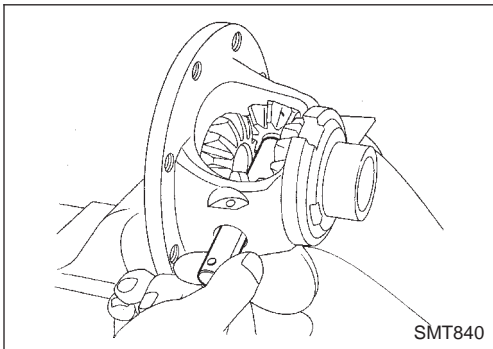
Bearing

- Make sure bearings roll freely and are free from noise, cracks, pitting or wear.
- **When replacing tapered roller bearing, replace outer and inner race as a set.**

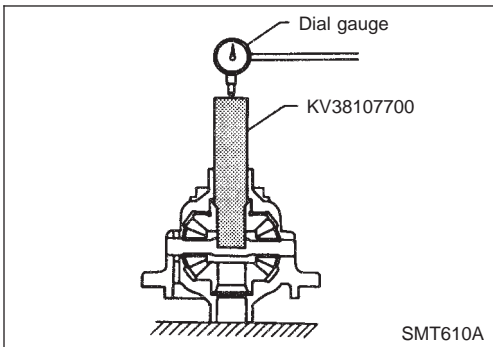


ASSEMBLY

1. Attach side gear thrust washers to side gears, then install pinion mate washers and pinion mate gears in place.



2. Insert pinion mate shaft.
 - **When inserting, be careful not to damage pinion mate thrust washers.**



3. Measure clearance between side gear and differential case with washers using the following procedure:

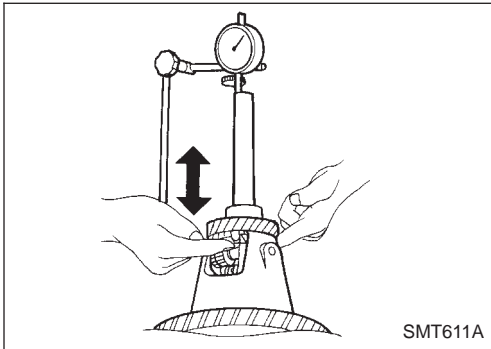
- a. Set Tool and dial indicator on side gear.
- b. Move side gear up and down to measure dial indicator deflection. Always measure indicator deflection on both side gears.

Clearance between side gear and differential case with washers:

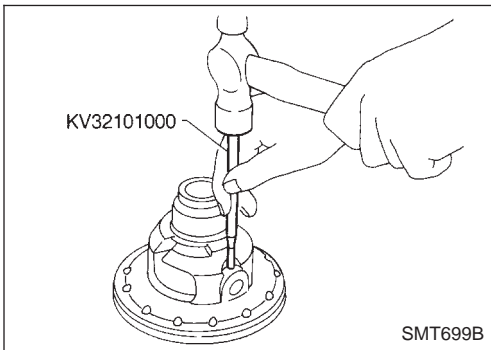
0.1 - 0.2 mm (0.004 - 0.008 in)

- c. If not within specification, adjust clearance by changing thickness of side gear thrust washers.

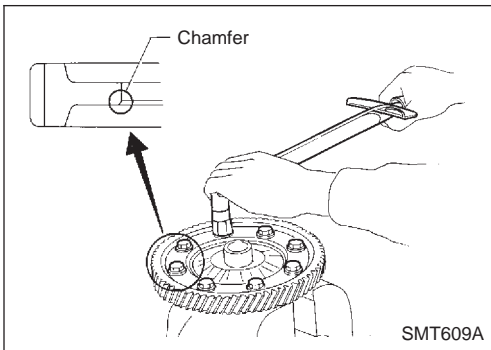
Final Drive (Cont'd)



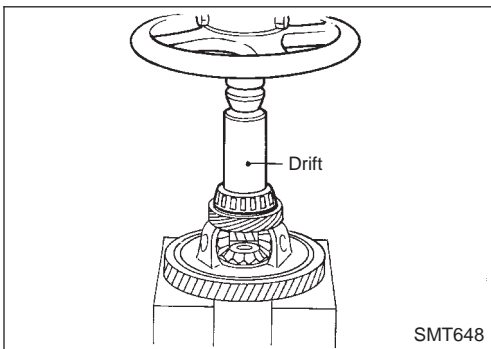
Side gear thrust washers:
Refer to SDS, MT-88.



4. Install retaining pin.
 - **Make sure that retaining pin is flush with case.**



5. Install final gear.
 - **Apply locking sealant to final gear fixing bolts before installing them.**
6. Install speedometer drive gear.



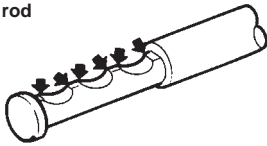
7. Press on differential side bearings.

Shift Control Components

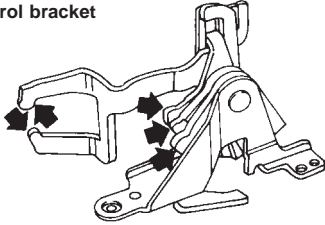
INSPECTION

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

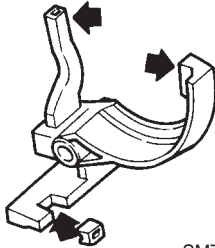
Striking rod



Control bracket

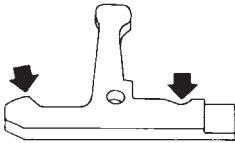


Shift fork and shifter cap

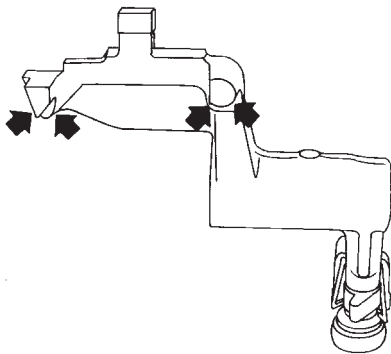


SMT703B

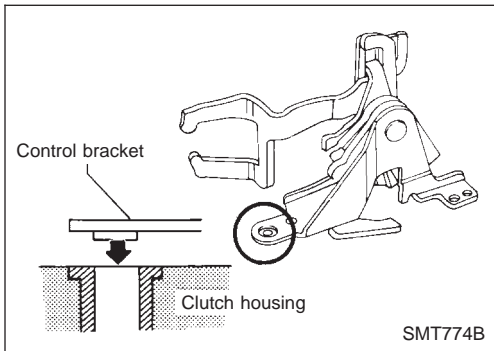
Reverse brake cam



Striking lever

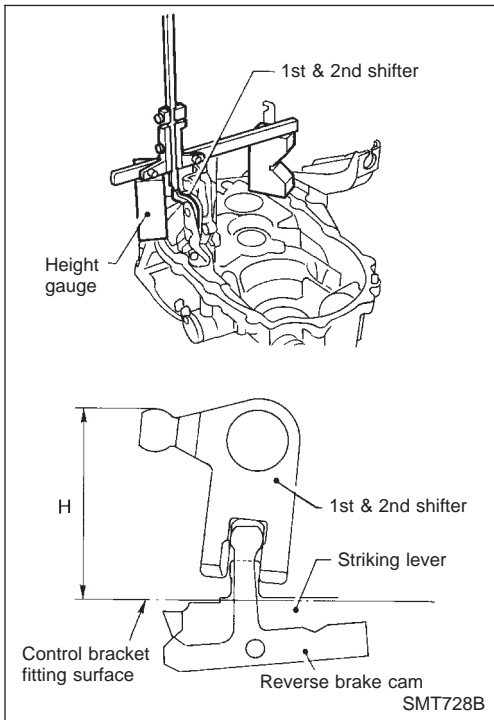


SMT727B



ADJUSTMENT OF INPUT SHAFT BRAKING MECHANISM

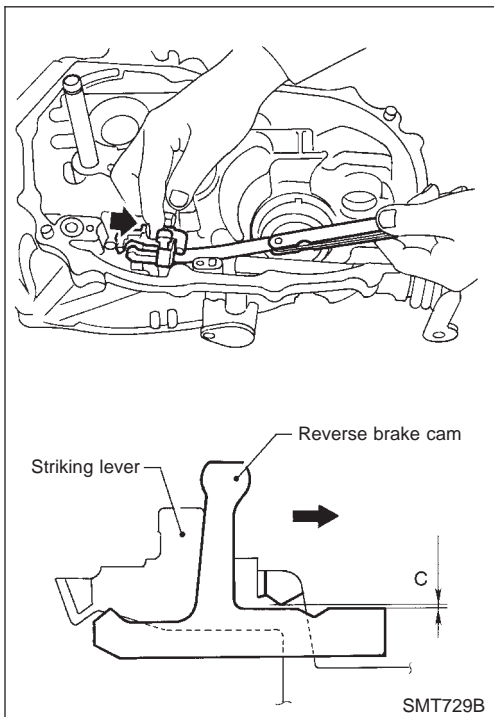
1. Install striking lever & rod, striking interlock assembly and control bracket on clutch housing exactly.
 - **When installing control bracket on clutch housing, assure protrusion beneath bracket is correctly seated.**



2. Measure maximum height "H" while shifting from neutral to reverse position.

Maximum height "H":

67.16 - 67.64 mm (2.6441 - 2.6630 in)



3. Remove control bracket from clutch housing.
4. Measure clearance "C" between reverse brake cam and striking lever at reverse position.

Clearance "C":

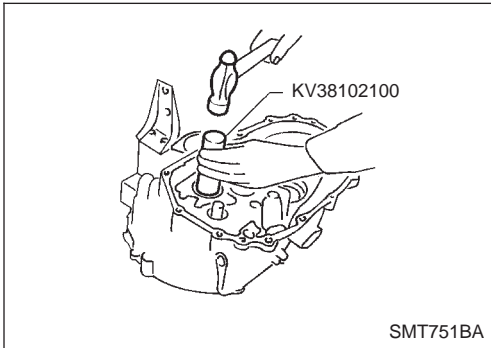
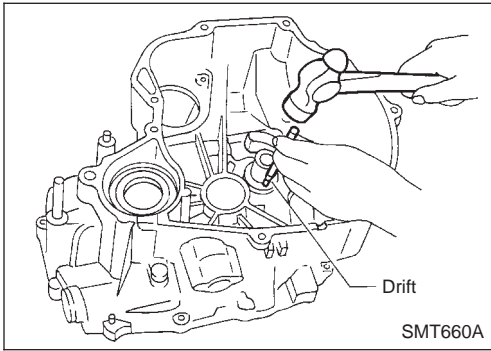
0.05 - 0.125 mm (0.0020 - 0.0044 in)

5. If height "H" and clearance "C" are not within specifications, replace control bracket, striking lever and striking interlock assembly as a set.

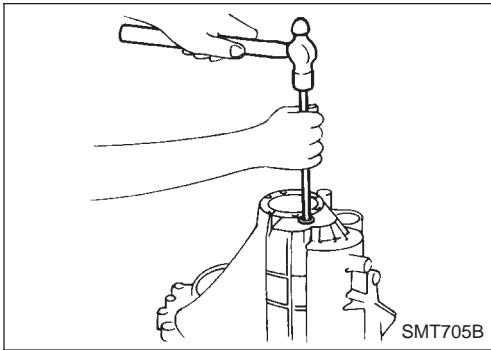
Case Components

REMOVAL AND INSTALLATION

Input shaft oil seal

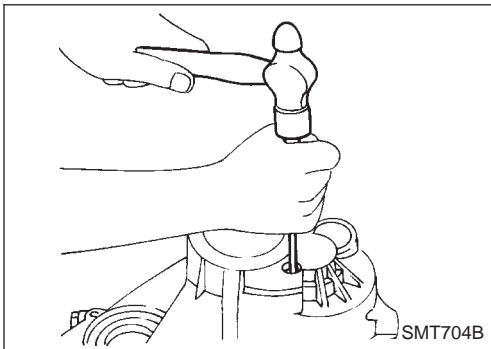


- Apply multi-purpose grease to seal lip of oil seal before installing.

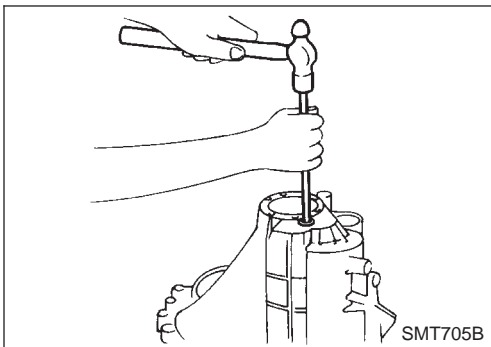


Input shaft rear bearing

1. Remove welch plug from transmission case.

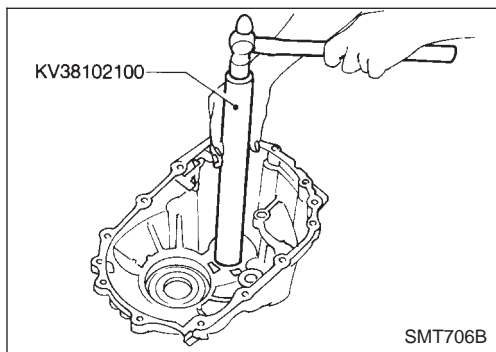


2. Remove input shaft rear bearing by tapping it from welch plug hole.

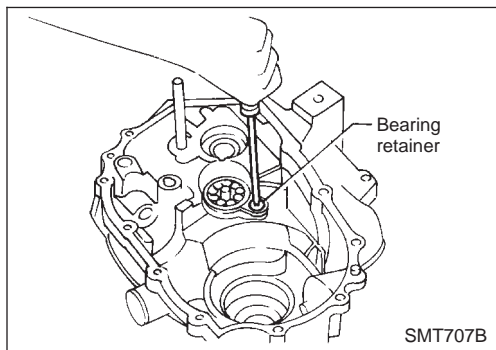


3. Install welch plug.
 - Apply recommended sealant to mating surface of transmission case.

Case Components (Cont'd)

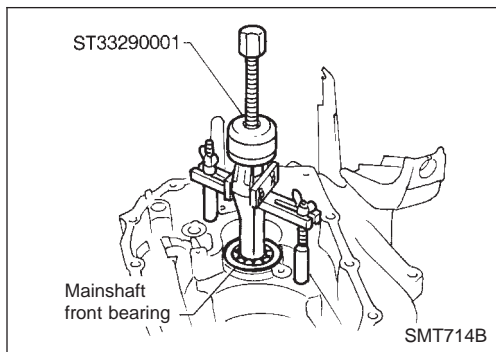


4. Install input shaft rear bearing.



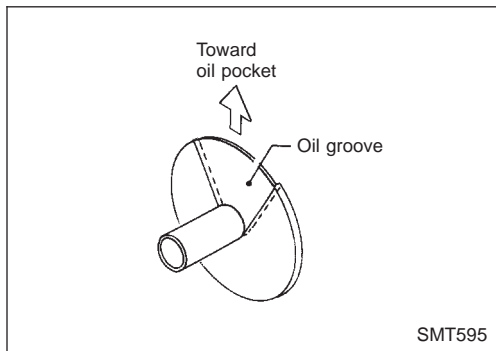
Mainshaft front bearing and oil channel

1. Remove mainshaft front bearing retainer.



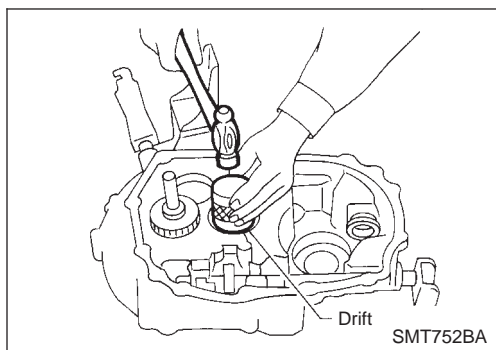
2. Remove mainshaft front bearing.

3. Remove oil channel.



4. Install oil channel.

- Ensure that oil groove in oil channel always faces toward oil pocket when installing it on clutch housing.



5. Install mainshaft front bearing.

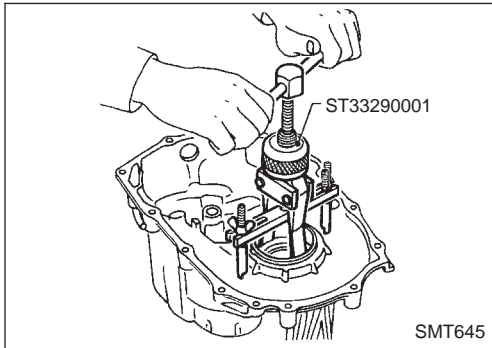
6. Install mainshaft front bearing retainer.

- Apply locking sealant to thread of screw before installation.

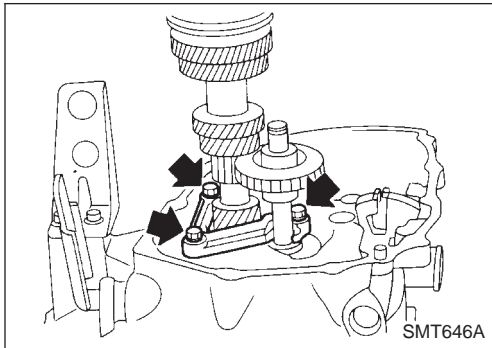
Differential Side Bearing Preload

If any of the following parts are replaced, adjust differential side bearing preload.

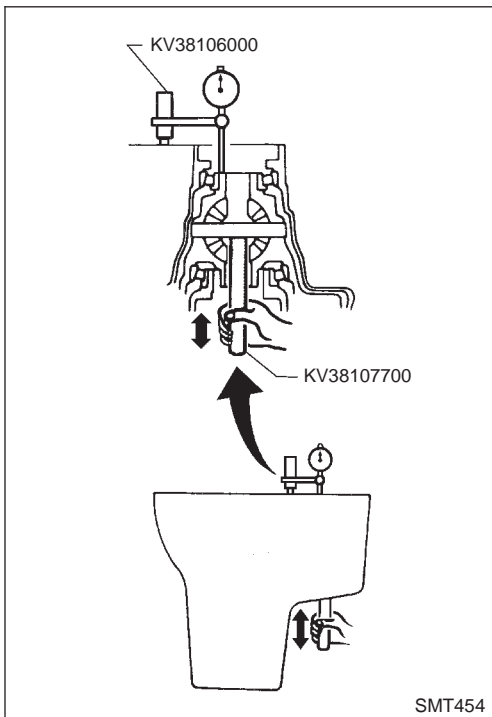
- Differential case
- Differential side bearing
- Clutch housing
- Transmission case



1. Remove differential side bearing outer race (transmission case side) and shim.



2. Reinstall differential side bearing outer race without shim.
3. Install final drive assembly on clutch housing.
4. Install transmission case on clutch housing.
- **Tighten transmission case fixing bolts to the specified torque.**

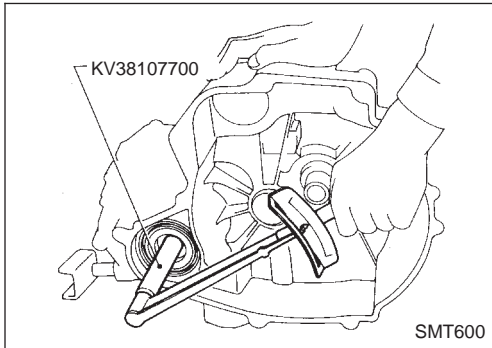


5. Set dial indicator on front end of differential case.
6. Insert Tool all the way into differential side gear.
7. Move Tool up and down and measure dial indicator deflection.
8. Select shim of proper thickness using SDS table as a guide.

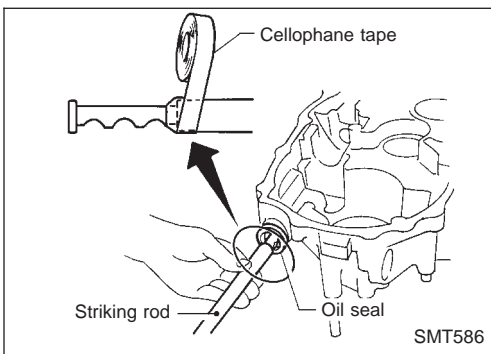
Differential side bearing adjusting shims:

Refer to SDS MT-88.

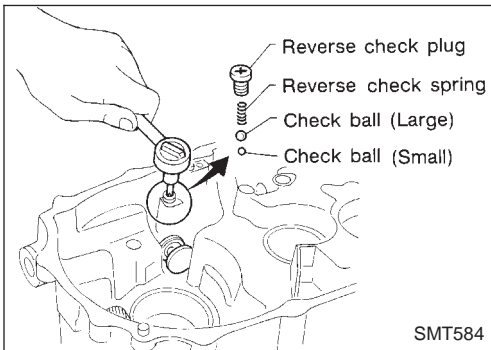
9. Install selected shim and differential side bearing outer race.
10. Check differential side bearing turning torque.
 - a. Install final drive assembly on clutch housing.
 - b. Install transmission case on clutch housing.
 - **Tighten transmission case fixing bolts to the specified torque. Page MT-15**



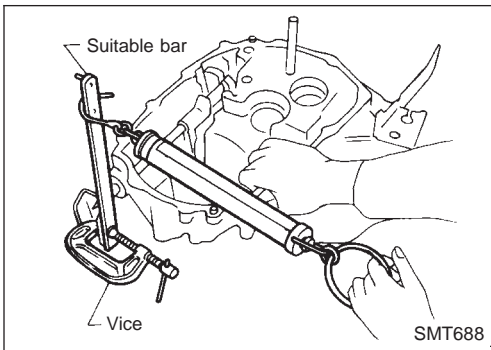
- c. Measure turning torque of final drive assembly.
 - Turning torque of final drive assembly
(New bearing):**
2.9 - 6.9 N·m (30 - 70 kg·cm, 26 - 61 in·lb)
 - When old bearing is used again, turning torque will be slightly less than the above.
 - Make sure torque is close to the specified range.
 - Changes in turning torque of final drive assembly per revolution should be within 1.0 N·m (10 kg·cm, 8.7 in·lb) without binding.



1. Install striking rod, lever and interlock.
 - **When inserting striking rod into clutch housing, tape edges of striking rod to avoid damaging oil seal lip.**



2. Install reverse check sleeve assembly.
3. Install check balls, reverse check spring and reverse check plug.

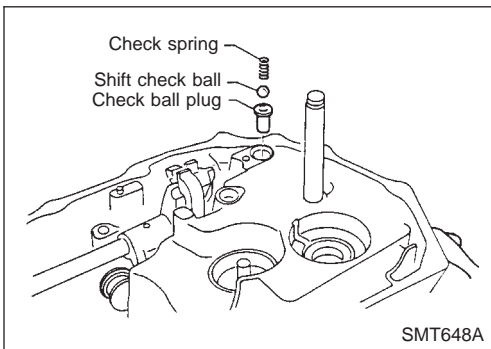


4. Check reverse check force.

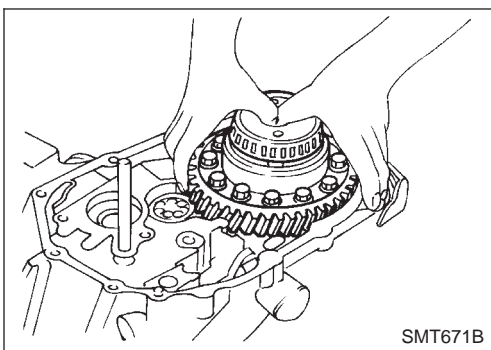
Reverse check force:
4.9 - 7.4 N·m
(50 - 75 kg-cm, 43 - 65 in-lb)

 - If not within specification, select another check plug having a different length and reinstall it.

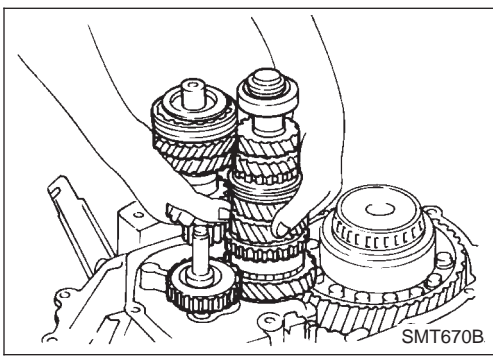
Available reverse check plugs:
Refer to SDS MT-87.



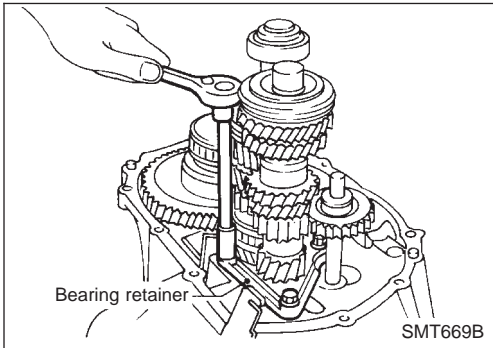
5. Install selected reverse check plug.
 - **Apply locking sealant to thread of plug before installing it.**
6. Install check ball plug, shift check ball and check spring.
7. Install oil pocket.



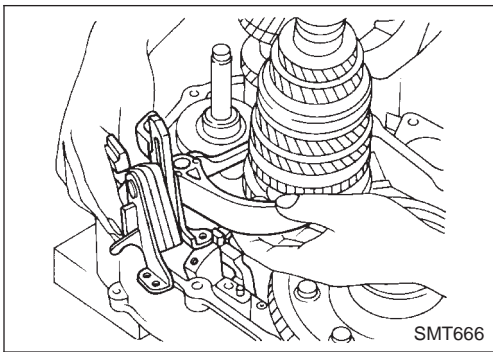
8. Install gear components onto clutch housing.
 - a. Install final drive assembly.



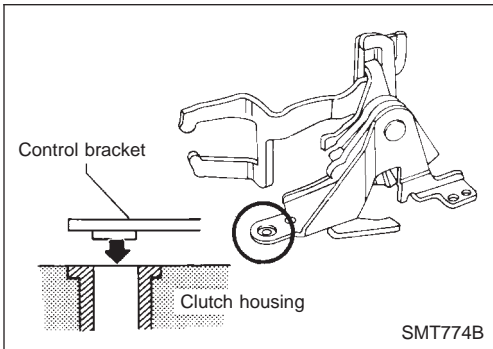
- b. Install input shaft assembly with bearing retainer, mainshaft assembly and reverse idler gear.
 - Be careful not to damage oil seal lip with splines of input shaft while shaft is being inserted into clutch housing.
 - Be careful not to damage oil channel when inserting mainshaft into clutch housing.



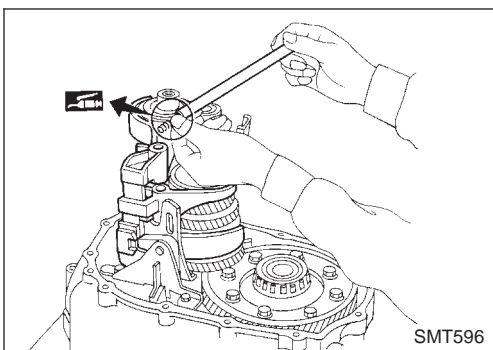
- c. Install input shaft front bearing retainer.



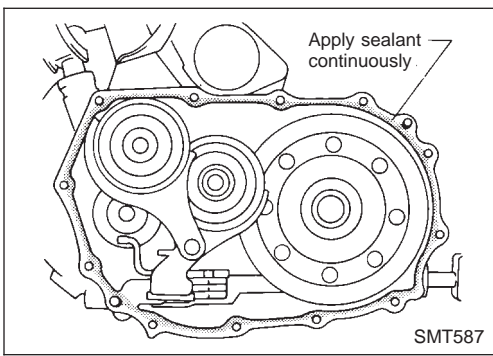
9. Apply grease to shifter caps, then install it to control bracket. Install control bracket with 1st & 2nd shift fork.



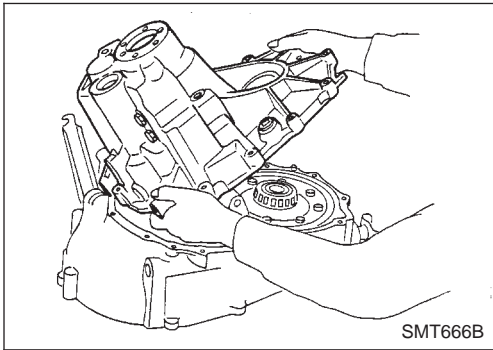
- Ensure control bracket is seated correctly on clutch housing.
10. Install 3rd & 4th and 5th shift forks.



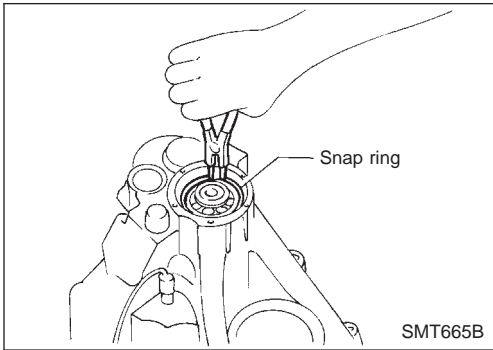
11. Insert fork shaft.
 - Apply multi-purpose grease to support spring before installing.
12. Install reverse idler spacer.



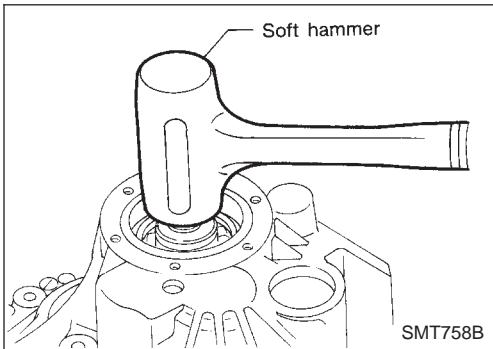
13. Apply recommended sealant to mating surface of clutch housing.



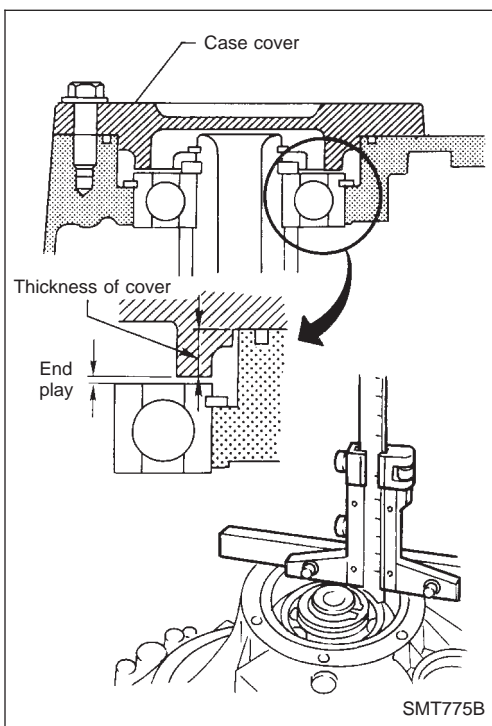
14. Install transmission case on clutch housing.



15. Install mainshaft front bearing snap ring.



16. Tap mainshaft with a soft hammer to ensure mainshaft rear bearing snap ring contacts the surface of transmission case.

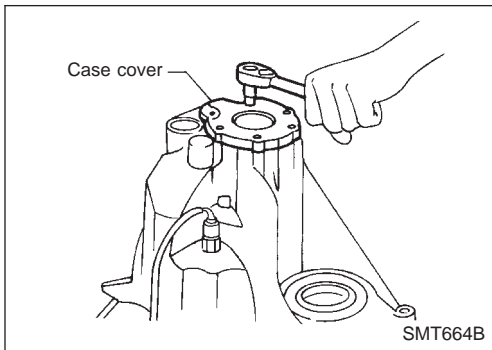


17. Select case cover using the following procedure.
 - a. Measure distance between case cover fitting surface and mainshaft rear bearing outer race.

Clearance "C" between the end of case cover and main shaft rear bearing outer race (Main shaft end play):
0 - 0.1 mm (0 - 0.004 in)
 - b. Select case cover so that clearance "C" will be specified clearance.

Case cover:

Refer to SDS MT-89.



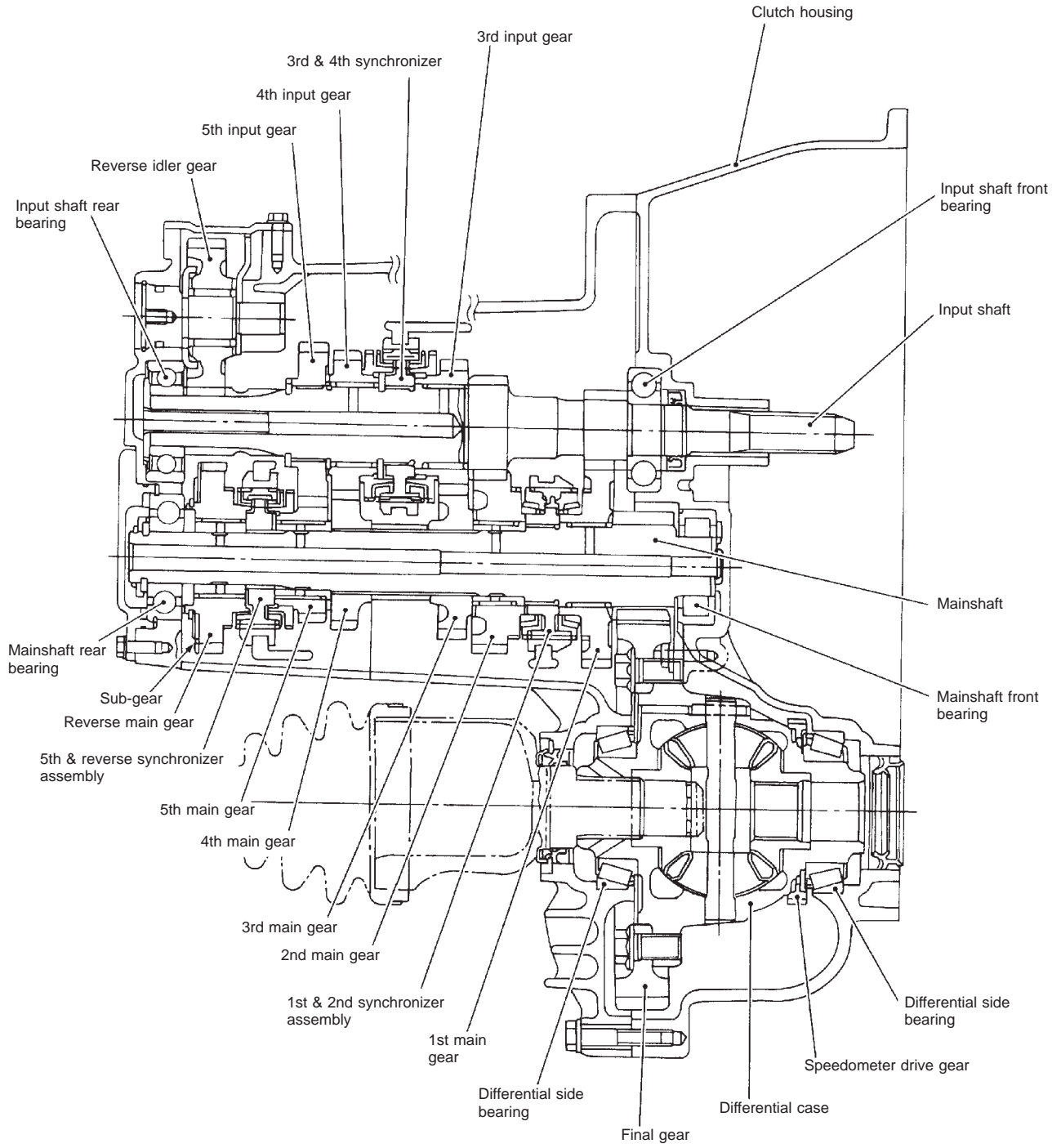
18. Install O-ring and case cover on transmission case.

- **Apply recommended sealant to mating surface of transmission case.**

Cross-sectional View

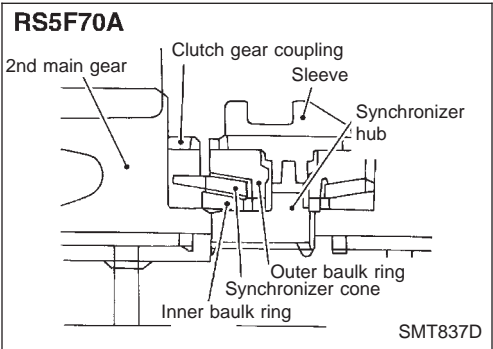
NCMT0004S01

RS5F70A



SMT834D

Cross-sectional View (Cont'd)



DOUBLE-CONE SYNCHRONIZER

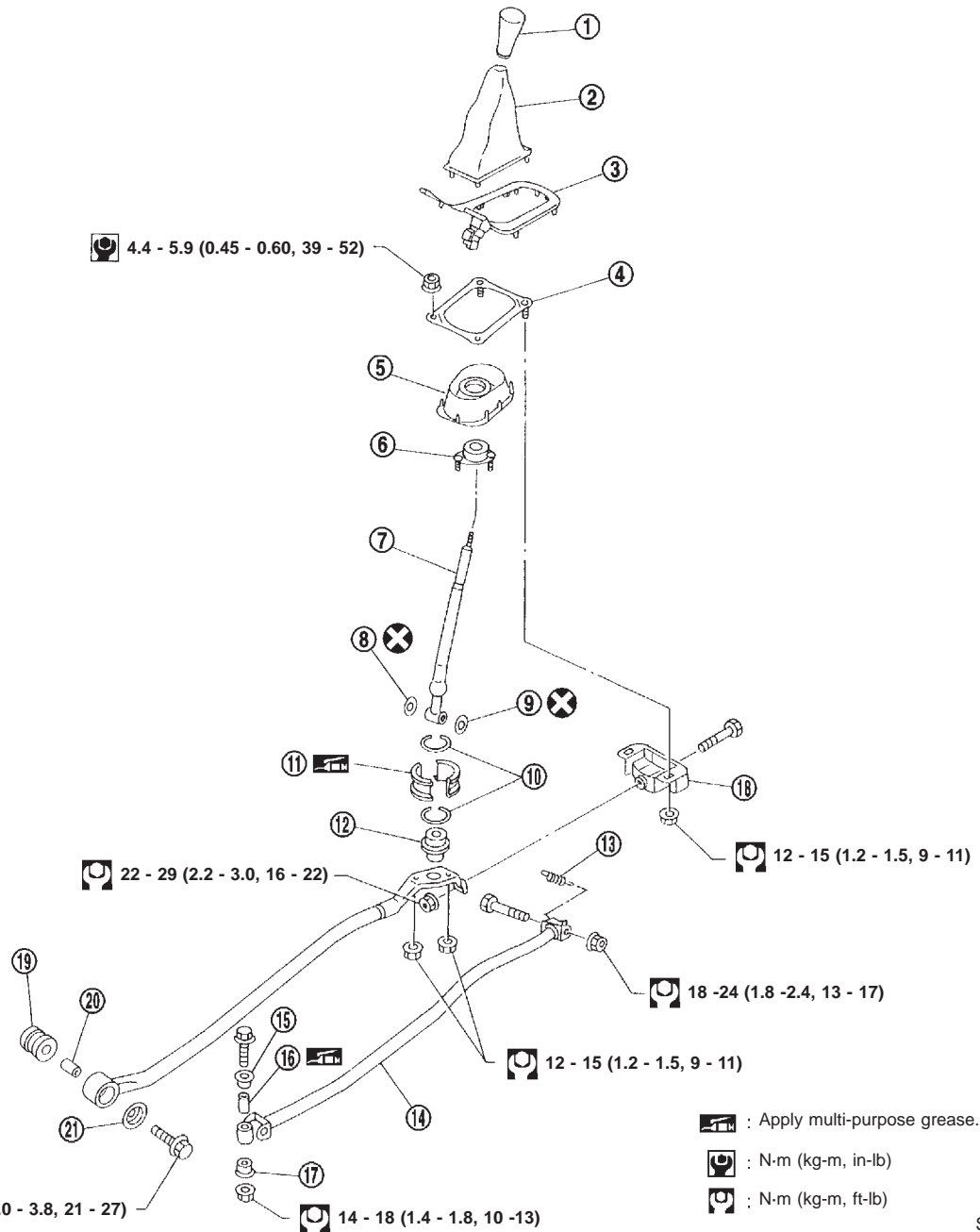
NCMT0004S0101

Double-cone synchronizer is adopted for 1st and 2nd gears to reduce operating force of the shift lever.

Transaxle Gear Control

NCMT0008S01

SEC. 341

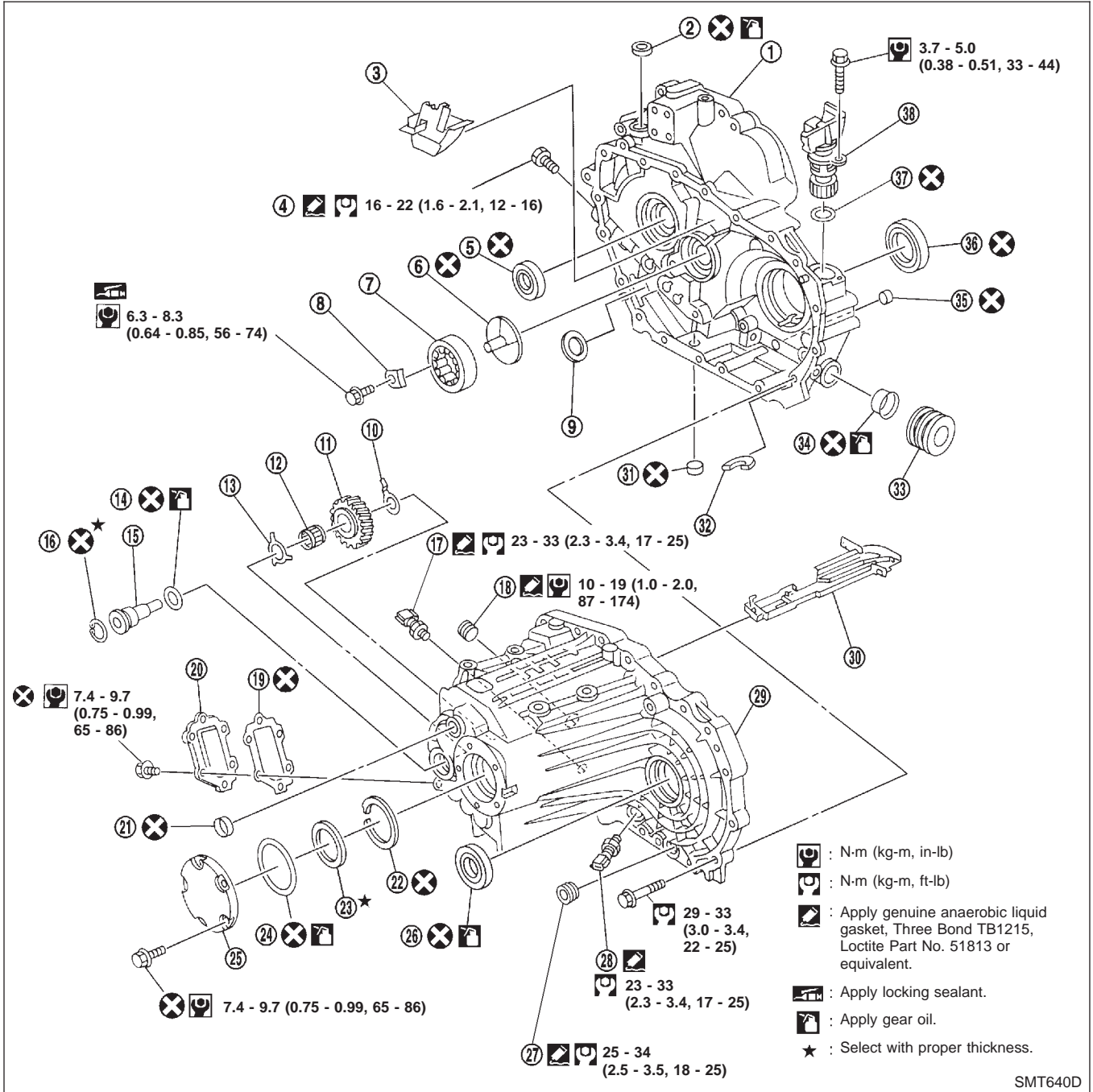


SMT135D

- | | | |
|--------------------------|-------------------|-------------|
| 1. Control lever knob | 8. O-ring | 15. Bush |
| 2. Boot | 9. O-ring | 16. Collar |
| 3. Finisher | 10. Ring spring | 17. Bush |
| 4. Control lever bracket | 11. Bearing seat | 18. Bracket |
| 5. Dust cover | 12. Seat | 19. Bush |
| 6. Socket | 13. Return spring | 20. Collar |
| 7. Control lever | 14. Control rod | 21. Washer |

Case Components

=NCMT0008S02

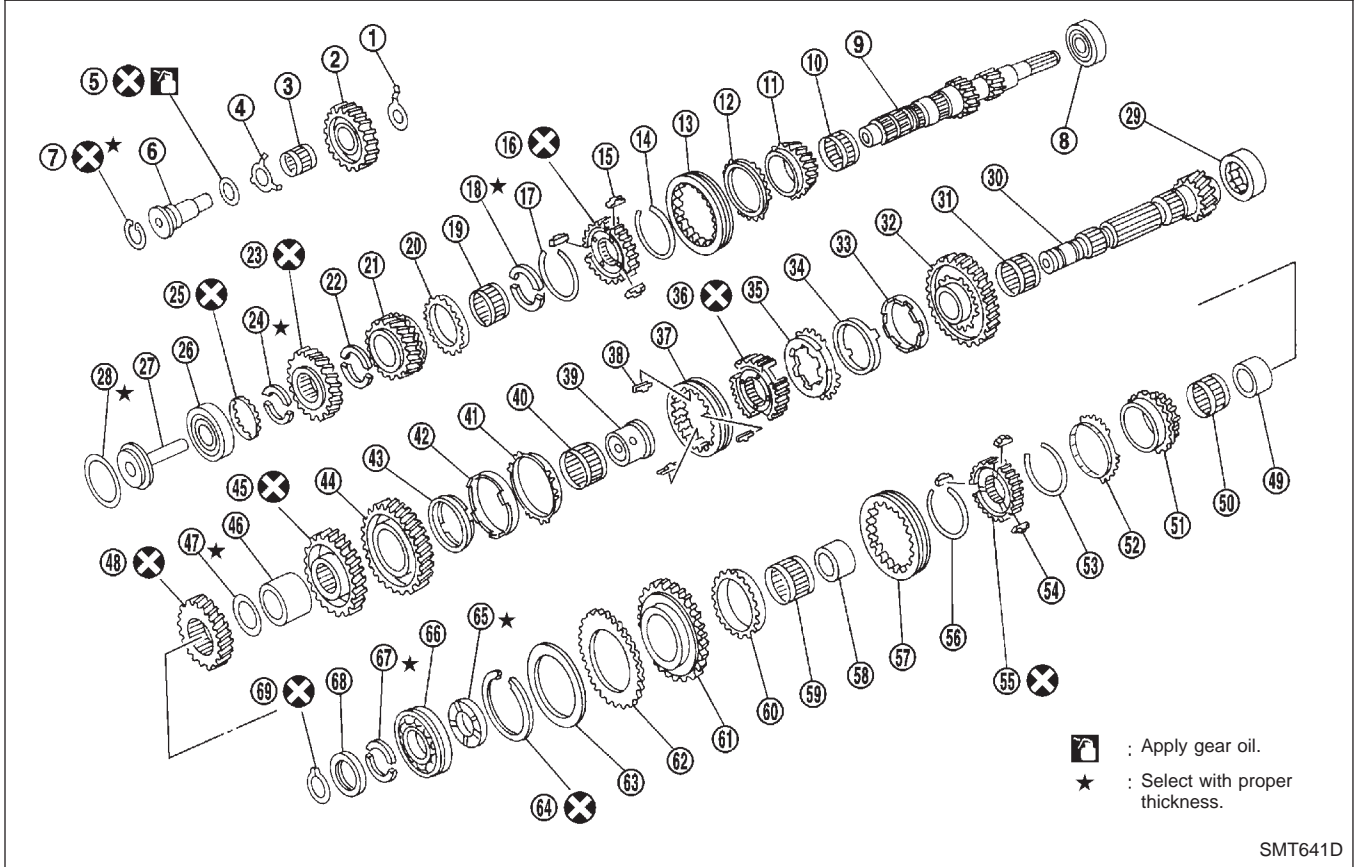


SMT640D

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> 1. Clutch housing 2. Welch plug 3. Oil pocket 4. Check plug 5. Input shaft oil seal 6. Oil channel 7. Mainshaft front bearing 8. Bearing retainer 9. Magnet 10. Reverse idler gear rear thrust washer 11. Reverse idler gear 12. Reverse idler gear bearing | <ul style="list-style-type: none"> 13. Reverse idler gear front thrust washer 14. O-ring 15. Reverse idler gear shaft 16. Snap ring 17. Reverse switch 18. Filler plug 19. Side cover gasket 20. Side cover 21. Welch plug 22. Mainshaft bearing snap ring 23. Mainshaft bearing adjusting shim 24. O-ring | <ul style="list-style-type: none"> 25. Rear cover 26. Differential oil seal 27. Drain plug 28. PNP switch 29. Transmission case 30. Oil gutter 31. Welch plug 32. Magnet 33. Boot 34. Striking rod oil seal 35. Welch plug 36. Differential oil seal 37. O-ring 38. Speedometer pinion (If so equipped) |
|--|--|---|

Gear Components

=NCMT0008S03

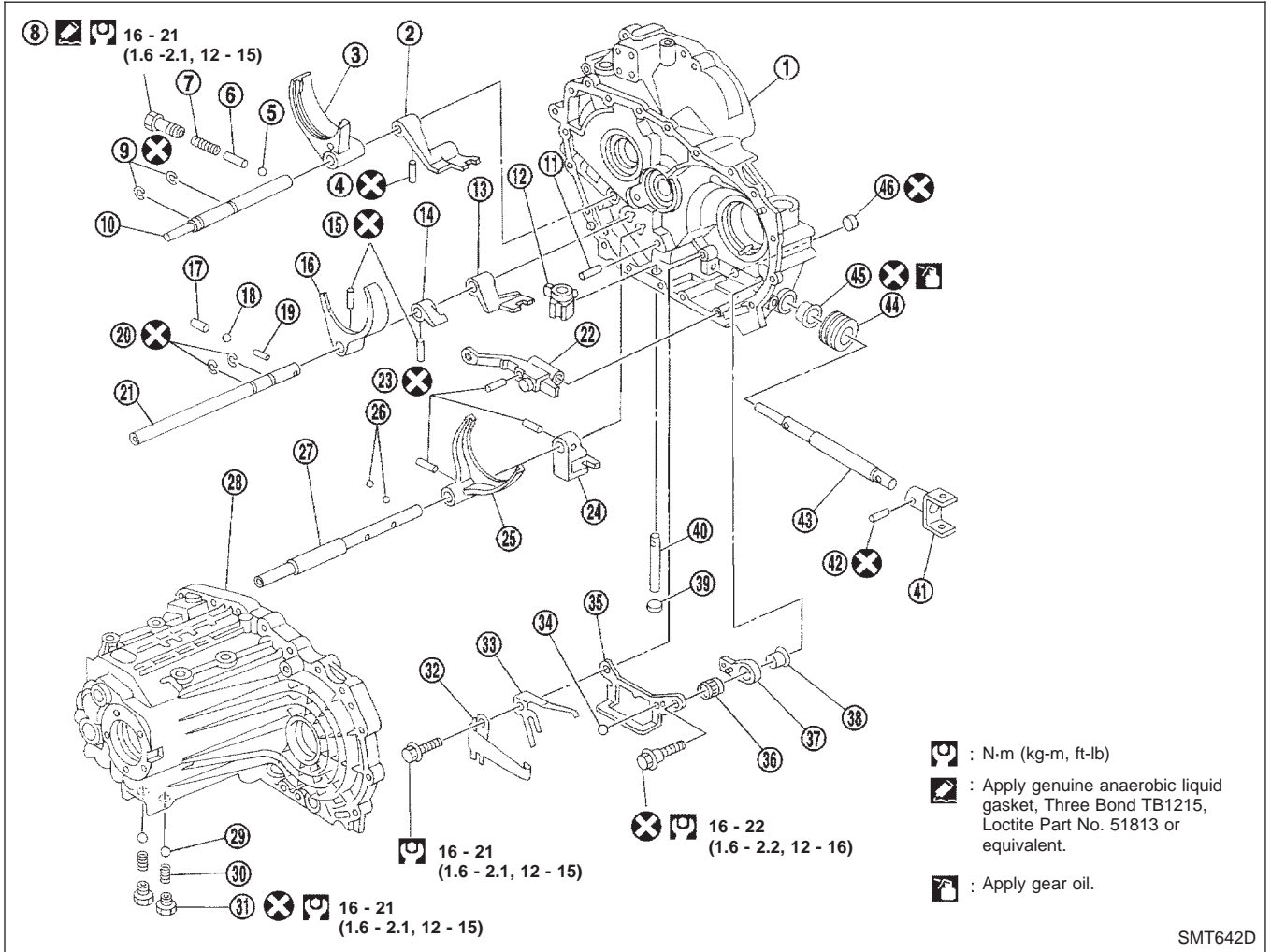


SMT641D

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> 1. Reverse idler gear rear thrust washer 2. Reverse idler gear 3. Reverse idler gear bearing 4. Reverse idler gear front thrust washer 5. O-ring 6. Reverse idler gear shaft 7. Snap ring 8. Input shaft front bearing 9. Input shaft 10. 3rd gear needle bearing 11. 3rd input gear 12. 3rd gear baulk ring 13. Coupling sleeve 14. Spread spring 15. Shifting insert 16. Coupling sleeve 17. Spread spring 18. 4th gear C-ring 19. 4th gear needle bearing 20. 4th gear baulk ring 21. 4th input gear 22. 5th gear front C-ring 23. 5th input gear | <ul style="list-style-type: none"> 24. 5th gear rear C-ring 25. C-ring holder 26. Input shaft rear bearing 27. Oil channel 28. Input shaft rear bearing adjusting shim 29. Mainshaft front bearing 30. Mainshaft 31. 1st gear needle bearing 32. 1st main gear 33. 1st inner baulk ring 34. 1st synchronizer cone 35. 1st outer baulk ring 36. 1st & 2nd synchronizer hub 37. Coupling sleeve 38. Insert spring 39. 2nd gear bushing 40. 2nd gear needle bearing 41. 2nd gear outer baulk ring 42. 2nd gear synchronizer cone 43. 2nd inner baulk ring 44. 2nd main gear 45. 3rd main gear 46. Spacer | <ul style="list-style-type: none"> 47. Mainshaft adjusting shim 48. 4th main gear 49. 5th gear bushing 50. 5th gear needle bearing 51. 5th main gear 52. 5th gear baulk ring 53. Spread spring 54. Shifting insert 55. 5th & reverse synchronizer hub 56. Spread spring 57. Coupling sleeve 58. Reverse gear bush 59. Reverse gear needle bearing 60. Reverse gear baulk ring 61. Reverse main gear 62. Sub-gear 63. Sub-gear washer 64. Snap ring 65. Mainshaft thrust washer 66. Mainshaft rear bearing 67. Mainshaft C-ring 68. C-ring holder 69. Snap ring |
|--|--|---|

Shift Control Components

=NCMT0008S04

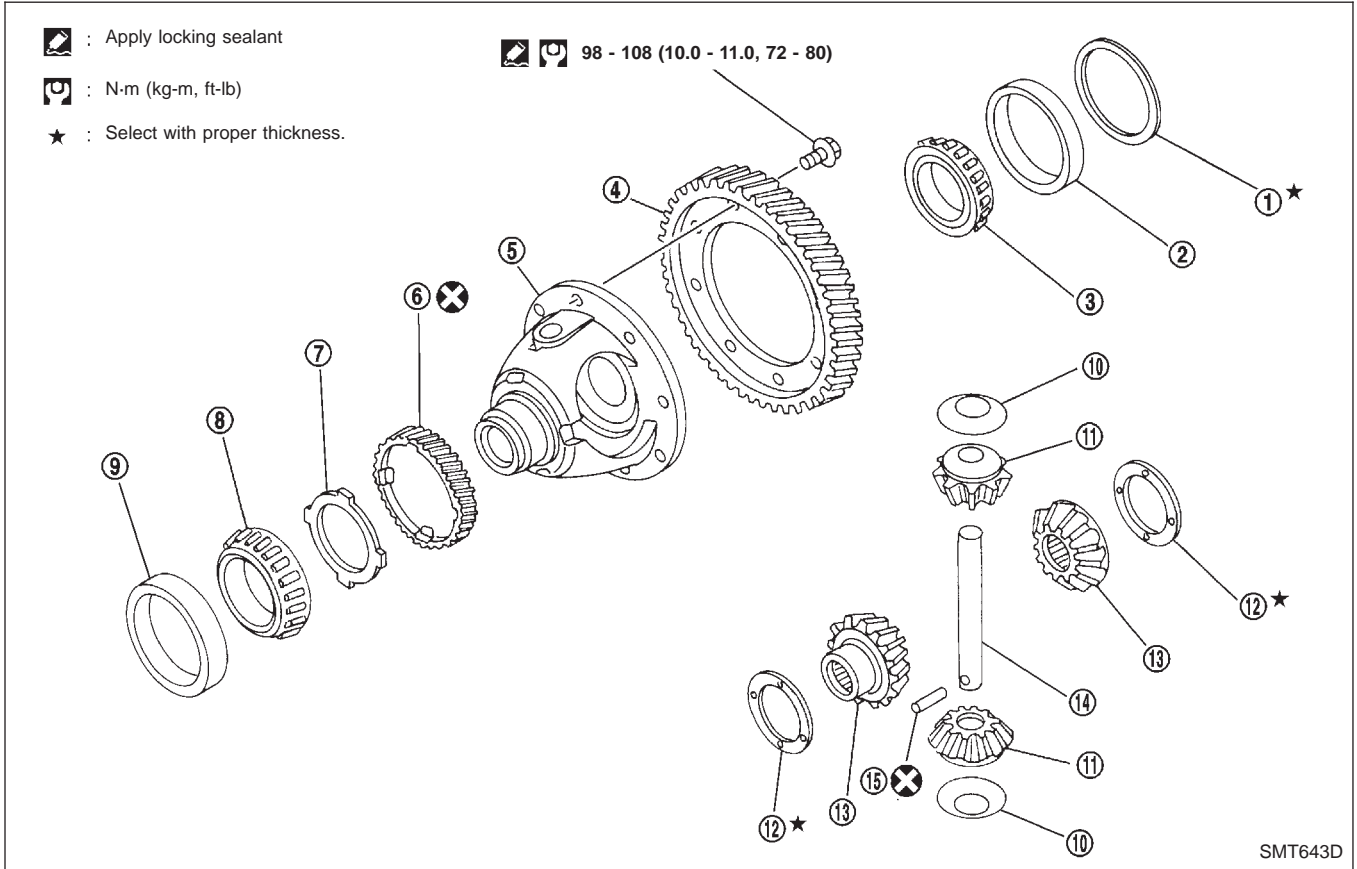


SMT642D

- | | | |
|------------------------------|----------------------------|---------------------------|
| 1. Clutch housing | 17. Interlock plunger | 32. Reverse gate |
| 2. 3rd & 4th bracket | 18. Check ball | 33. Return spring |
| 3. 3rd & 4th shift fork | 19. Interlock pin | 34. Steel ball |
| 4. Retaining pin | 20. Stopper ring | 35. Reverse gate |
| 5. Check ball | 21. 5th & reverse fork rod | 36. Return bearing |
| 6. Check pin | 22. Striking lever | 37. Selector arm |
| 7. Check spring | 23. Retaining pin | 38. Bushing |
| 8. Check plug | 24. 1st & 2nd bracket | 39. Welch plug |
| 9. Stopper ring | 25. 1st & 2nd shift fork | 40. Selector shaft |
| 10. 3rd & 4th fork rod | 26. Check ball | 41. Striking yoke |
| 11. Selector shaft pin | 27. 1st & 2nd fork rod | 42. Retaining pin |
| 12. Selector | 28. Transaxle case | 43. Striking rod |
| 13. 5th & reverse bracket | 29. Check ball | 44. Dust boot |
| 14. Reverse switch bracket | 30. Check spring | 45. Striking rod oil seal |
| 15. Retaining pin | 31. Check plug | 46. Welch plug |
| 16. 5th & reverse shift fork | | |

Final Drive Components

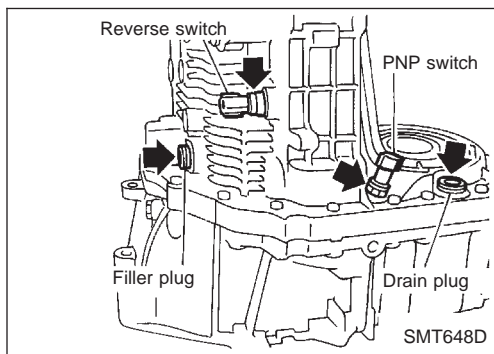
=NCMT0008S05



- | | | |
|---|---|-----------------------------|
| 1. Differential side bearing adjusting shim | 6. Speedometer drive gear | 11. Pinion mate gear |
| 2. Differential side bearing outer race | 7. Speedometer stopper | 12. Side gear thrust washer |
| 3. Differential side bearing | 8. Differential side bearing | 13. Side gear |
| 4. Final gear | 9. Differential side bearing outer race | 14. Pinion mate shaft |
| 5. Differential case | 10. Pinion mate thrust washer | 15. Lock pin |

DISASSEMBLY

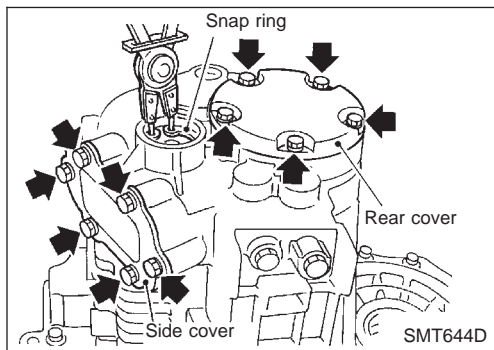
Transaxle Case



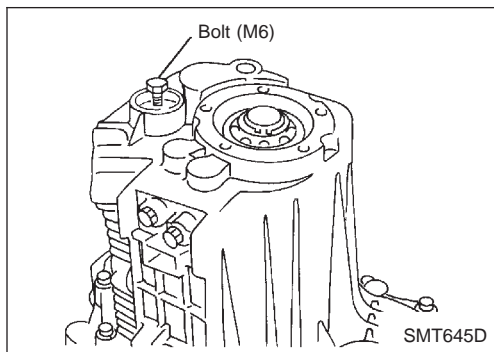
Transaxle Case

NCMT0009S01

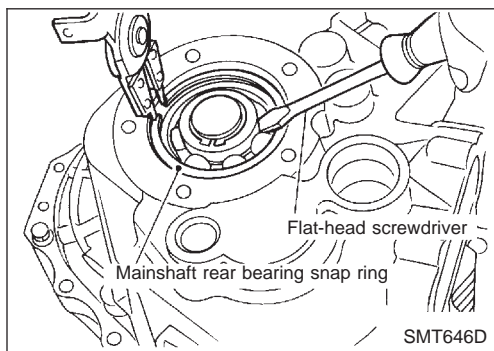
1. Remove reverse switch, PNP switch, drain plug, and filler plug from transaxle case.



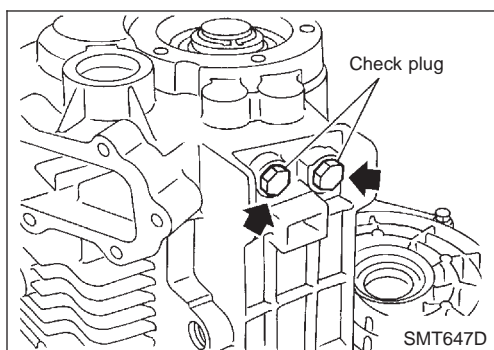
2. Remove snap rings from reverse idler shaft.
3. Remove side cover and rear cover from case.
4. Remove O-ring and mainshaft bearing adjusting shim.



5. Remove reverse idler gear shaft.
 - a. Attach bolt (M6) to thread of reverse idler gear shaft end.
 - b. Pull out the attached bolt, and remove reverse idler gear shaft from case.
6. Remove reverse idler gear, thrust washer, and bearing from case.



7. Remove snap ring of mainshaft bearing from case.

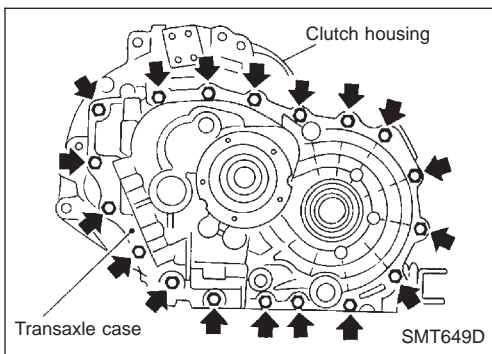


8. Remove check plugs, springs, and check balls from case.

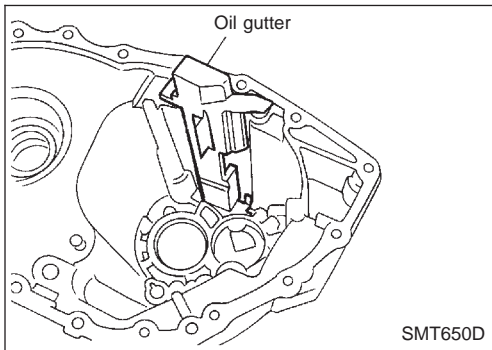
DISASSEMBLY

RS5F70A

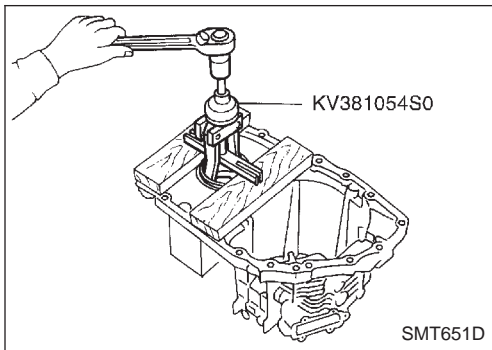
Transaxle Case (Cont'd)



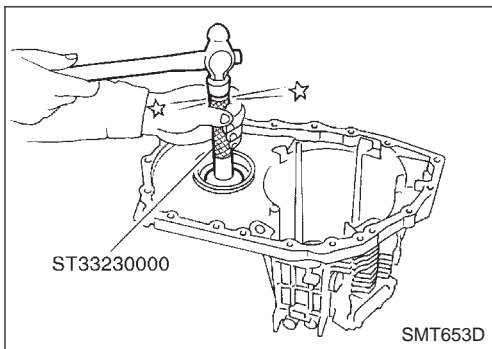
9. Remove mounting bolts.
10. Remove input shaft rear bearing adjusting shim from transaxle case.



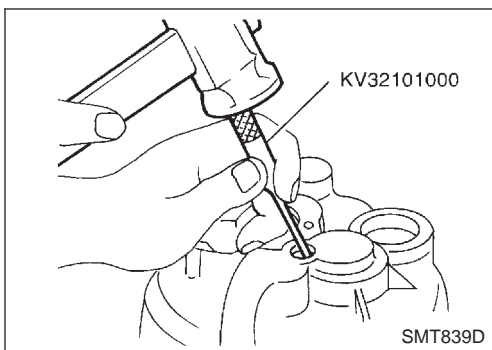
11. Remove oil gutter from case.



12. Remove differential side bearing outer race and adjusting shim from case.

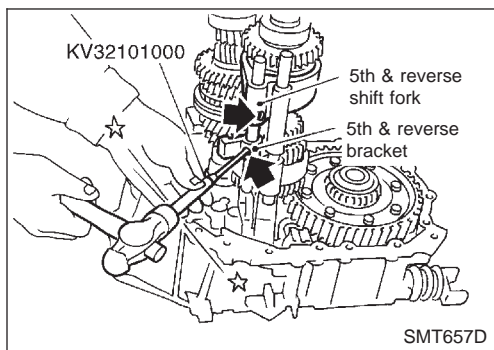
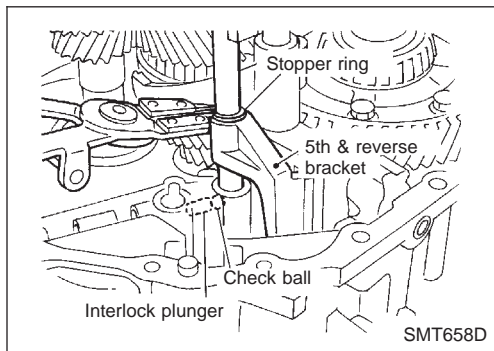
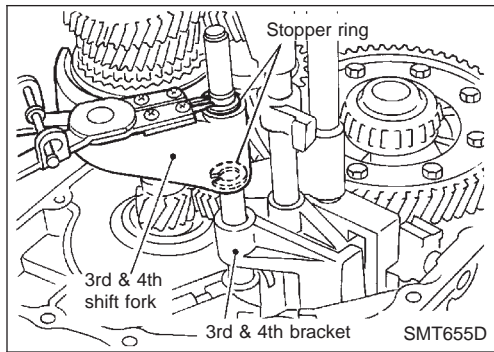
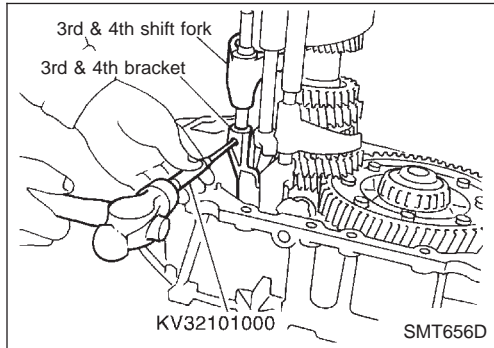
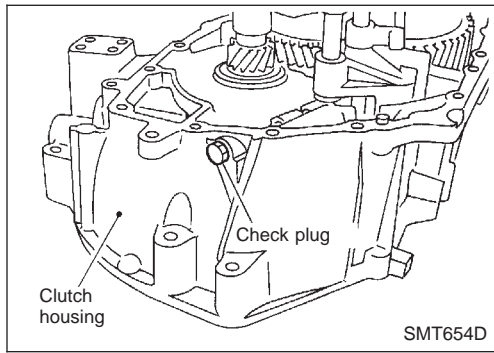


13. Remove differential oil seal from case.



14. Remove welch plugs from case.

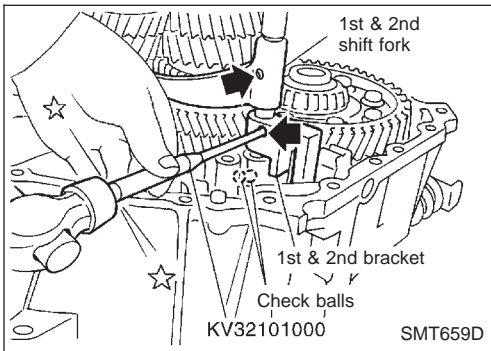
Clutch Housing



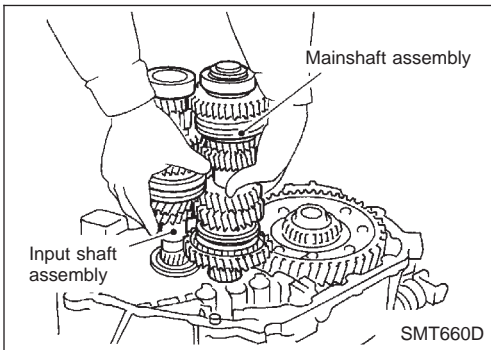
Clutch Housing

NCMT0009S02

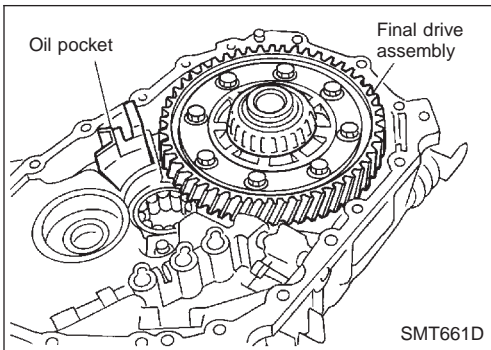
1. Remove transaxle case from clutch housing.
2. Remove magnet from housing.
3. Remove check plugs, check springs, check pins, and check balls from housing.
4. Remove 3rd & 4th bracket retaining pin.
5. Remove 3rd & 4th shift fork stopper ring.
6. Remove 3rd & 4th fork rod.
7. Remove 3rd & 4th shift fork and bracket.
8. Remove interlock plunger and check ball.
9. Remove 5th & reverse bracket stopper ring.
10. Remove retaining pin from 5th & reverse shift fork and reverse switch bracket.
11. Remove 5th & reverse fork rod.
12. Remove interlock pin from 5th & reverse fork rod.
13. Remove reverse switch bracket and 5th & reverse bracket.



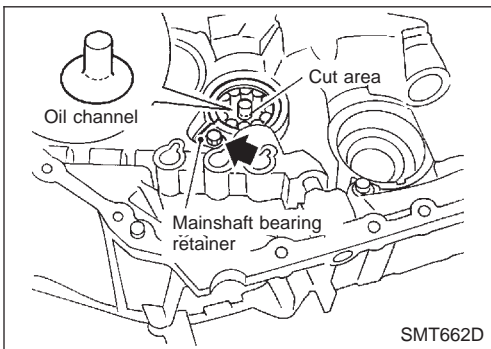
14. Remove check ball from housing.
15. Remove retaining pin for 1st & 2nd shift fork and bracket.
16. Remove 1st & 2nd fork rod.
17. Remove 5th & reverse and 1st & 2nd shift forks, and 1st & 2nd bracket.



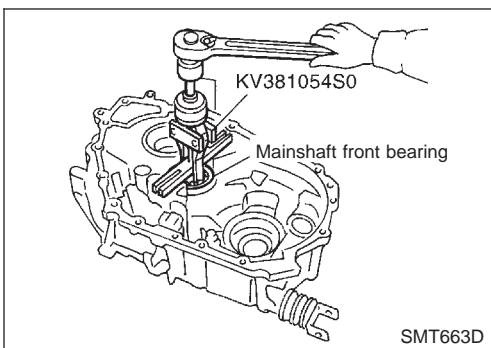
18. Remove both input shaft and mainshaft assemblies from housing.



19. Remove final drive assembly from housing.
20. Remove oil pocket from housing.

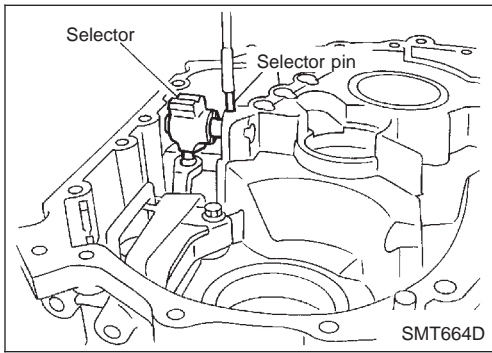


21. Remove mainshaft bearing retainer from housing.
22. Cut off oil channel using a cutter as shown in the figure.

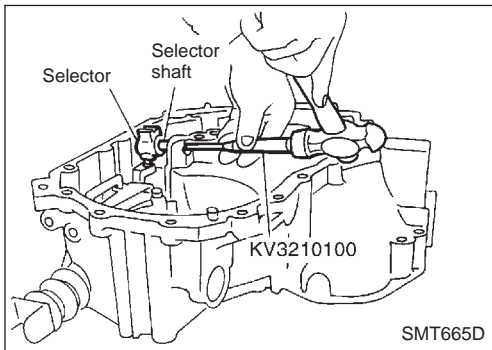


23. Remove mainshaft front bearing from housing.

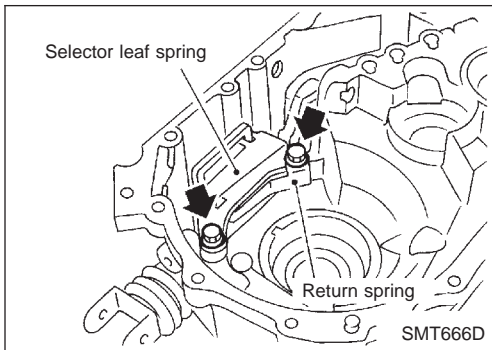
Clutch Housing (Cont'd)



24. Using a magnet or other suitable tool, remove retaining pin from selector shaft.



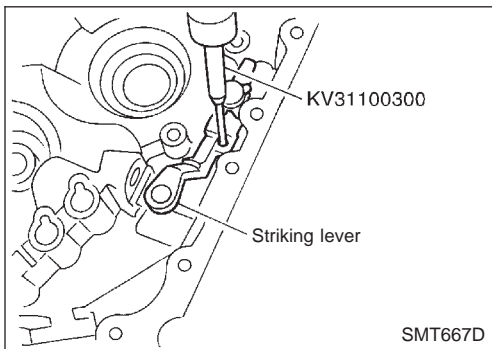
25. Remove selector shaft and plug, then remove selector.



26. Remove reamer bolt, then remove selector leaf spring, return spring, steel ball, reverse gate, selector arm, bearing, and bushing.

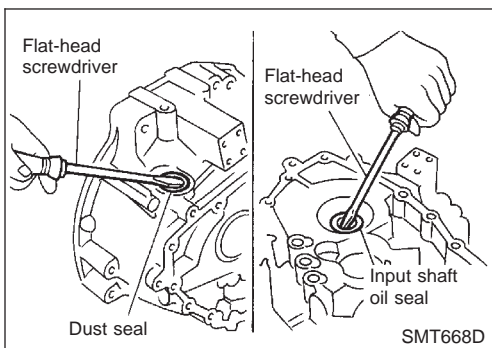
CAUTION:

Be careful not to lose the steel ball.



27. Remove retaining pin and plug from striking lever.

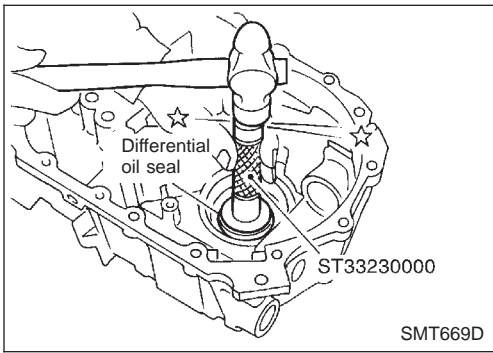
28. Remove striking rod, then striking lever from housing.



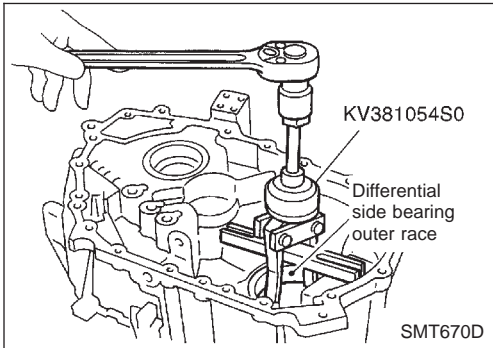
29. Using a flat-head screwdriver or other suitable tool, remove dust seal, input shaft oil seal, and striking rod oil seal from housing.

CAUTION:

When removing dust and oil seals, be careful not to damage mounting surfaces of dust seal and oil seal.

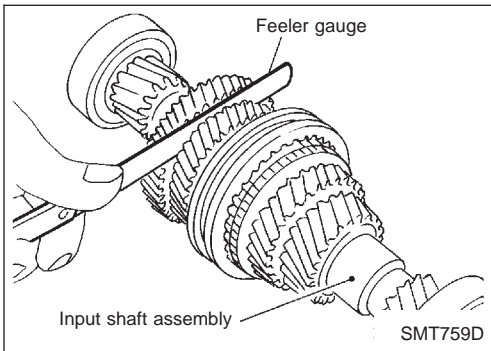


30. Remove differential oil seal from housing.



31. Remove differential side bearing outer race from housing.

Input Shaft and Gears



Input Shaft and Gears

DISASSEMBLY

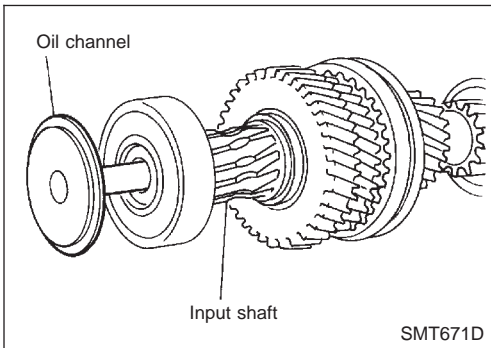
NCMT0010

1. Before disassembly, measure the end plays of 3rd and 4th input gears.

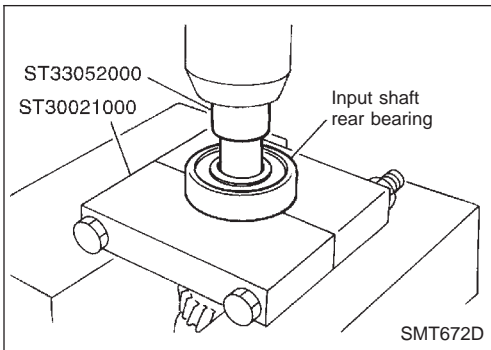
Gear end play:

Refer to SDS, MT-90.

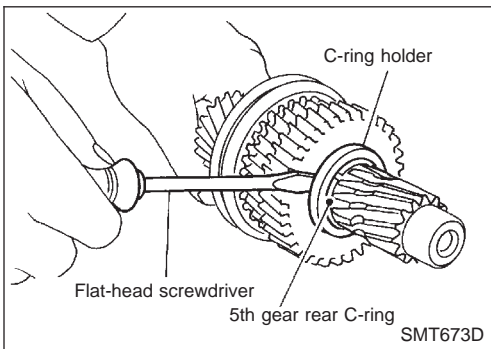
- If end play is not within specification, disassemble and check the parts.



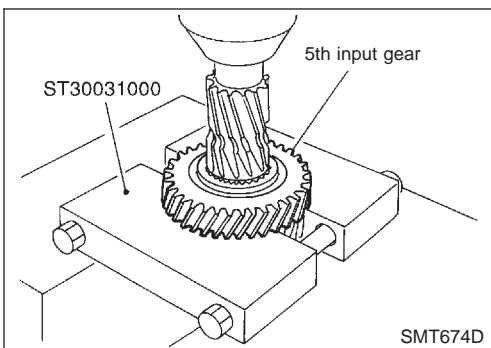
2. Remove oil channel from input shaft rear bearing.



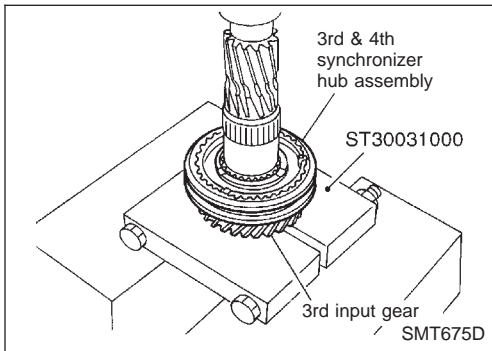
3. Press out input shaft rear bearing.



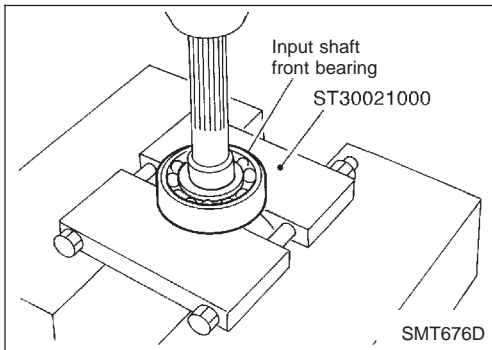
4. Remove C-ring holder.
5. Remove 5th gear rear C-ring.



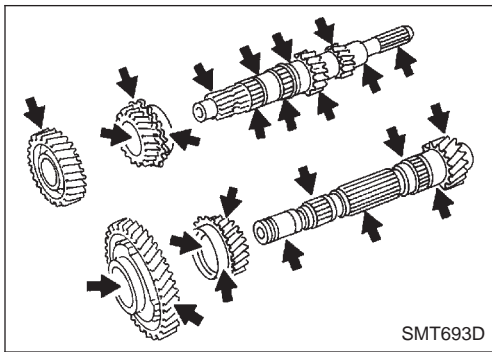
6. Remove 5th input gear from input shaft.
7. Remove 5th gear front C-ring.



8. Remove 4th input gear, baulk ring, 4th gear needle bearing, and 4th gear C-ring from input shaft.
9. Press out both 3rd & 4th synchronizer hub assembly and 3rd input gear from input shaft.
10. Remove 3rd gear needle bearing.



11. Press out input shaft front bearing from input shaft.



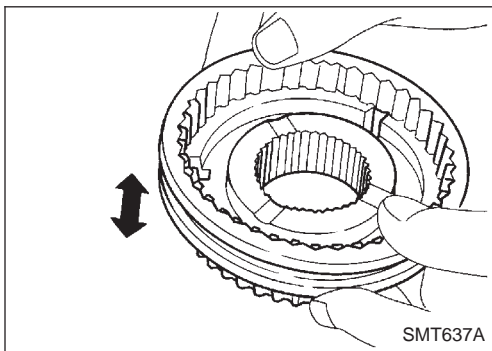
INSPECTION

NCMT0011

Gear and Shaft

NCMT0011S01

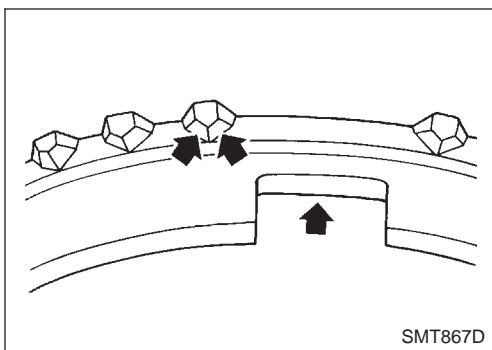
- Check shaft for cracks, wear or bending.
- Check gears for excessive wear, chips or cracks.



Synchronizers

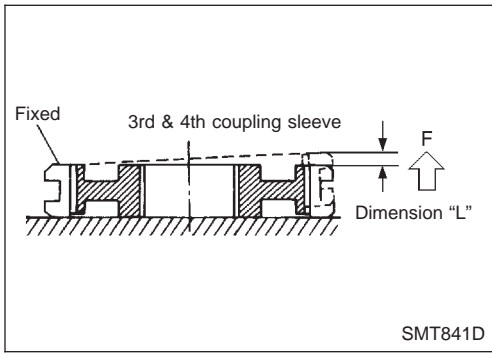
NCMT0011S02

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



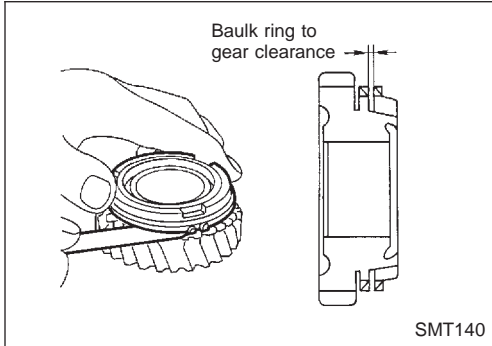
- If any crack, damage, or excessive wear is found on cam face of baulk ring or working face of insert, replace it.

Input Shaft and Gears (Cont'd)

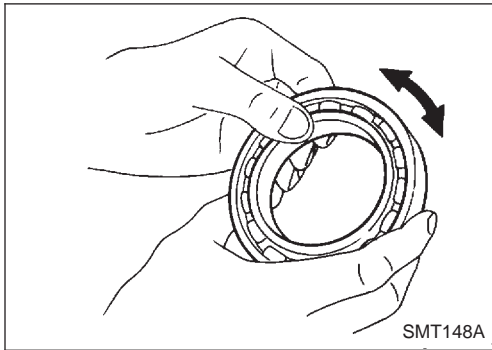


- Measure the movement (play, dimension "L") of 3rd & 4th coupling sleeve with their end fixed and the other end lifted as shown in the figure. If the movement exceeds specification, replace the sleeve.

Coupling sleeve	Length "L"
3rd & 4th	0 - 0.95 mm (0 - 0.0374 in)



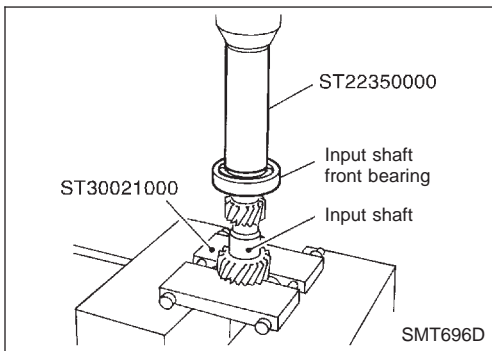
- Measure clearance between baulk ring and gear.
**Clearance between baulk ring and gear:
Refer to SDS, MT-90.**



Bearing

NCMT0011S03

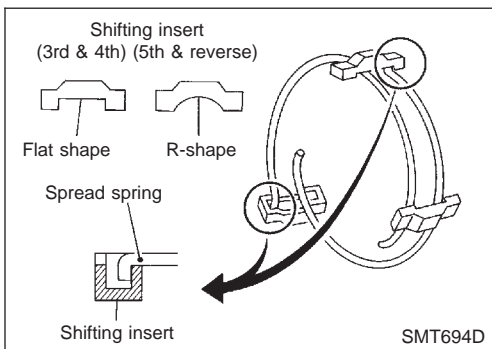
- Make sure bearings roll freely and are free from noise, cracks, pitting or wear.



ASSEMBLY

NCMT0012

1. Press on input shaft front bearing.
2. Install 3rd gear needle, 3rd input gear and 3rd gear baulk ring bearing to input shaft.



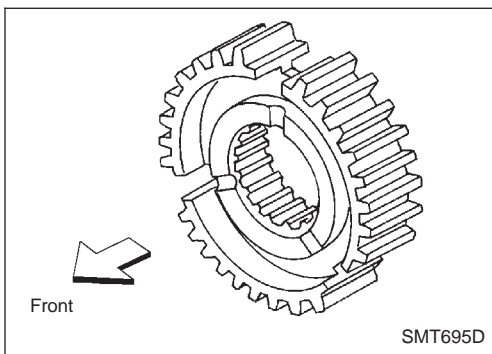
3. Install spread spring, shifting insert, and 3rd & 4th synchronizer hub onto 3rd & 4th coupling sleeve.

- Pay attention to the shape of spread spring and shifting insert for correct assembly.

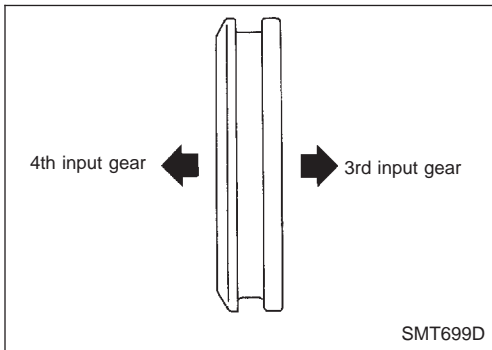
Do not install spread spring hook onto the same shifting insert.

CAUTION:

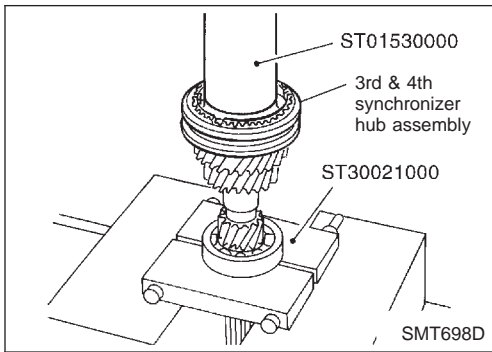
Do not reuse 3rd & 4th synchronizer hub.



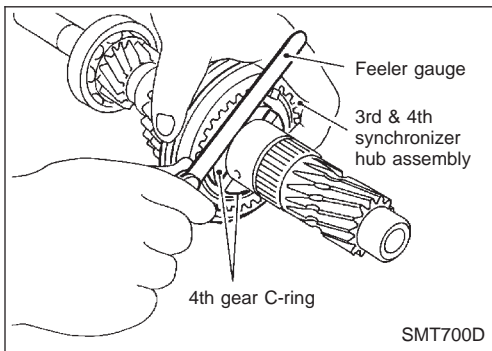
- Install synchronizer hub with its three grooves facing the front side (3rd input gear side).



- Install 3rd & 4th coupling sleeve with its chamfered surface facing the 4th input gear side.



4. Position bearing replacer to the front side of input shaft front bearing.
- Align grooves of shifting insert and 3rd gear baulk ring. Then, press it onto 3rd & 4th synchronizer hub assembly using a drift.
5. Install 4th gear C-ring onto input shaft.

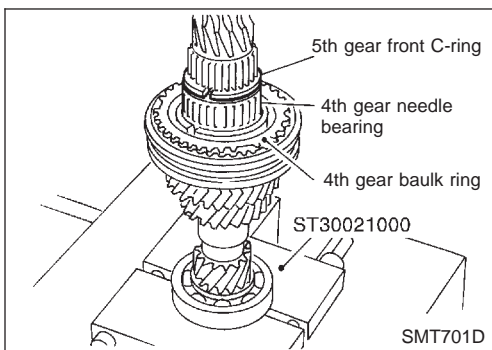


6. Measure the end play of 3rd & 4th synchronizer hub, and check if it is within allowable specification below.

End play specification:
0 - 0.06 mm (0 - 0.0024 in)

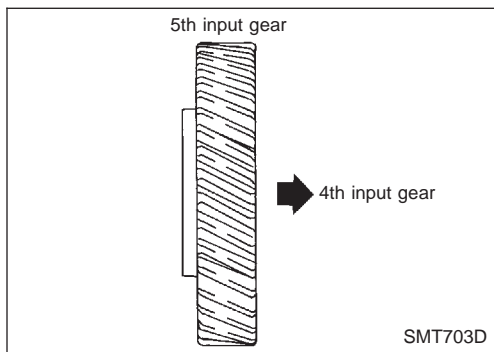
7. If not within specification, adjust the end play by changing thickness of 4th gear C-ring.

Available C-ring:
Refer to SDS, MT-90.

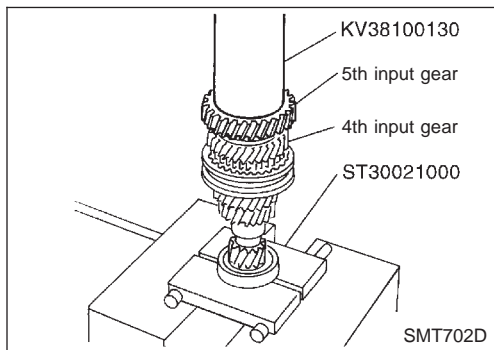


8. Install 4th gear needle bearing, 4th gear baulk ring, and 5th gear front C-ring.
9. Install 4th input gear.

Input Shaft and Gears (Cont'd)



10. Position 5th input gear as shown in the figure, and install it on input shaft.

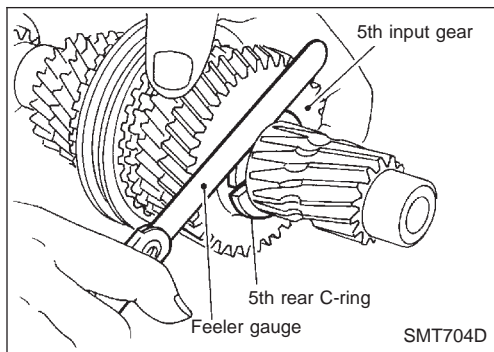


11. Install 5th input gear.

CAUTION:

Do not reuse 5th input gear.

12. Install 5th gear rear C-ring onto input shaft.



13. Measure the end play of 5th input gear, and check if it is within the allowable specification below.

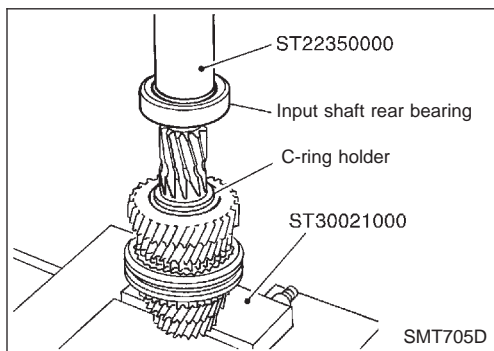
End play specification:

0 - 0.06 mm (0 - 0.0024 in)

14. If not within specification, adjust the end play by changing thickness of the 5th gear rear C-ring.

Available C-ring:

Refer to SDS, MT-90.



15. Install C-ring holder onto 5th gear rear C-ring.

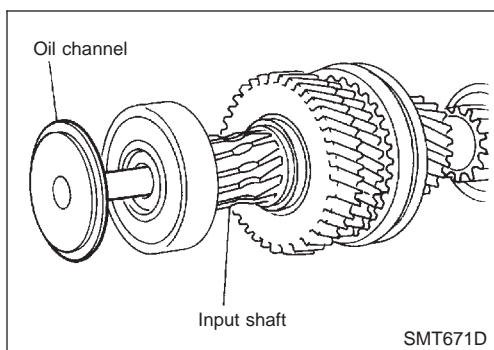
CAUTION:

Do not reuse C-ring holder.

16. Install input shaft rear bearing.

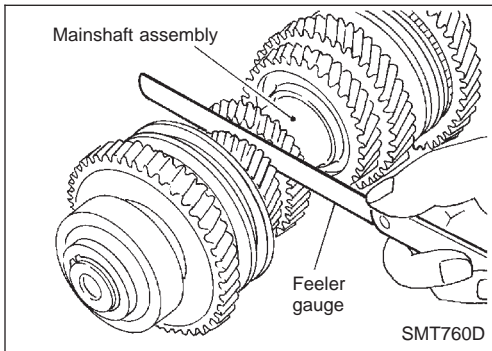
CAUTION:

Install input shaft rear bearing with its brown surface facing the input gear side.



17. Install oil channel onto input shaft.

18. Measure gear end play as a final check. Refer to, MT-58.



Mainshaft and Gears

DISASSEMBLY

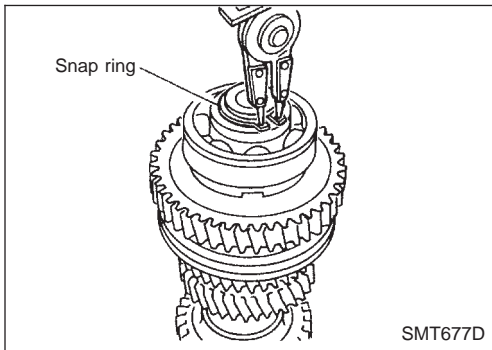
NCMT0013

1. Before disassembly, measure gear end play.

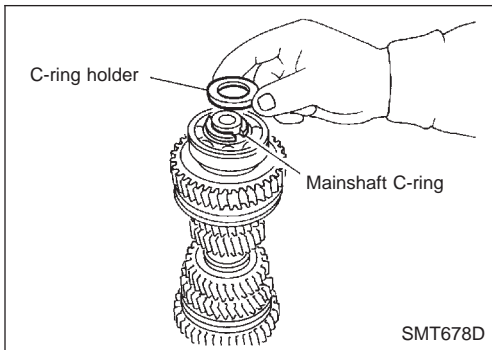
Gear end play:

Refer to SDS, MT-90.

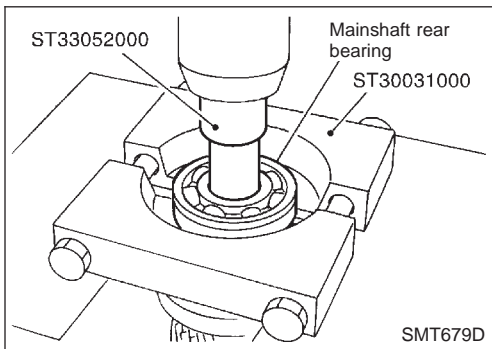
- If end play is not within the specified limit, disassemble and check the parts.



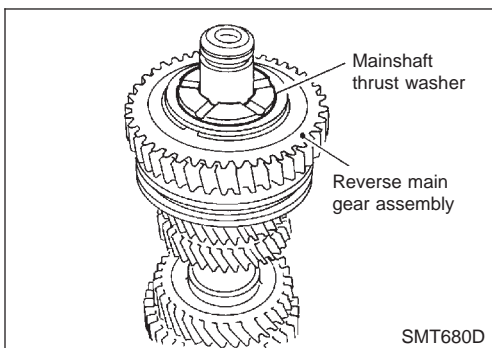
2. Remove snap ring.



3. Remove C-ring holder and mainshaft C-ring.

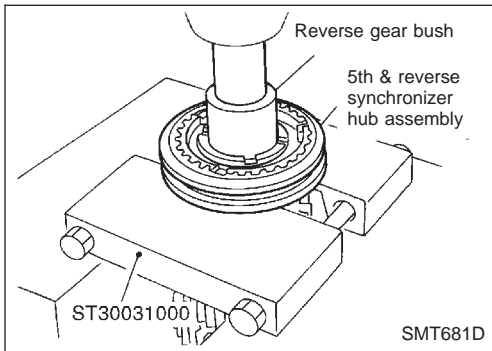


4. Press out mainshaft rear bearing from mainshaft.

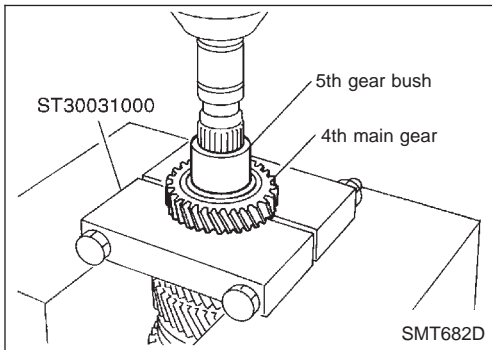


5. Remove mainshaft thrust washer.
6. Remove snap ring from mainshaft. Then, remove reverse main gear assembly, reverse gear needle bearing, and reverse gear baulk ring.

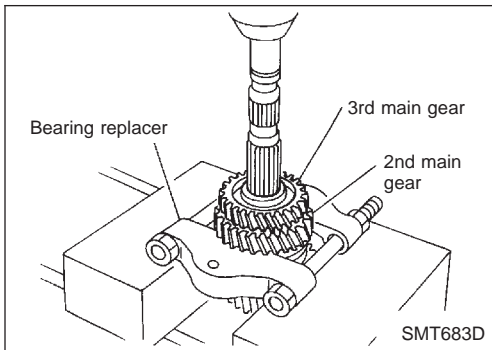
Mainshaft and Gears (Cont'd)



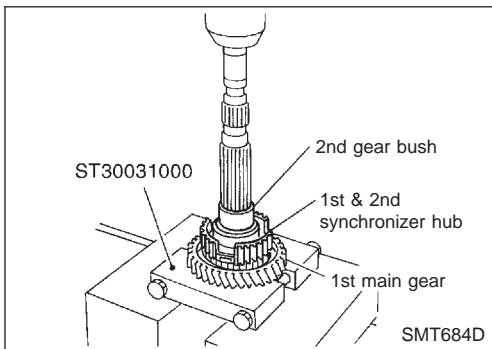
7. Place bearing replacer between 5th & reverse synchronizer hub and 5th main gear, and press out both reverse gear bushing and 5th & reverse synchronizer assembly.
8. Remove 5th main gear, 5th gear baulk ring, and 5th gear needle bearing.



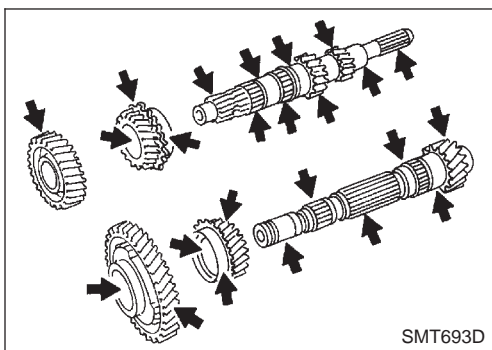
9. Place bearing replacer between 3rd and 4th main gears, and press out both 5th gear bushing and 4th main gear.



10. Remove mainshaft adjusting shim and spacer.
11. Place bearing replacer between 2nd main gear and 1st & 2nd synchronizer hub, and press out both 3rd and 2nd main gears.



12. Remove 2nd double cone assembly, 2nd gear bushing, and coupling sleeve assembly.
13. Place bearing replacer on 1st gear front side, and press out all of 2nd gear bushing, 1st & 2nd synchronizer hub, 1st main gear, and 1st double cone.
14. Remove 1st gear needle bearing.



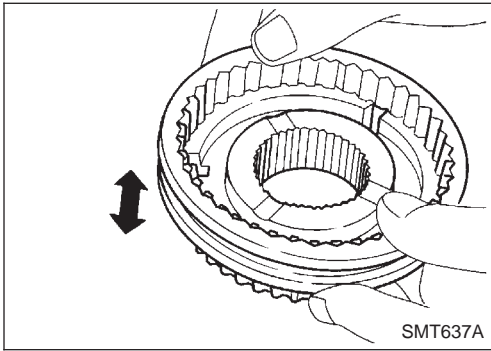
INSPECTION

Gear and Shaft

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

NCMT0014

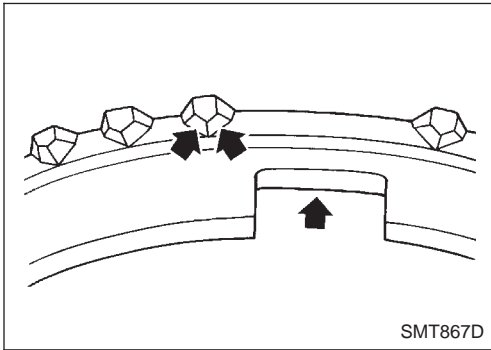
NCMT0014S01



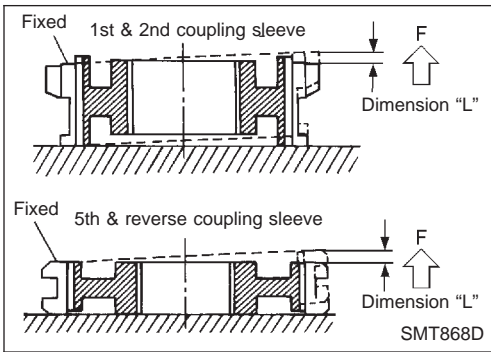
Synchronizers

NCMT0014S02

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

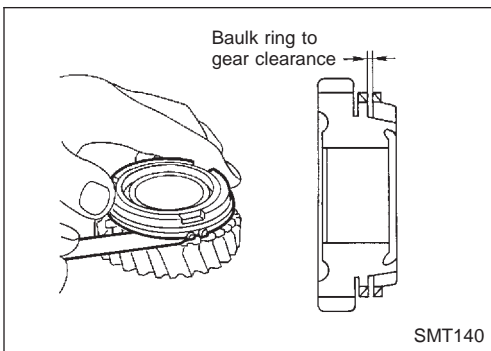


- If any crack, damage, or excessive wear is found on cam face of baulk ring or working face of insert, replace it.

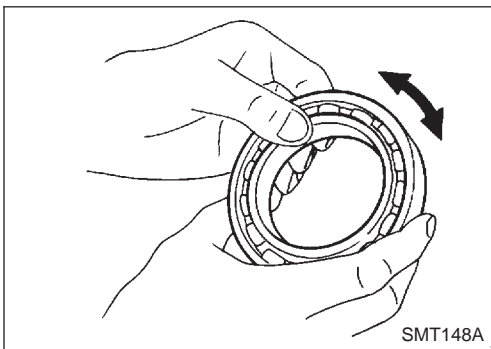


- Measure the movement (play, dimension "L") of 1st & 2nd coupling sleeve and 5th & reverse coupling sleeve with their end fixed and the other end lifted as shown in the figure. If the movement exceeds specification, replace the sleeve.

Coupling sleeve	Length "L"
1st & 2nd	0 - 0.68 mm (0 - 0.0268 in)
5th & Reverse	0 - 0.89 mm (0 - 0.0350 in)



- Measure clearance between baulk ring and gear.
**Clearance between baulk ring and gear:
Refer to SDS, MT-90.**

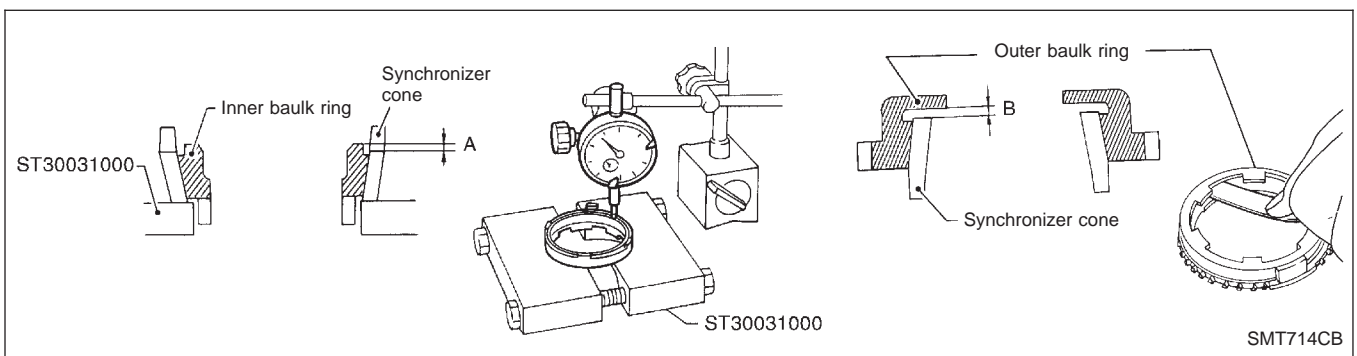


Bearing

NCMT0014S03

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

Mainshaft and Gears (Cont'd)



- Measure wear of 1st and 2nd baulk ring.
- a) Place baulk rings in position on synchronizer cone.
- b) While holding baulk ring against synchronizer cone as far as it will go, measure dimensions "A" and "B".

Standard:

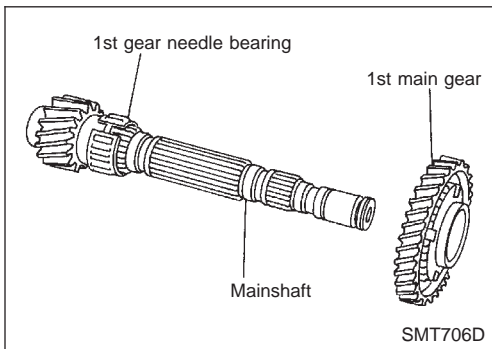
A 0.6 - 0.8 mm (0.024 - 0.031 in)

B 0.6 - 1.1 mm (0.024 - 0.043 in)

Wear limit:

0.2 mm (0.008 in)

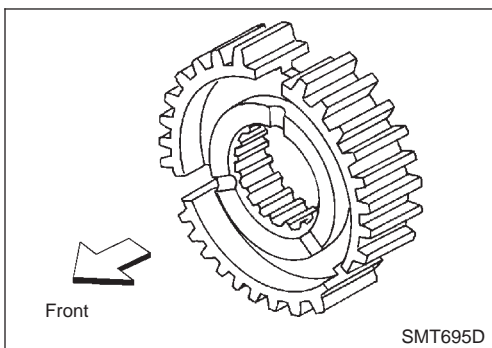
- If dimension "A" or "B" is smaller than the wear limit, replace outer baulk ring, inner baulk ring and synchronizer cone as a set.



ASSEMBLY

NCMT0015

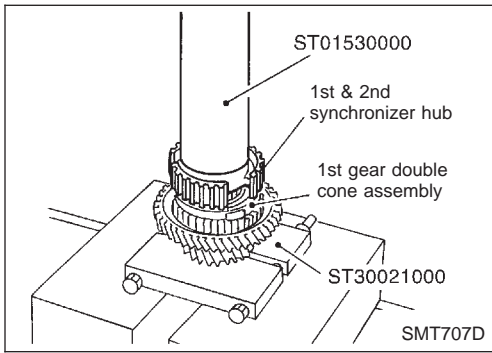
1. Install 1st gear needle bearing and 1st main gear onto mainshaft.
2. Install 1st double cone assembly onto mainshaft.



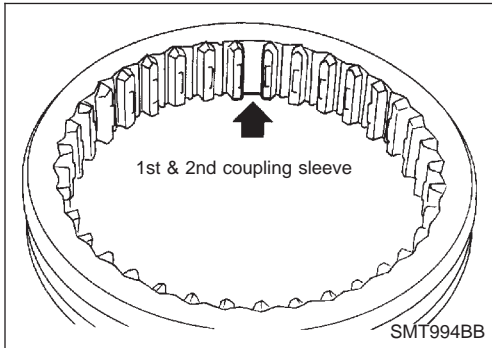
3. Install 1st & 2nd synchronizer hub with its three grooves facing the front side (1st main gear side) onto mainshaft.

CAUTION:

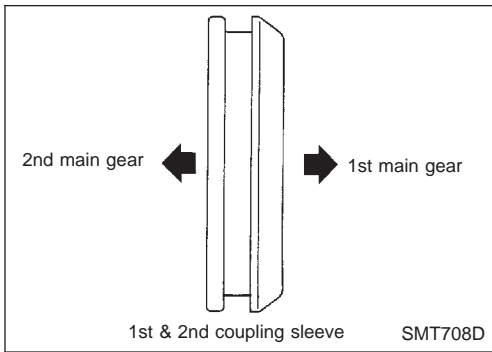
Do not reuse 1st & 2nd synchronizer hub.



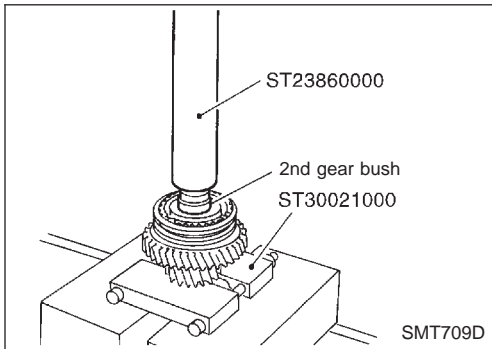
4. Install 1st & 2nd synchronizer hub.



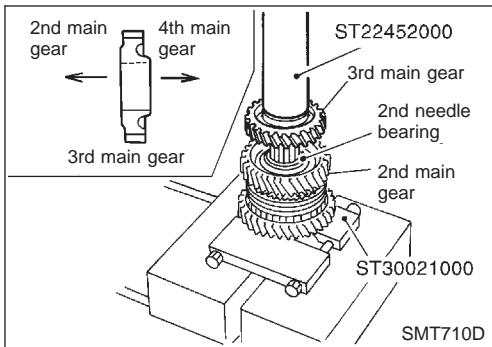
5. Install insert spring onto 1st & 2nd coupling sleeve.



6. Install 1st & 2nd coupling sleeve with its chamfered surface facing the 1st main gear side onto 1st & 2nd synchronizer hub.



7. Install 2nd gear bushing with its flange surface facing 1st & 2nd synchronizer hub side.



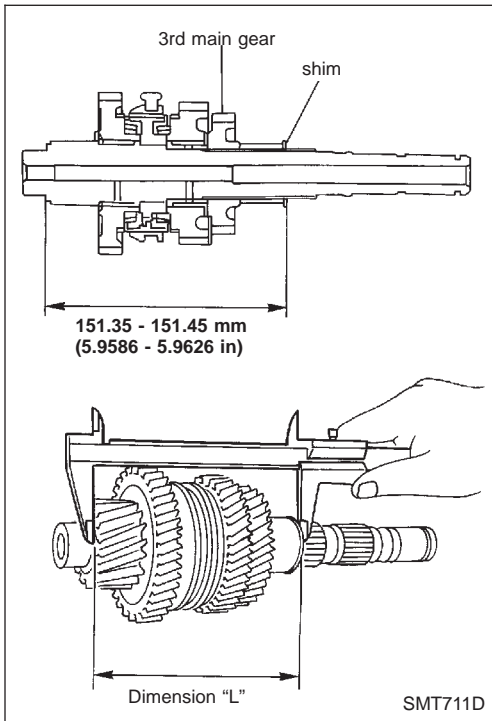
8. Install 2nd needle bearing, 2nd double cone assembly, and 2nd main gear onto mainshaft.

9. Position 3rd main gear as shown in the figure, and install it.

CAUTION:

Do not reuse 3rd main gear.

Mainshaft and Gears (Cont'd)



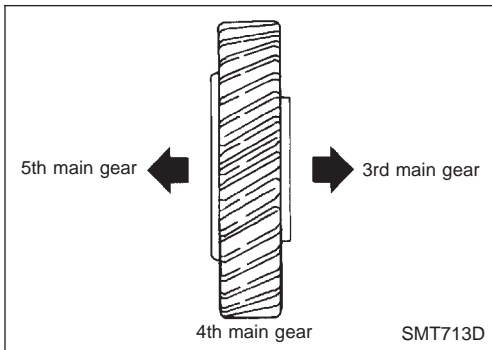
10. Install spacer and mainshaft adjusting shim onto mainshaft.
11. Select a mainshaft adjusting shim suitable to satisfy the following specification of dimension "L" and install it onto mainshaft.

Specification of dimension "L":

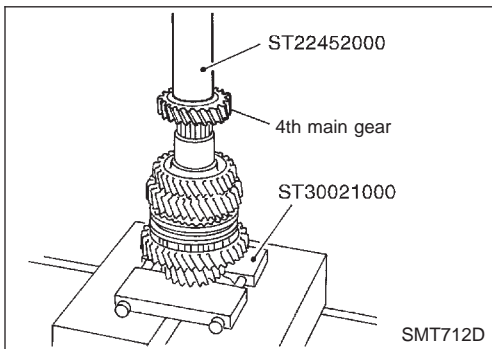
151.35 - 151.45 mm (5.9586 - 5.9626 in)

Available mainshaft adjusting shims:

Refer to SDS, MT-91.



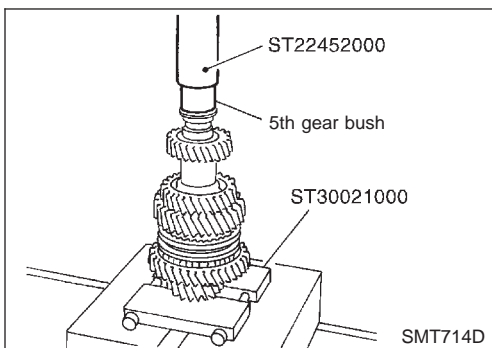
12. Position 4th main gear as shown in the figure, and install it onto mainshaft.



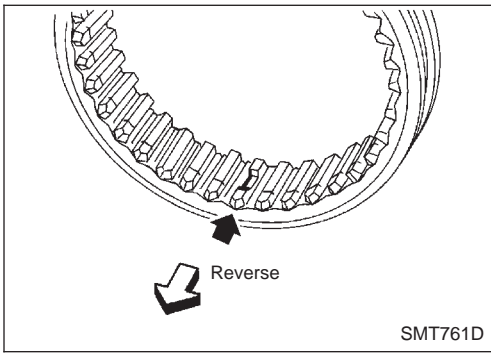
13. Install 4th main gear onto mainshaft.

CAUTION:

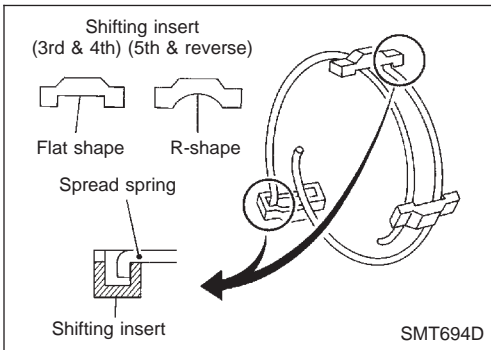
Do not reuse 4th main gear.



14. Install 5th gear bush with its flange surface facing the 4th main gear side.

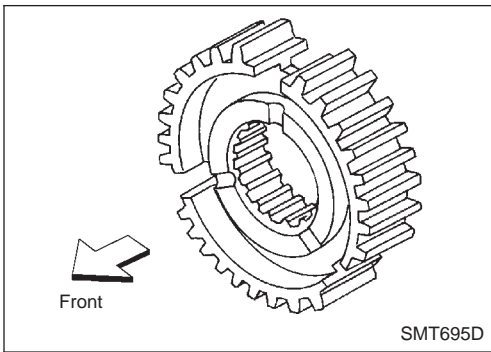


15. Install 5th needle bearing, 5th main gear, and 5th gear baulk ring onto mainshaft.



16. Being careful of the following points, install spread spring, shifting insert, and 5th & reverse synchronizer hub onto 5th & reverse coupling sleeve.

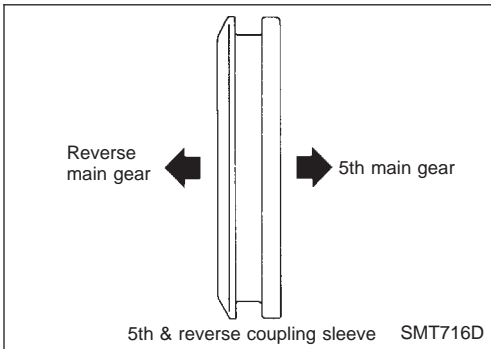
- Pay attention to the shape of spread spring and shifting insert for correct assembly. Do not install spread spring hook onto the same shifting insert.



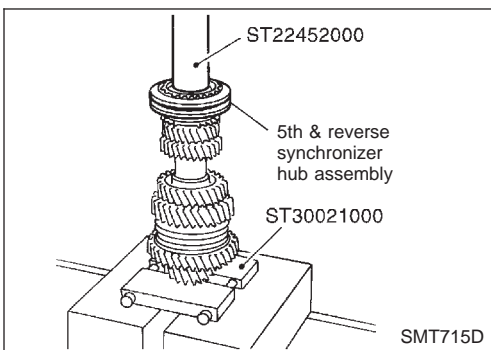
- Install synchronizer hub with its three grooves facing the front side (5th main gear side).

CAUTION:

Do not reuse 5th & reverse synchronizer hub.

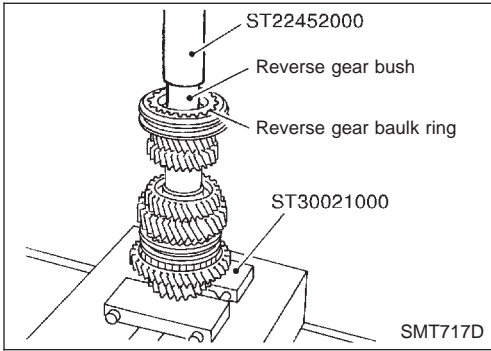


- Install 5th & reverse coupling sleeve with its chamfered surface facing the reverse main gear side.

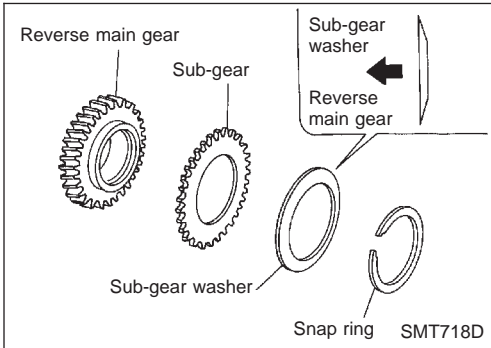


17. Install 5th & reverse synchronizer hub assembly.

Mainshaft and Gears (Cont'd)



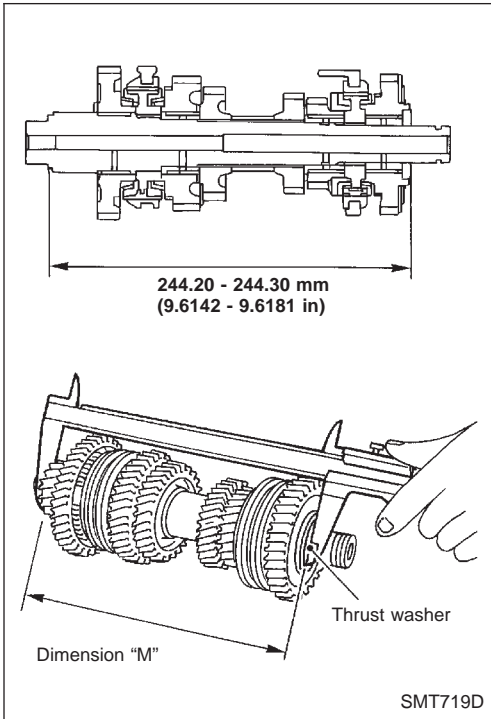
18. Install reverse gear baulk ring.
19. Install reverse gear bushing.
20. Install reverse gear needle bearing.



21. Install sub-gear, sub-gear washer, and snap ring onto reverse main gear.

CAUTION:

- Pay attention to direction of sub-gear washer.
- Do not reuse snap ring.



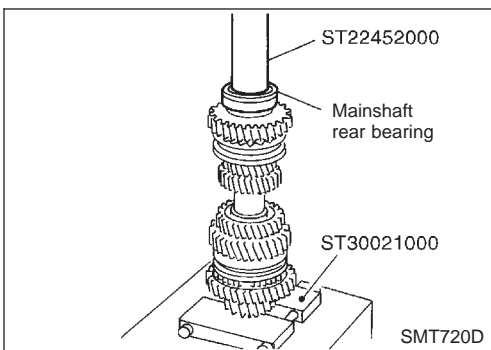
22. Install reverse main gear assembly onto mainshaft.
23. Select a thrust washer suitable to satisfy the following specification of dimension "M" (as shown in the figure), and install it onto mainshaft.

Specification of dimension "M":

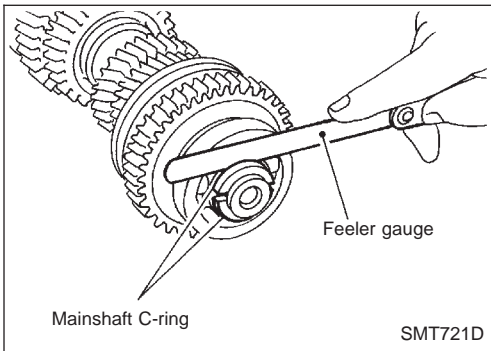
244.20 - 244.30 mm (9.6142 - 9.6181 in)

Available thrust washers:

Refer to SDS, MT-92.



24. Install mainshaft rear bearing.



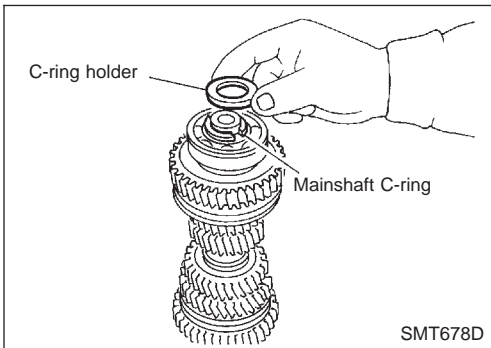
25. Install mainshaft C-ring.
26. Using feeler gauge, measure the end play of mainshaft rear bearing, and check if it satisfies the following specification.

End play specification:

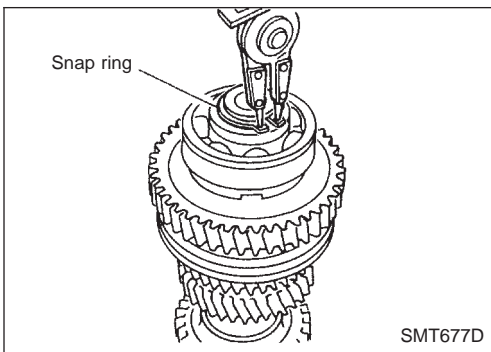
0 - 0.06 mm (0 - 0.0024 in)

Available mainshaft C-rings:

Refer to SDS, MT-91.



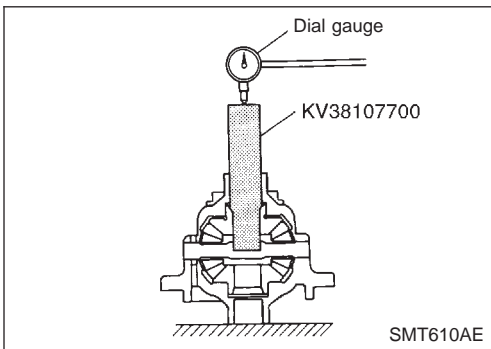
27. Install C-ring holder.



28. Install snap ring.
29. Measure gear end play as a final check. Refer to, MT-63.

CAUTION:

- **Do not reuse snap ring.**

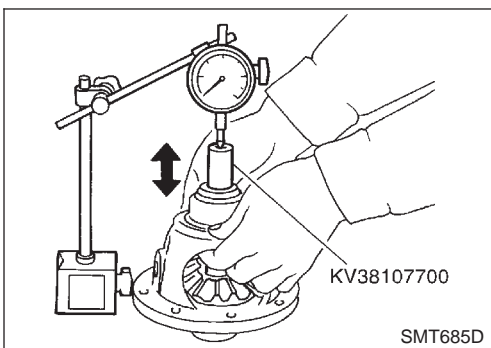


Final Drive

PRE-INSPECTION

NCMT0036

- Check the clearance between side gear and differential case as follows.
1. Clean final drive assembly sufficiently to prevent side gear thrust washer, differential case, side gear, and other parts from sticking by gear oil.

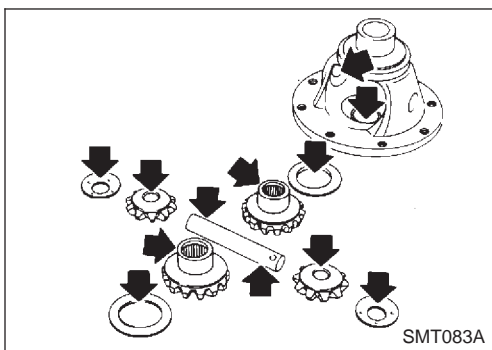
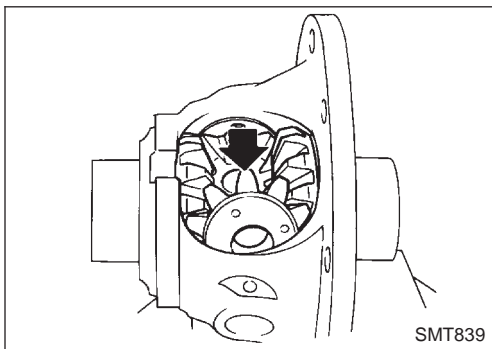
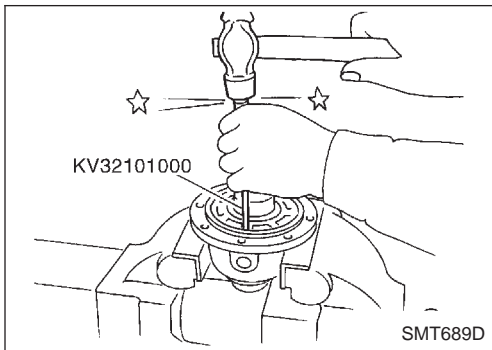
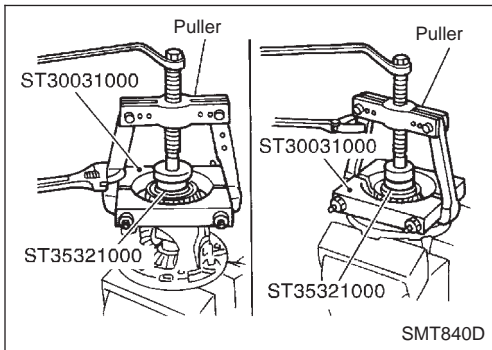
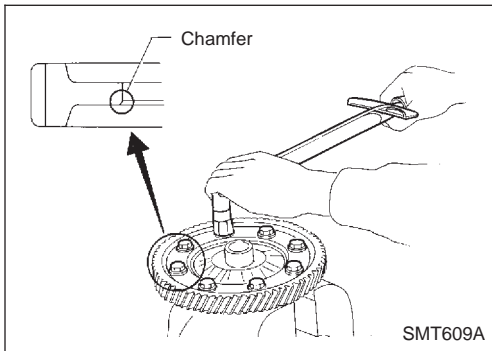


2. Upright the differential case so that the side gear to be measured faces upward.
3. Place final drive adapter and dial gauge onto side gear. Move side gear up and down, and measure the clearance.

Clearance between side gear and differential case:

0.1 - 0.2 mm (0.004 - 0.008 in)

4. If not within specification, adjust the clearance by changing thrust washer thickness.
5. Turn differential case upside down, and measure the clearance between side gear and differential case on the other side in the same way.



DISASSEMBLY

NCMT0016

1. Remove mounting bolts. Then, separate the final gear from differential case.
2. Make a notch and remove speedometer drive gear using a scraper or other suitable tool.
 - **Bearing replacer cannot be positioned unless speedometer drive gear is removed.**

3. Remove differential side bearing of final gear side.
4. Turn differential case upside down, and remove differential side bearing of speedometer drive gear side.
5. Remove speedometer stopper.

6. Remove lock pins from pinion mate shaft.

7. Remove pinion mate shaft.
8. Rotate pinion mate gear, and remove pinion mate gear, pinion mate thrust washer, side gear, and side gear thrust washer from differential case.

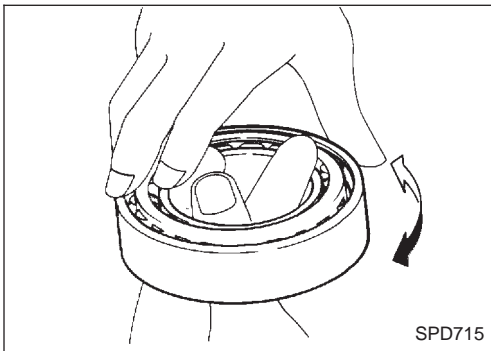
INSPECTION

NCMT0017

Gear, Washer, Shaft and Case

NCMT0017S01

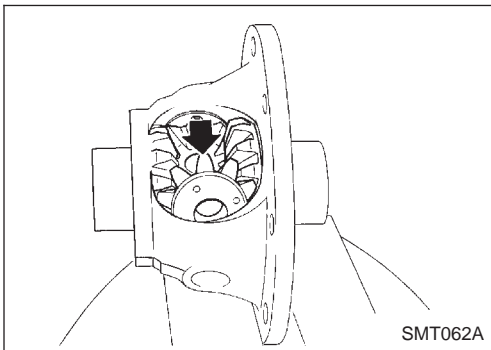
- Check side gear, side gear thrust washer, pinion mate shaft, pinion mate gear, pinion mate gear washer, and differential case.
- Check washers for wear.



Bearing

NCMT0017S04

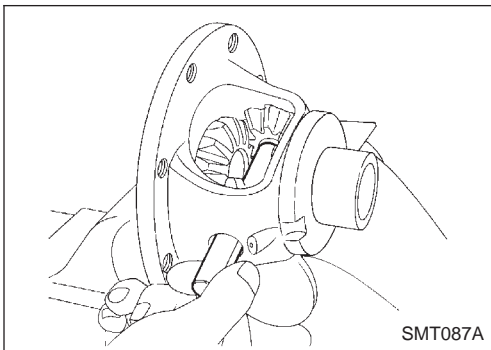
- Make sure bearings roll freely and are free from noise, cracks, pitting or wear.
- **When replacing tapered roller bearing, replace outer and inner race as a set.**



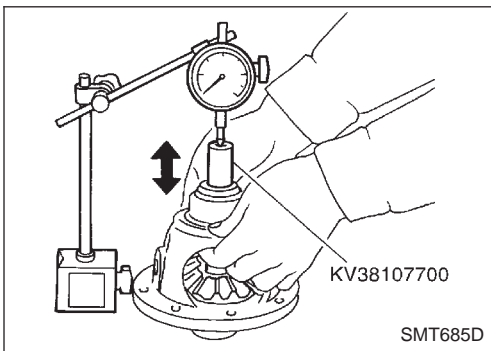
ASSEMBLY

NCMT0018

1. Apply gear oil to sliding area of differential case, each gear, and thrust washer.
2. Install side gear thrust washer and side gear into differential case.
3. Position pinion mate gear and pinion mate thrust washer diagonally, and install them into differential case while rotating.



4. Insert pinion mate shaft into differential case.



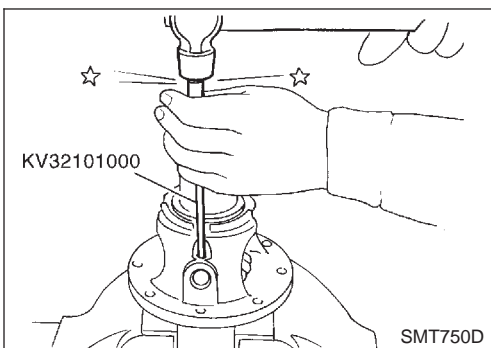
5. Upright the differential case so that its side gear to be measured faces upward.
6. Place preload adapter and dial gauge onto side gear. Move side gear up and down, and measure the clearance.
7. Turn differential case upside down, and measure the clearance between side gear and differential case on the other side in the same way.

Clearance of side gear and differential case:

0.1 - 0.2 mm (0.004 - 0.008 in)

Available differential thrust washers:

Refer to SDS, MT-92.

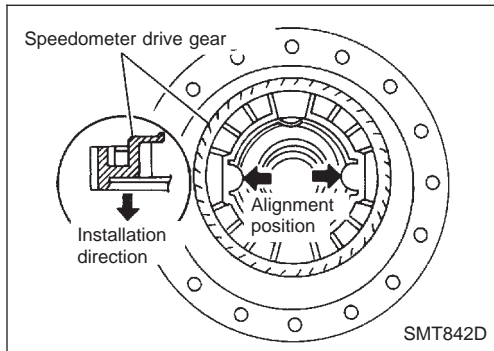


8. Hammer the retaining pin into pinion mate shaft.

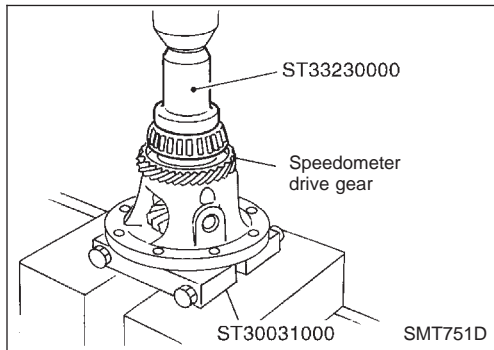
CAUTION:

Do not reuse retaining pin.

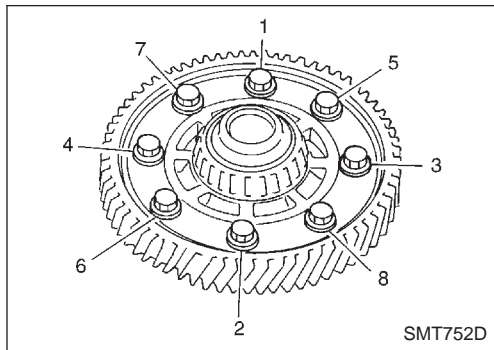
Final Drive (Cont'd)



9. Align and install speedometer drive gear into differential case.
10. Install speedometer stopper.

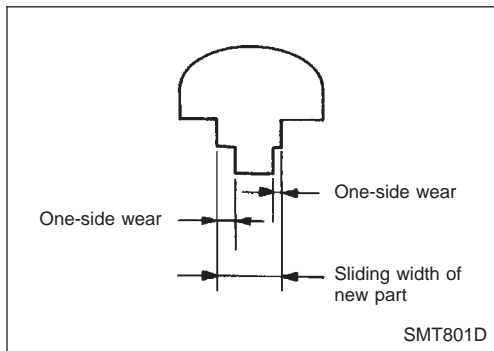


11. Install differential side bearing.
12. Turn differential case upside down, and install another differential side bearing on the other side in the same way.



13. Install final gear into differential case. Apply sealant onto mounting bolts, and tighten them in order as shown in the figure with specified torque.

Tightening torque:
Refer to MT-48.



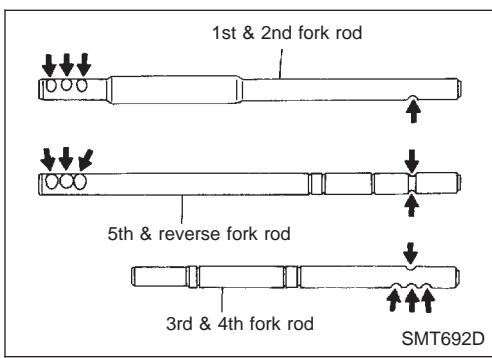
Shift Control Components

INSPECTION

NCMT0019

- Check if the width of shift fork hook (sliding area with coupling sleeve) is within allowable specification below.

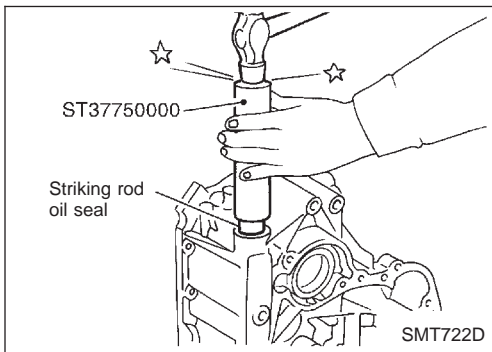
Item	One-side wear specification	Sliding width of new part
1st & 2nd	0.2 mm (0.008 in)	7.80 - 7.93 mm (0.3071 - 0.3122 in)
3rd & 4th	0.2 mm (0.008 in)	7.80 - 7.93 mm (0.3071 - 0.3122 in)
5th & reverse	0.2 mm (0.008 in)	7.80 - 7.93 mm (0.3071 - 0.3122 in)



- Check if shift check groove of fork rod or 5th & reverse check groove is worn, or has any other abnormalities.

ASSEMBLY

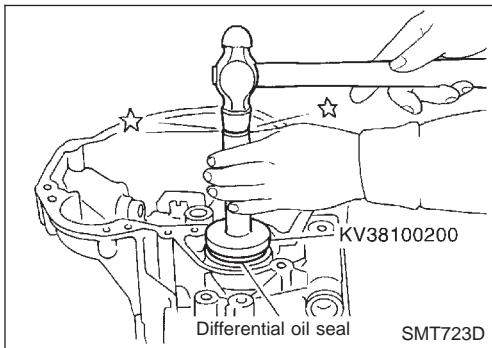
Clutch Housing



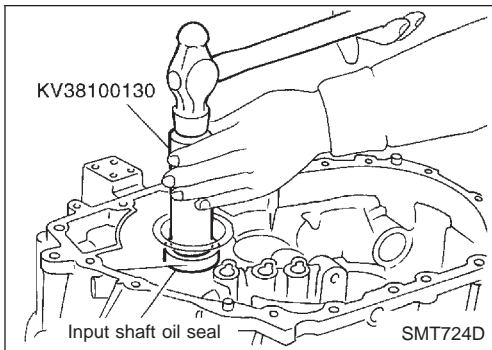
Clutch Housing

NCMT0023S01

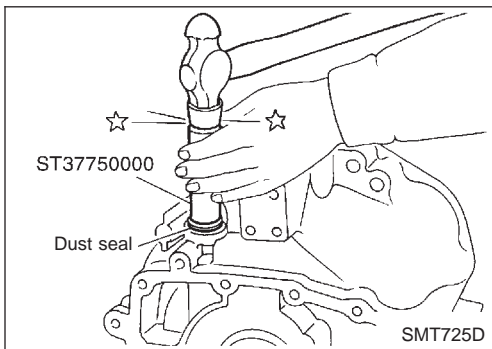
1. Hammer the striking rod oil seal into clutch housing as far as it will go.

CAUTION:**Do not reuse striking rod oil seal.**

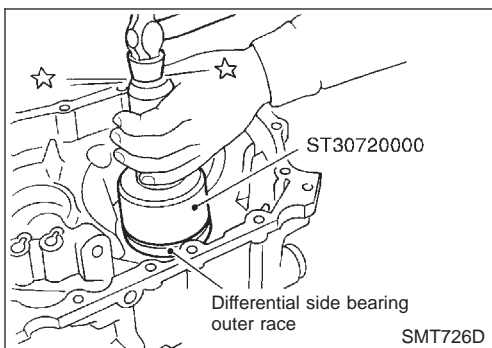
2. Hammer the differential oil seal into clutch housing until it becomes flush with clutch housing end face.

CAUTION:**Do not reuse differential oil seal.**

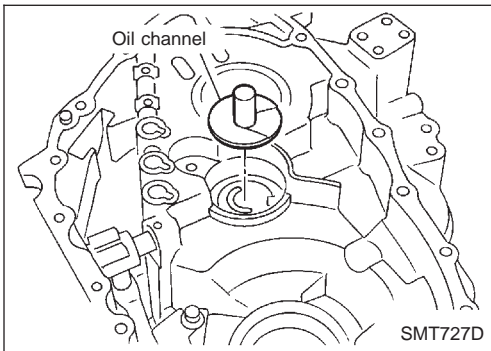
3. Hammer input shaft oil seal into clutch housing as far as it will go.

CAUTION:**Do not reuse input shaft oil seal.**

4. Hammer the dust seal into clutch housing as far as it will go.

CAUTION:**Do not reuse dust seal.**

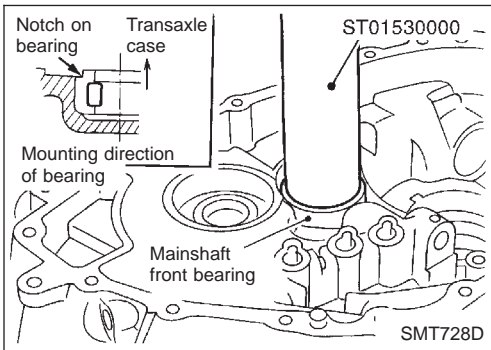
5. Install outer race of differential side bearing.



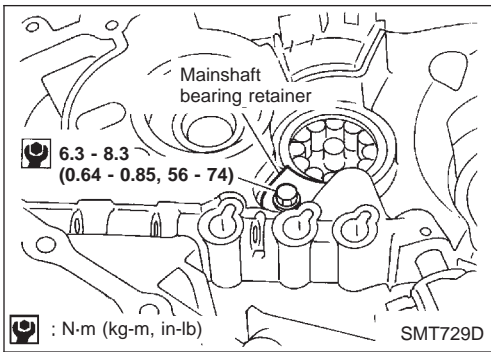
6. Install new oil channel (mainshaft).

CAUTION:

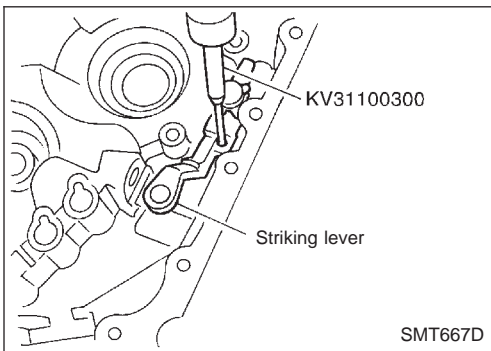
Pay attention to installation direction of oil channel.



7. Align the notches on mainshaft front bearing and transaxle case. Then, install mainshaft front bearing.



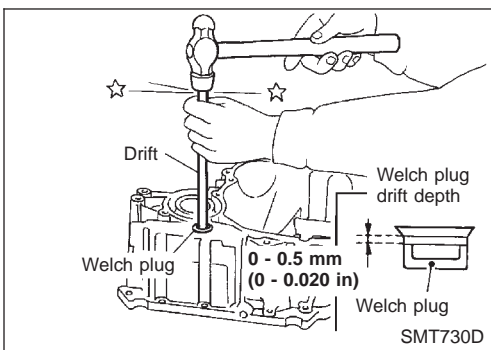
8. Install mainshaft bearing retainer, and tighten bolts with specified torque.



9. Attach boot, striking rod, and striking lever to clutch housing. And install retaining pin for selector lever.

CAUTION:

- Before installing striking rod, wrap the end with a vinyl tape or the like to prevent oil seal from being damaged.
- Do not reuse retaining pin.

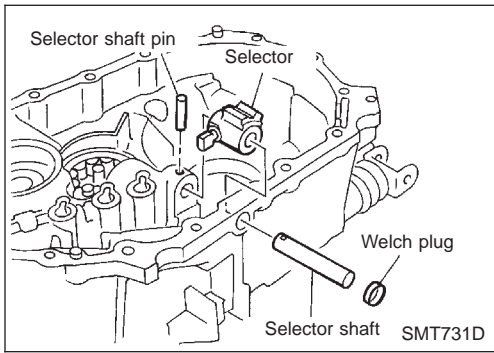


10. Hammer the welch plug (striking lever side) with a general-purpose drift [OD: 12 mm (0.47 in)].

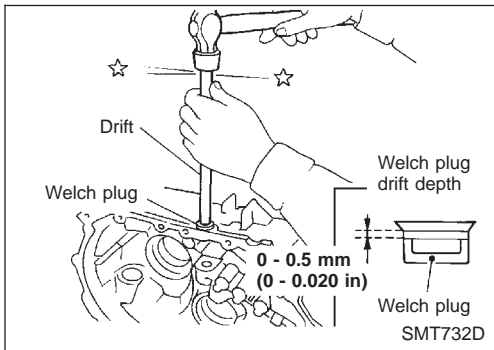
CAUTION:

Do not reuse welch plug.

Clutch Housing (Cont'd)



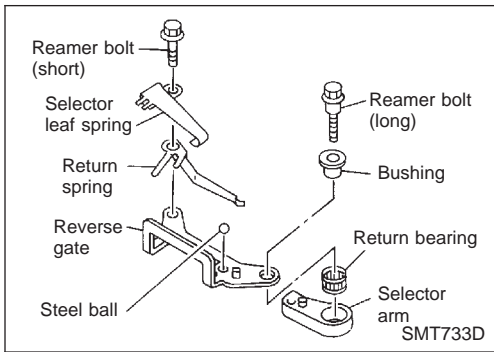
11. Install selector, selector shaft, and selector shaft pin into clutch housing.



12. Hammer the welch plug (selector shaft side) with a general-purpose drift [OD: 12 mm (0.47 in)].

CAUTION:

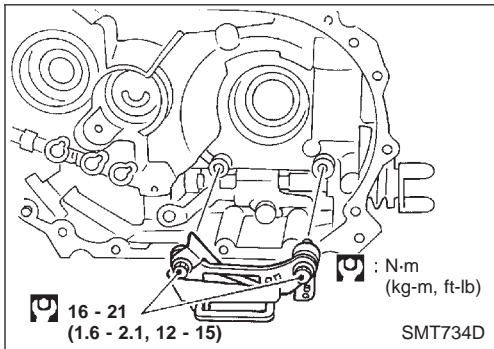
Do not reuse welch plug.



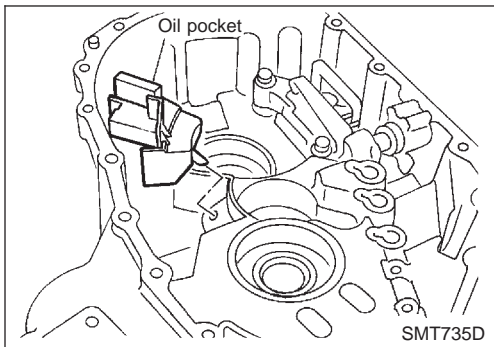
13. Install selector leaf spring, return spring, steel ball, reverse gate, selector arm, bushing, and return bearing. Then, tighten two reamer bolts with specified torque.

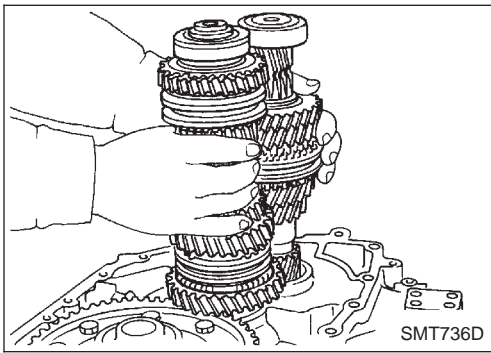
CAUTION:

Use correct reamer bolts for each installation point, because each bolt has a different length.



14. Install oil pocket.

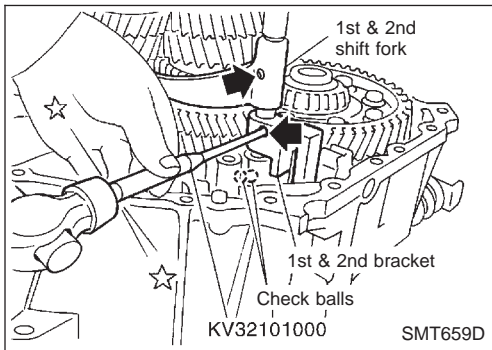




15. Install differential assembly, input shaft assembly, and mainshaft assembly into clutch housing.

CAUTION:

Be careful not to damage input shaft oil seal during installation of input shaft assembly.



16. Install 5th & reverse shift fork.

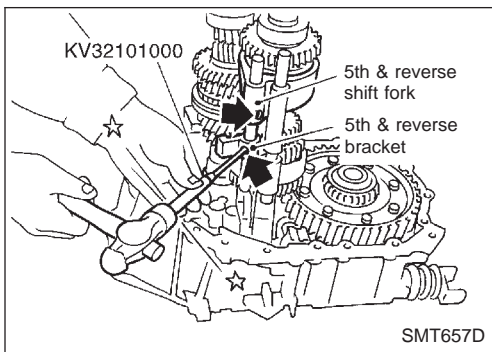
17. Install 1st & 2nd shift fork, bracket, and fork rod.

18. Install retaining pin for 1st & 2nd bracket.

CAUTION:

Do not reuse retaining pin.

19. Install two check balls.



20. Install interlock pin into 5th & reverse fork rod.

21. Install reverse switch bracket, 5th & reverse bracket, and fork rod.

22. Install retaining pin for 5th & reverse shift fork and reverse switch bracket.

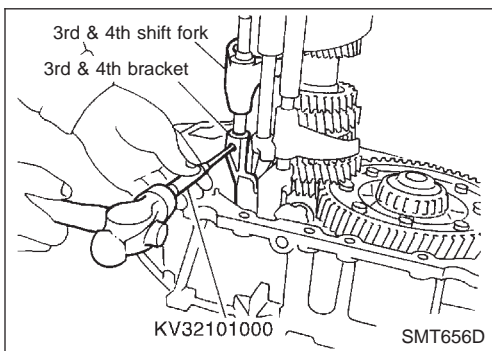
CAUTION:

Do not reuse retaining pin.

23. Install 5th & reverse bracket stopper ring.

CAUTION:

Do not reuse stopper pin.



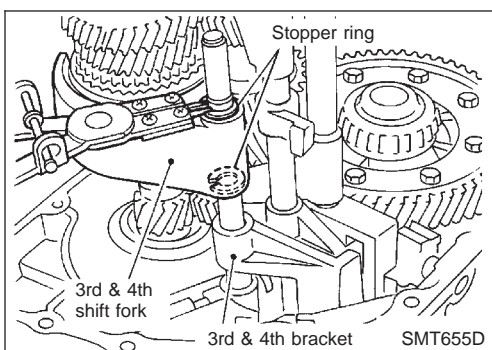
24. Install check ball and interlock plunger.

25. Install 3rd & 4th shift fork, bracket, and fork rod.

26. Install 3rd & 4th bracket retaining pin.

CAUTION:

Do not reuse retaining pin.



27. Install 3rd & 4th shift fork stopper ring.

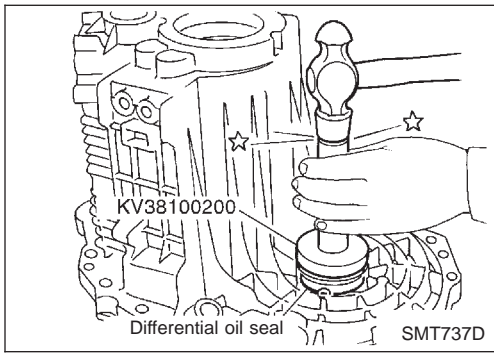
CAUTION:

Do not reuse stopper ring.

28. Install check ball, check pin, and check spring, and apply Three Bond TB1215, Loctite Part No. 51813 or equivalent onto check plug. Then, tighten it with specified torque.

Tightening torque:

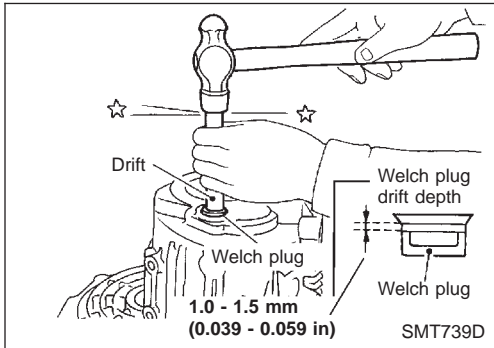
Refer to MT-48.



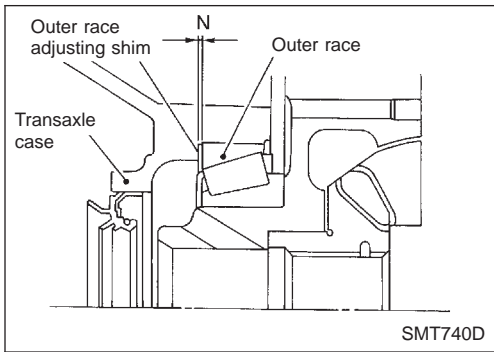
Transaxle Case

NCMT0023S02

1. Insert differential oil seal into differential case until it becomes flush with case end face.



2. Install welch plug into transaxle case.



3. Calculate dimension "N" (thickness of adjusting shim) using the following procedure to satisfy specification of end play for differential side bearing.

End play: 0.15 - 0.21 mm (0.0059 - 0.0083 in)

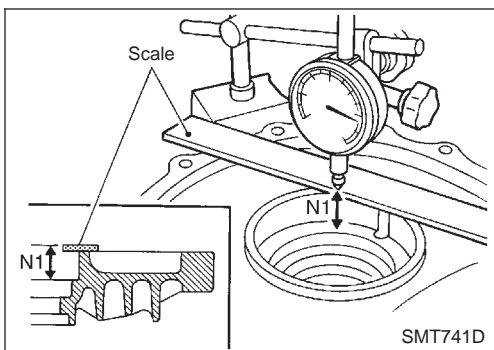
Dimension "N" = (N1 - N2) + End play

N : Thickness of adjusting shim

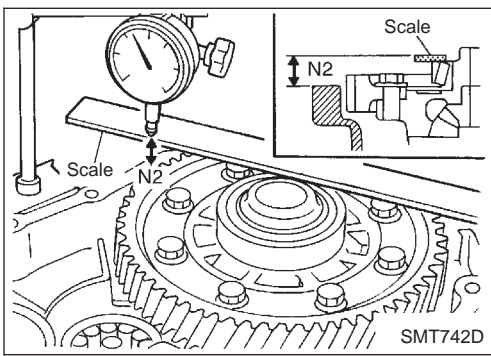
N1: Distance between clutch housing case end face and mounting face of adjusting shim

N2: Distance between differential side bearing and transaxle case

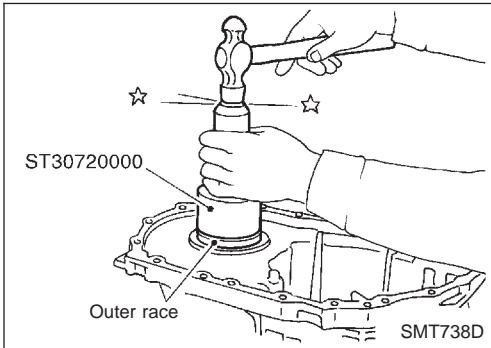
**Available differential side bearing adjusting shims:
Refer to SDS, MT-92.**



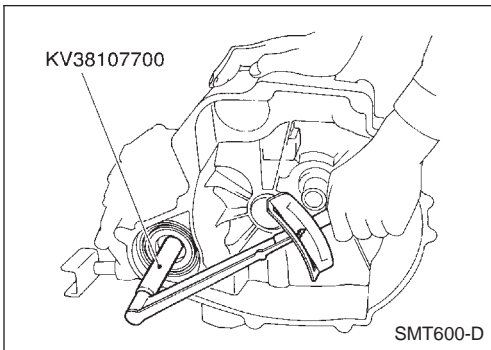
- a. Using dial gauge and scale, measure dimension "N1" between clutch housing case end face and mounting face of adjusting shim.



- b. Install outer race onto differential side bearing on final gear side. Holding lightly the outer race horizontally by hand, rotate final gear five times or more (for smooth movement of bearing roller).
- c. Using dial gauge and scale as shown in the figure, measure dimension "N2" between differential side bearing outer race and transaxle case end face.



4. Install selected shim and bearing outer race.



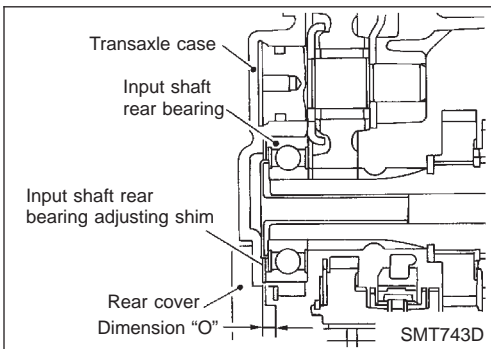
5. Measure turning torque of final drive assembly.

Turning torque of final drive assembly

(New bearing):

2.9 - 6.9 N·m (30 - 70 kg·cm, 26 - 61 in·lb)

- When old bearing is used again, turning torque will be slightly less than the above.
- Make sure torque is close to the specified range.
- Changes in turning torque of final drive assembly per revolution should be within **1.0 N·m (10 kg·cm, 8.7 in·lb)** without binding.



6. Calculate dimension "O" (thickness of adjusting shim) using the following procedure to satisfy specification of end play for input shaft rear bearing.

End play: 0 - 0.06 mm (0 - 0.0024 in)

Dimension "O" = (O1 - O2) + End play

O : Thickness of adjusting shim

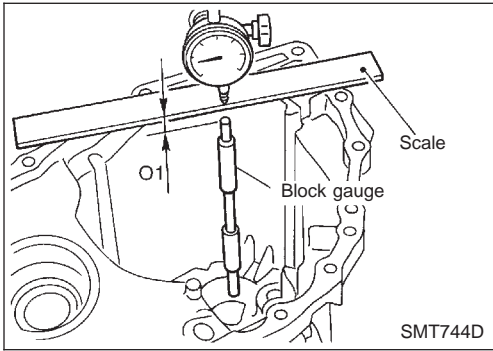
O1: Distance between transaxle case end face and mounting face of adjusting shim

O2: Distance between clutch housing case end face and end face of input shaft rear bearing

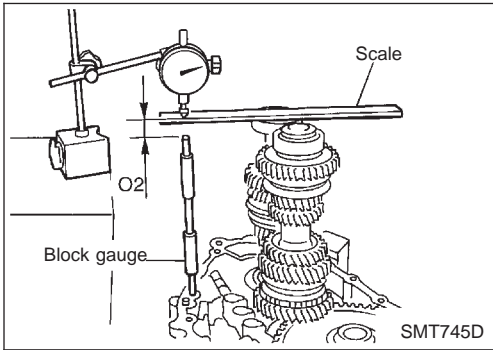
Available input shaft rear bearing adjusting shims:

Refer to SDS, MT-91.

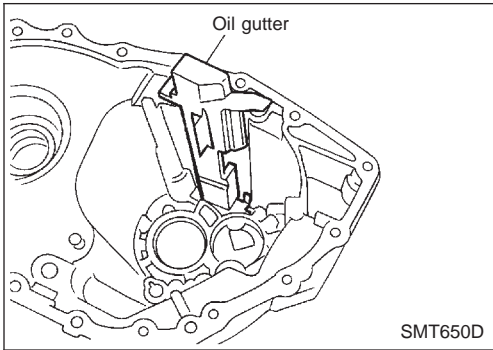
Transaxle Case (Cont'd)



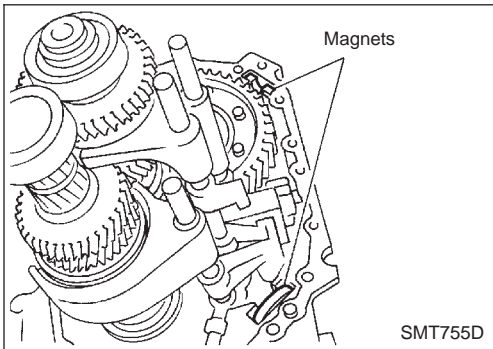
- a. Using block gauge, scale, and dial gauge, measure dimension "O1" between transaxle case end face and mounting face of adjusting shim.



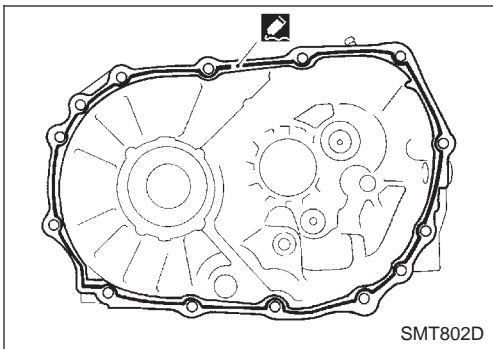
- b. Using gauge block, scale, and dial gauge as shown in the figure, measure dimension "O2" between clutch housing case end face and end face of input shaft rear bearing.
7. Install selected input shaft rear bearing adjusting shim onto input shaft.



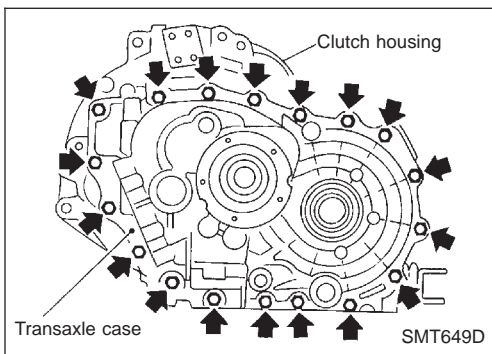
8. Install oil gutter into transaxle case.



9. Install two magnets.

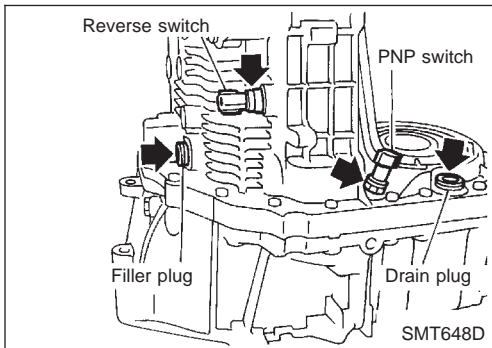


10. Clean mating surfaces of clutch housing and transaxle case. Check for cracks and damage. Then, apply Three Bond TB1215, Loctite Part No. 51813 or equivalent.



11. Install transaxle case onto clutch housing, and tighten mounting bolts with specified torque.

Tightening torque:
Refer to MT-48.

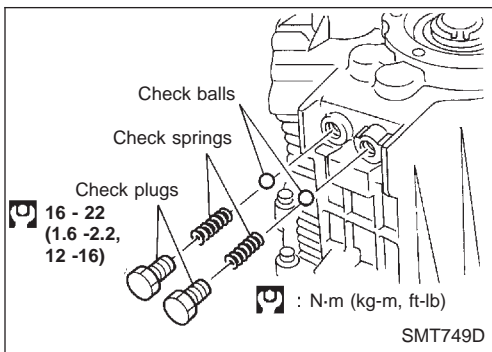


12. Apply Three Bond TB1215, Loctite Part No. 51813 or equivalent to threads of reverse switch, PNP switch, and drain plug, and install them. (Fill the case with oil before installation of filler plug.)

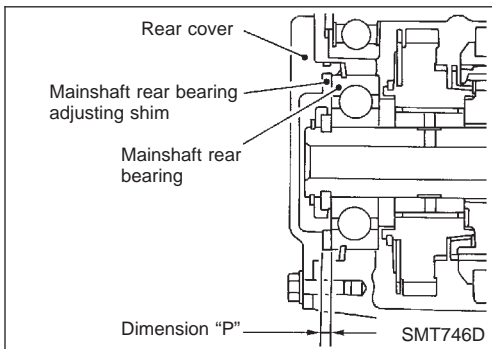
13. Install speedometer pinion assembly.

CAUTION:

Do not reuse O-ring.



14. Install check springs and check balls. Apply sealant to the thread on the check plug, and install it.



15. Calculate thickness of adjusting shim using the following procedure to satisfy specification of end play for mainshaft rear bearing.

End play: 0 - 0.06 mm (0 - 0.0024 in)

Dimension "P" = (P1 - P2) + End play

P : Thickness of adjusting shim

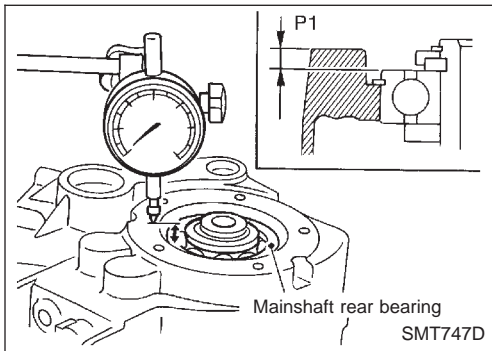
P1: Distance between transaxle case end face and mainshaft rear bearing

P2: Distance between adjusting shim end face of rear cover and transaxle mounting face

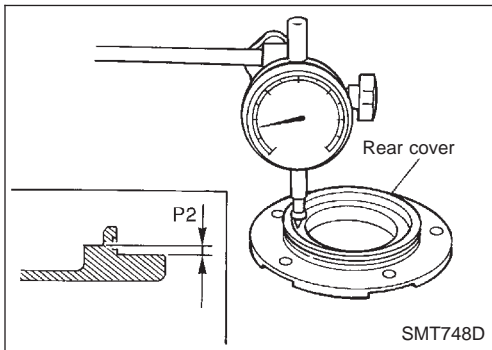
Available mainshaft rear bearing adjusting shims:

Refer to SDS, MT-92.

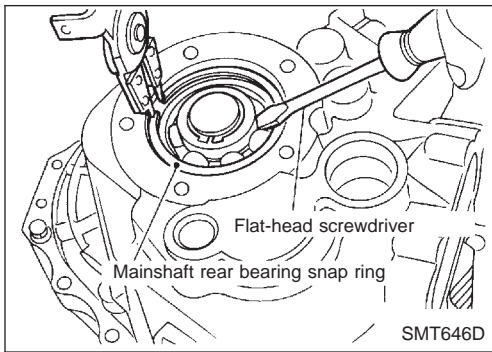
Transaxle Case (Cont'd)



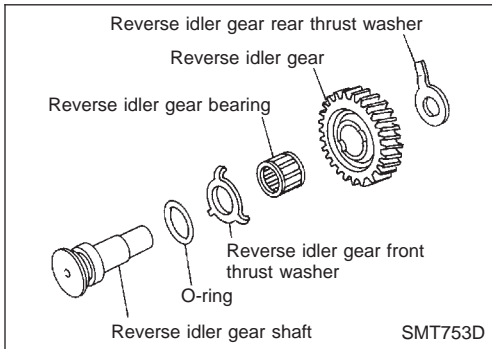
- a. Using dial gauge as shown in the figure, measure dimension "P1" between transaxle case end face and mainshaft rear bearing.



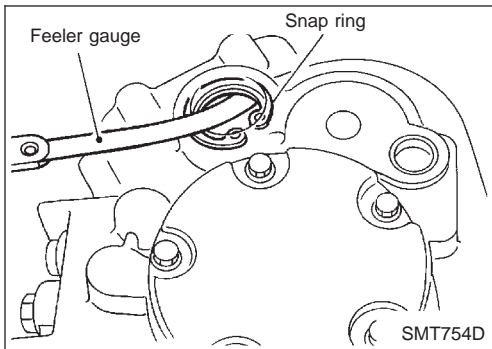
- b. Using dial gauge as shown in the figure, measure dimension "P2" between adjusting shim mounting face of rear cover and transaxle mounting face.



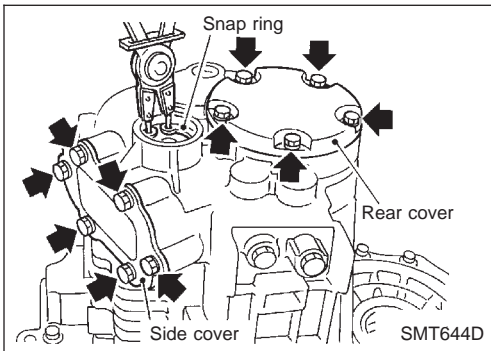
16. Using snap ring pliers as shown in the figure, install snap ring.
CAUTION:
Do not reuse snap ring.
 17. Install selected mainshaft adjusting shim.



18. Install reverse idler gear, O-ring, thrust washers (front, rear), and bearing onto reverse idler shaft.
 19. Install snap ring into transaxle case using snap ring pliers.
CAUTION:
- Do not reuse snap ring.
 - Do not reuse O-ring.
 - Before installation, apply gear oil to O-ring.



20. Using feeler gauge, measure the end play of snap ring, and select a snap ring suitable to satisfy the following specification.
End play:
0.05 - 0.25 mm (0.0020 - 0.0098 in)
Available snap ring:
Refer to SDS, MT-90.



21. Install selected snap ring.

CAUTION:

Do not reuse snap ring.

22. Apply gear oil to rear cover O-ring, and install rear cover, side cover gasket, and side cover. Then tighten mounting bolts with specified torque.

Tightening torque:

Refer to MT-48.

CAUTION:


Do not reuse mounting bolts for rear cover and side cover.

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications — RS5F32A and RS5F70A

General Specifications — RS5F32A and RS5F70A

TRANSAXLE

Engine		CD20T	QG16DE	QG18DE	SR20DE	
Transaxle model		RS5F32A	RS5F70A			
Transaxle model code number		2J624	8E069	7J006	6J016	
Number of speeds		5				
Synchromesh type		Warner				
Shift pattern						
NMT031						
Gear ratio	1st	3.3333		3.3333		
	2nd	1.9545		1.9545		
	3rd	1.2857		1.2857		
	4th	0.9268		0.9268		
	5th	0.7333		0.7556		
	Reverse	3.2143		3.2143		
Number of teeth	Input gear	1st	15		15	
		2nd	22		22	
		3rd	28		28	
		4th	41		41	
		5th	45		45	
		Rev.	14		14	
	Main gear	1st	50		50	
		2nd	43		43	
		3rd	36		36	
		4th	38		38	
		5th	33		34	
		Rev.	45		45	
	Reverse idler gear		31	37		
	Oil capacity (Reference) ℓ (Imp pt)		3.6 - 3.8 (6-3/8 - 6-3/4)		3.0 (5-1/4)	
Oil level mm (in)		57 - 62 (2.244 - 2.441)	75.5 - 80.5 (2.972 - 3.169)		56.5 - 61.0 (2.224 - 2.402)	

FINAL GEAR

Engine		QG16DE	QG18DE/ SR20DE	CD20T
Final gear ratio		4.4375	4.1765	3.8888
Number of teeth	Final gear/ Pinion	71/16	71/17	70/18
	Side gear/ Pinion	16/10	14/10	14/10

Inspection and Adjustment — RS5F32A

GEAR END PLAY

Gear	End play mm (in)
1st main gear	0.18 - 0.31 (0.0071 - 0.0122)
2nd main gear	0.20 - 0.30 (0.0079 - 0.0118)
3rd main gear	0.20 - 0.30 (0.0079 - 0.0118)
4th main gear	0.20 - 0.30 (0.0079 - 0.0118)
5th input gear	0.18 - 0.31 (0.0071 - 0.0122)

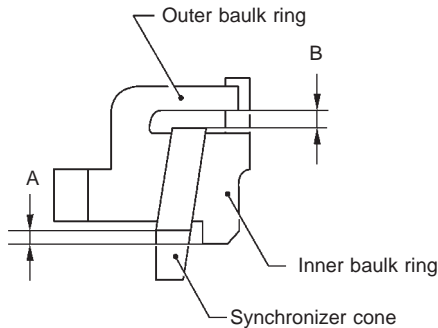
CLEARANCE BETWEEN BAULK RING AND GEAR

1st, 4th, 5th baulk ring

Unit: mm (in)

Standard	Wear limit	0.7 (0.028)
1st	0.95 - 1.45 (0.0374 - 0.0571)	
4th	0.90 - 1.45 (0.0354 - 0.0571)	
5th	0.90 - 1.50 (0.0354 - 0.0591)	

2nd and 3rd baulk ring



NMT026

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)	

AVAILABLE CHECK PLUGS

Reverse check plug

Reverse check turning torque (At striking rod)	4.9 - 7.4 N-m (50 - 75 kg-cm, 43 - 65 in-lb)
Length mm (in)	Part number
8.3 (0.327)	32188-M8001*
7.1 (0.280)	32188-M8002
7.7 (0.303)	32188-M8003
8.9 (0.350)	32188-M8004

* Standard check plug

AVAILABLE SNAP RINGS

Input shaft front bearing

Allowable clearance	0 - 0.1 mm (0 - 0.004 in)
Thickness mm (in)	Part number
1.27 (0.0500)	32204-M8004
1.33 (0.0524)	32204-M8005
1.39 (0.0547)	32204-M8006
1.45 (0.0571)	32204-M8007

Input shaft 5th synchronizer hub

Allowable clearance	0 - 0.1 mm (0 - 0.004 in)
Thickness mm (in)	Part number
2.00 (0.0787)	32311-M8812
2.05 (0.0807)	32311-M8813
2.10 (0.0827)	32311-M8814
2.15 (0.0846)	32311-M8815
2.20 (0.0866)	32311-M8816
2.25 (0.0886)	32311-M8817
2.30 (0.0906)	32311-M8818

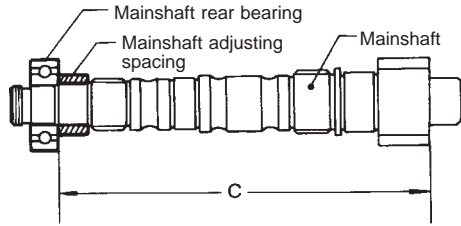
AVAILABLE C-RINGS

Mainshaft C-ring

Allowable clearance	0 - 0.1 mm (0 - 0.004 in)
Thickness mm (in)	Part number
4.45 (0.1752)	32348-50J00
4.52 (0.1780)	32348-50J01
4.59 (0.1807)	32348-50J02
4.66 (0.1835)	32348-50J03
4.73 (0.1862)	32348-50J04
4.80 (0.1890)	32348-50J05
4.87 (0.1917)	32348-50J06
4.94 (0.1945)	32348-50J07

AVAILABLE SPACERS

Mainshaft bearing adjusting spacer



SMT693B

Bearing distance: C	230.15 - 230.25 mm (9.0610 - 9.0649 in)
Thickness mm (in)	Part number
18.91 (0.7445)	32347-50J00
18.98 (0.7472)	32347-50J01
19.05 (0.7500)	32347-50J02
19.12 (0.7528)	32347-50J03
19.19 (0.7555)	32347-50J04
19.26 (0.7583)	32347-50J05
19.33 (0.7610)	32347-50J06
19.40 (0.7638)	32347-50J07
19.47 (0.7665)	32347-50J08

AVAILABLE WASHERS

Differential side gear thrust washer

Allowable clearance between side gear and differential case with washer	0.1 - 0.2 mm (0.004 - 0.008 in)	
	Thickness mm (in)	Part number
F32A	0.75 - 0.80 (0.0295 - 0.0315)	38424-D2111
	0.80 - 0.85 (0.0315 - 0.0335)	38424-D2112
	0.85 - 0.90 (0.0335 - 0.0354)	38424-D2113
	0.90 - 0.95 (0.0354 - 0.0374)	38424-D2114
	0.95 - 1.00 (0.0374 - 0.0394)	38424-D2115

AVAILABLE SHIMS

— DIFFERENTIAL SIDE BEARING PRELOAD AND ADJUSTING SHIM

Bearing preload (Re-used bearing)

Unit: mm (in)

Differential side bearing preload: T*	0.25 - 0.30 (0.0098 - 0.0118)
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* Install shims which are "deflection of differential case" + "T" in thickness.

Turning torque (New bearing)

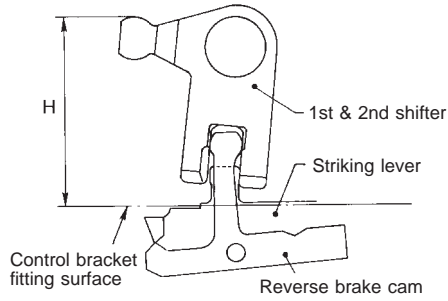
Unit: N-m (kg-cm, in-lb)

Final drive	2.9 - 6.9 (30 - 70, 26 - 61)
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Differential side bearing adjusting shims

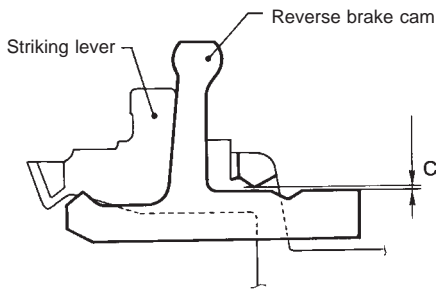
Thickness mm (in)	Part number
0.44 (0.0173)	38454-M8000
0.48 (0.0189)	38454-M8001
0.56 (0.0220)	38454-M8003
0.60 (0.0236)	38454-M8004
0.64 (0.0252)	38454-M8005
0.68 (0.0268)	38454-M8006
0.72 (0.0283)	38454-M8007
0.76 (0.0299)	38454-M8008
0.80 (0.0315)	38454-M8009
0.84 (0.0331)	38454-M8010
0.88 (0.0346)	38454-M8011

INPUT SHAFT BRAKING MECHANISM



SMT735B

Maximum height "H" between the control bracket fitting surface and 1-2 shifter mm (in)	67.16 - 67.64 (2.6441 - 2.6630)
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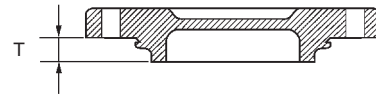
SMT736B

Clearance "C" between reverse brake cam and striking lever mm (in)	0.05 - 0.125 (0.0020 - 0.0049)
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MAINSHAFT END PLAY

Mainshaft end play (Clearance between end of case cover and mainshaft rear bearing outer race)	0 - 0.1 mm (0 - 0.004 in)
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Case cover



SMT760B

Thickness "T" mm (in)	Part No.
10.78 (0.4244)	32131-50J00
10.83 (0.4264)	32131-50J01
10.88 (0.4283)	32131-50J02
10.93 (0.4303)	32131-50J03
10.98 (0.4323)	32131-50J04
11.03 (0.4343)	32131-50J05

Inspection and Adjustment — RS5F70A

GEAR END PLAY

NCMT0025
Unit: mm (in)

Gear	End play
1st main gear	0.18 - 0.31 (0.0071 - 0.0122)
2nd main gear	
5th main gear	
Reverse main gear	
3rd input gear	
4th input gear	

CLEARANCE BETWEEN BAULK RING AND GEAR

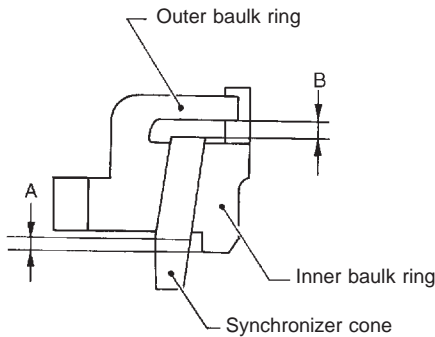
3rd, 4th, 5th, Reverse Baulk Ring

NCMT0026
NCMT0026S01
Unit: mm (in)

Standard		Wear limit
3rd	0.90 - 1.45 (0.0354 - 0.0571)	0.7 (0.028)
4th		
5th		
Reverse	0.9 - 1.35 (0.0354 - 0.0531)	

1st and 2nd Baulk Ring

NCMT0026S02
Unit: mm (in)



SMT757C

Dimension	Standard	Wear limit
A	0.6 - 0.8 (0.024 - 0.031)	0.2 (0.008)
B	0.6 - 1.1 (0.024 - 0.043)	

AVAILABLE SNAP RINGS

Snap Ring

NCMT0028

NCMT0028S01

Allowable clearance	0.05 - 0.25 mm (0.0020 - 0.0098 in)
Thickness	Part number*
1.45 mm (0.0571 in)	32204-6J000
1.55 mm (0.0610 in)	32204-6J001
1.65 mm (0.0650 in)	32204-6J002
1.75 mm (0.0689 in)	32204-6J003
1.85 mm (0.0728 in)	32204-6J004

*: Always check with the parts department for the latest information.

AVAILABLE C-RINGS

4th Input Gear C-ring

NCMT0029

NCMT0029S01

Allowable clearance	0 - 0.06 mm (0 - 0.0024 in)
Thickness	Part number*
3.00 mm (0.1181 in)	32205-6J000
3.03 mm (0.1193 in)	32205-6J001
3.06 mm (0.1205 in)	32205-6J002
3.09 mm (0.1217 in)	32205-6J003

5th Input Gear Rear C-ring

NCMT0029S02

Allowable clearance	0 - 0.06 mm (0 - 0.0024 in)
Thickness	Part number*
2.59 mm (0.1020 in)	32205-6J005
2.62 mm (0.1031 in)	32205-6J006
2.65 mm (0.1043 in)	32205-6J007
2.68 mm (0.1055 in)	32205-6J008
2.71 mm (0.1067 in)	32205-6J009
2.74 mm (0.1079 in)	32205-6J010

Mainshaft C-ring

NCMT0029S03

Allowable clearance	0 - 0.06 mm (0 - 0.0024 in)
Thickness	Part number*
3.48 mm (0.1370 in)	32348-6J000
3.51 mm (0.1382 in)	32348-6J001
3.54 mm (0.1394 in)	32348-6J002
3.57 mm (0.1406 in)	32348-6J003
3.60 mm (0.1417 in)	32348-6J004
3.63 mm (0.1429 in)	32348-6J005
3.66 mm (0.1441 in)	32348-6J006
3.69 mm (0.1453 in)	32348-6J007
3.72 mm (0.1465 in)	32348-6J008
3.75 mm (0.1476 in)	32348-6J009
3.78 mm (0.1488 in)	32348-6J010
3.81 mm (0.1500 in)	32348-6J011
3.84 mm (0.1512 in)	32348-6J012
3.87 mm (0.1524 in)	32348-6J013
3.90 mm (0.1535 in)	32348-6J014
3.93 mm (0.1547 in)	32348-6J015
3.96 mm (0.1559 in)	32348-6J016

*: Always check with the parts department for the latest information.

AVAILABLE ADJUSTING SHIMS

Input Shaft Rear Bearing Adjusting Shim

NCMT0037

NCMT0037S01

Allowable clearance	0 - 0.06 mm (0 - 0.0024 in)
Thickness	Part number*
0.74 mm (0.0291 in)	32225-6J003
0.78 mm (0.0307 in)	32225-6J004
0.82 mm (0.0323 in)	32225-6J005
0.86 mm (0.0339 in)	32225-6J006
0.90 mm (0.0354 in)	32225-6J007
0.94 mm (0.0370 in)	32225-6J008
0.98 mm (0.0386 in)	32225-6J009
1.02 mm (0.0402 in)	32225-6J010
1.06 mm (0.0417 in)	32225-6J011
1.10 mm (0.0433 in)	32225-6J012
1.14 mm (0.0449 in)	32225-6J013
1.18 mm (0.0465 in)	32225-6J014
1.22 mm (0.0480 in)	32225-6J015
1.26 mm (0.0496 in)	32225-6J016
1.30 mm (0.0512 in)	32225-6J017
1.34 mm (0.0528 in)	32225-6J018
1.38 mm (0.0543 in)	32225-6J019
1.42 mm (0.0559 in)	32225-6J020
1.46 mm (0.0575 in)	32225-6J021
1.50 mm (0.0591 in)	32225-6J022
1.54 mm (0.0606 in)	32225-6J023
1.58 mm (0.0622 in)	32225-6J024
1.62 mm (0.0638 in)	32225-6J060
1.66 mm (0.0654 in)	32225-6J061

Mainshaft Adjusting Shim

NCMT0037S02

Standard length "L"	151.35 - 151.45 mm (5.9586 - 5.9626 in)
Thickness	Part number*
0.48 mm (0.0189 in)	32238-6J000
0.56 mm (0.0220 in)	32238-6J001
0.64 mm (0.0252 in)	32238-6J002
0.72 mm (0.0283 in)	32238-6J003
0.80 mm (0.0315 in)	32238-6J004
0.88 mm (0.0346 in)	32238-6J005

*: Always check with the parts department for the latest information.

Inspection and Adjustment — RS5F70A (Cont'd)

Mainshaft Rear Bearing Adjusting Shim

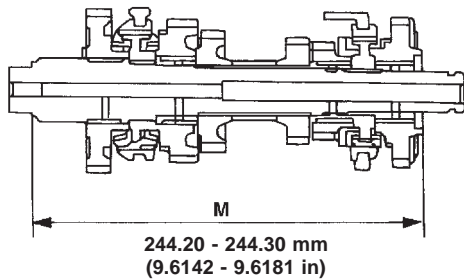
NCMT0037S03

Thickness	Part number*
2.99 mm (0.1177 in)	32238-6J010
3.03 mm (0.1193 in)	32238-6J011
3.07 mm (0.1209 in)	32238-6J012
3.11 mm (0.1224 in)	32238-6J013
3.15 mm (0.1240 in)	32238-6J014
3.19 mm (0.1256 in)	32238-6J015
3.23 mm (0.1272 in)	32238-6J016
3.27 mm (0.1287 in)	32238-6J017
3.31 mm (0.1303 in)	32238-6J018
3.35 mm (0.1319 in)	32238-6J019
3.39 mm (0.1335 in)	32238-6J020
3.43 mm (0.1350 in)	32238-6J021
3.47 mm (0.1366 in)	32238-6J022
3.51 mm (0.1382 in)	32238-6J023

**AVAILABLE THRUST WASHER
Mainshaft Thrust Washer**

NCMT0038

NCMT0038S01



SMT843D

Standard length "M"	244.20 - 244.30 mm (9.6142 - 9.6181 in)
Thickness	Part number*
6.04 mm (0.2378 in)	32246-6J000
6.12 mm (0.2409 in)	32246-6J001
6.20 mm (0.2441 in)	32246-6J002
6.28 mm (0.2472 in)	32246-6J003
6.36 mm (0.2504 in)	32246-6J004

*: Always check with the parts department for the latest information.

AVAILABLE WASHERS

NCMT0031

Differential Side Gear Thrust Washer

NCMT0031S01

Allowable clearance between side gear and differential case with washer	0.1 - 0.2 mm (0.004 - 0.008 in)
Thickness mm (in)	Part number*
0.75 - 0.80 (0.0295 - 0.0315)	38424-D2111
0.80 - 0.85 (0.0315 - 0.0335)	38424-D2112
0.85 - 0.90 (0.0335 - 0.0354)	38424-D2113
0.90 - 0.95 (0.0354 - 0.0374)	38424-D2114
0.95 - 1.00 (0.0374 - 0.0394)	38424-D2115

AVAILABLE SHIMS — DIFFERENTIAL SIDE BEARING PRELOAD AND ADJUSTING SHIM

NCMT0032

Bearing Preload

NCMT0032S01

Unit: mm (in)

Differential side bearing preload: T*	0.15 - 0.21 (0.0059 - 0.0083)
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* Install shims which are "deflection of differential case" + "T" in thickness.

Differential Side Bearing Adjusting Shims

NCMT0032S03

Thickness mm (in)	Part number*
0.44 (0.0173)	38454-M8000
0.48 (0.0189)	38454-M8001
0.52 (0.0205)	38454-M8002
0.56 (0.0220)	38454-M8003
0.60 (0.0236)	38454-M8004
0.64 (0.0252)	38454-M8005
0.68 (0.0268)	38454-M8006
0.72 (0.0283)	38454-M8007
0.76 (0.0299)	38454-M8008
0.80 (0.0315)	38454-M8009
0.84 (0.0331)	38454-M8010
0.88 (0.0346)	38454-M8011

*: Always check with the parts department for the latest information.