

MANUAL TRANSAXLE

SECTION **MT**

CONTENTS

<input type="checkbox"/>	<input type="checkbox"/>	RS5F70A	<input type="checkbox"/>	Position Switch Check.....	16
				BACK-UP LAMP SWITCH	16
				PNP SWITCH	16
				BACK-UP LAMP SWITCH AND PNP SWITCH	17
<input type="checkbox"/>	<input type="checkbox"/>	RS5F50A	<input type="checkbox"/>		
				REMOVAL AND INSTALLATION	18
				Removal.....	18
				Installation.....	19
				MODEL QG18DE ENGINE	19
<input type="checkbox"/>	<input type="checkbox"/>	RS5F50A	<input type="checkbox"/>		
				REMOVAL AND INSTALLATION	20
				Removal.....	20
				Installation.....	22
				MODEL YD ENGINE	22
<input type="checkbox"/>	<input type="checkbox"/>	RS5F70A	<input type="checkbox"/>		
				TRANSAXLE GEAR CONTROL	23
				Components.....	23
<input type="checkbox"/>	<input type="checkbox"/>	RS5F50A	<input type="checkbox"/>		
				OVERHAUL	24
				Case Components	24
				Gear Components	25
				Shift Control Components	26
				Final Drive Components	27
				DISASSEMBLY	28
				Transaxle Case.....	28
				Clutch Housing	30
				REPAIR FOR COMPONENT PARTS	34
				Input Shaft and Gears	34
				DISASSEMBLY.....	34
				INSPECTION.....	35
				ASSEMBLY	36
				Mainshaft and Gears	39
				DISASSEMBLY.....	39
				INSPECTION.....	40
<input type="checkbox"/>	<input type="checkbox"/>	RS5F70A	<input type="checkbox"/>		
				PREPARATION	3
				Special Service Tools	3
				Commercial Service Tools	5
<input type="checkbox"/>	<input type="checkbox"/>	RS5F50A	<input type="checkbox"/>		
				PREPARATION	6
				Special Service Tools	6
				Commercial Service Tools	8
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
				NOISE, VIBRATION AND HARSHNESS (NVH)	
				TROUBLESHOOTING	9
				NVH Troubleshooting Chart.....	9
				MANUAL TRANSAXLE	9
<input type="checkbox"/>	<input type="checkbox"/>	RS5F70A	<input type="checkbox"/>		
				M/T OIL	10
				Changing M/T Oil.....	10
				Checking	10
				OIL LEAK AND OIL LEVEL.....	10
<input type="checkbox"/>	<input type="checkbox"/>	RS5F50A	<input type="checkbox"/>		
				M/T OIL	11
				Changing M/T Oil.....	11
				Checking	11
				OIL LEAK AND OIL LEVEL.....	11
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
				DESCRIPTION	12
				Cross-sectional View - RS5F70A	12
				Cross-sectional View - RS5F50A	13
				DOUBLE-CONE SYNCHRONIZER	14
				ON-VEHICLE SERVICE	15
				Replacing Oil Seal	15
				DIFFERENTIAL OIL SEAL	15
				STRIKING ROD OIL SEAL	15

CONTENTS (Cont'd)

ASSEMBLY	42
Final Drive.....	47
PRE-INSPECTION	47
DISASSEMBLY.....	48
INSPECTION.....	49
ASSEMBLY	49
Shift Control Components	51
INSPECTION.....	51
ASSEMBLY	52
Clutch Housing	52
Transaxle Case.....	56

RS5F50A

OVERHAUL	62
Case Components	62
Gear Components	63
Shift Control Components	64
DISASSEMBLY	65
REPAIR FOR COMPONENT PARTS	68
Input Shaft and Gears	68
DISASSEMBLY.....	68
INSPECTION.....	69
ASSEMBLY	70
Mainshaft and Gears	73
DISASSEMBLY.....	73
INSPECTION.....	74
ASSEMBLY	75
Final Drive.....	77
DISASSEMBLY.....	77
INSPECTION.....	77
ASSEMBLY	78
Shift Control Components	79
INSPECTION.....	79
Case Components	79
REMOVAL AND INSTALLATION.....	79
ADJUSTMENT	81
Input Shaft End Play and Differential Side Bearing Preload.....	81
DIFFERENTIAL SIDE	81
INPUT SHAFT SIDE.....	82
Mainshaft Bearing Preload	82
ASSEMBLY	84

RS5F70A

SERVICE DATA AND SPECIFICATIONS (SDS)	88
General Specifications.....	88
TRANSAXLE	88
FINAL GEAR	88
Gear End Play	89
Clearance Coupling Sleeve.....	89
1ST, 2ND, 3RD, 4TH, 5TH & REVERSE COUPLING SLEEVE	89
Clearance Between Baulk Ring and Gear	89

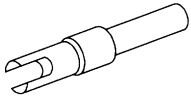
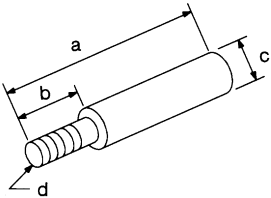
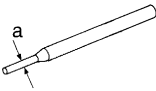
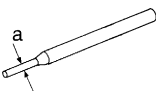
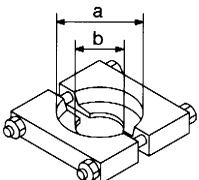
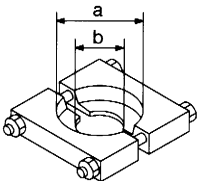
3RD, 4TH, 5TH, REVERSE BAULK RING.....	89
1ST AND 2ND DOUBLE BAULK RING	89
Available Snap Rings	90
SNAP RING.....	90
Available C-rings.....	90
4TH INPUT GEAR C-RING.....	90
5TH INPUT GEAR REAR C-RING	90
MAINSHAFT C-RING	91
Available Adjusting Shims	92
INPUT SHAFT REAR BEARING ADJUSTING SHIM	92
MAINSHAFT ADJUSTING SHIM.....	93
MAINSHAFT REAR BEARING ADJUSTING SHIM	93
Available Thrust Washer.....	94
MAINSHAFT THRUST WASHER.....	94
Available Washers	94
DIFFERENTIAL SIDE GEAR THRUST WASHER.....	94
Available Shims - Differential Side Bearing Preload and Adjusting Shim	95
BEARING PRELOAD	95
DIFFERENTIAL SIDE BEARING ADJUSTING SHIMS	95

RS5F50A

SERVICE DATA AND SPECIFICATIONS (SDS)	96
General Specifications.....	96
TRANSAXLE	96
FINAL GEAR	96
Gear End Play	97
Clearance Between Baulk Ring and Gear	97
3RD, 4TH & 5TH BAULK RING.....	97
1ST AND 2ND DOUBLE BAULK RING	97
REVERSE BAULK RING	97
Available Snap Rings	98
1ST & 2ND SYNCHRONIZER HUB (AT MAINSHAFT).....	98
3RD & 4TH SYNCHRONIZER HUB (AT INPUT SHAFT).....	98
5TH MAIN GEAR (AT MAINSHAFT)	98
Available Thrust Washer.....	98
4TH INPUT GEAR (AT INPUT SHAFT).....	98
DIFFERENTIAL SIDE GEAR THRUST WASHER.....	98
Available Shims	99
BEARING PRELOAD AND END PLAY	99
TOTAL TURNING TORQUE (NEW BEARING)	99
MAINSHAFT BEARING ADJUSTING SHIM	99
TABLE FOR SELECTING MAINSHAFT BEARING ADJUSTING SHIM(S).....	99
INPUT SHAFT BEARING ADJUSTING SHIM	100
TABLE FOR SELECTING INPUT SHAFT BEARING ADJUSTING SHIM(S).....	100
DIFFERENTIAL SIDE BEARING ADJUSTING SHIM	100
TABLE FOR SELECTING DIFFERENTIAL SIDE BEARING ADJUSTING SHIM(S)	101

Special Service Tools

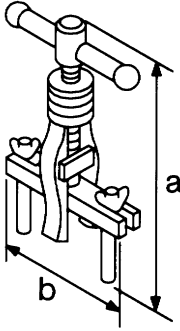
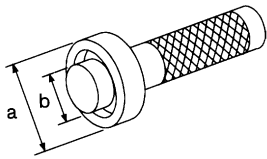
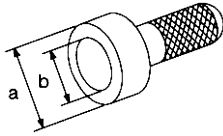
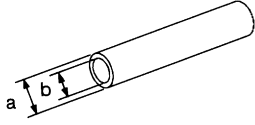
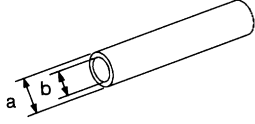
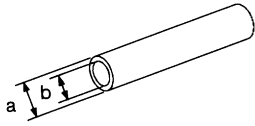
NLMT0032

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.) a: 140 mm (5.51 in) b: 40 mm (1.57 in) c: 16 mm (0.63 in) dia. d: M8 x 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 bush 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 bush Installing mainshaft rear bearing a: 110 mm (4.33 in) dia. b: 68 mm (2.68 in) dia.</p>

PREPARATION

RS5F70A

Special Service Tools (Cont'd)

Tool number Tool name	Description
ST33290001 Puller	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>Removing idler gear bearing outer race a: 250 mm (9.84 in) b: 160 mm (6.30 in)</p> </div> </div> <p style="margin-top: 10px;">NT414</p>
ST33230000 Drift	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>Removing differential oil seal Installing differential side bearing a: 51 mm (2.01 in) dia. b: 28.5 mm (1.122 in) dia.</p> </div> </div> <p style="margin-top: 10px;">NT084</p>
ST30720000 Drift	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>Installing differential side bearing outer race a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.</p> </div> </div> <p style="margin-top: 10px;">NT115</p>
ST22350000 Drift	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>Installing input shaft front and rear bearing a: 34 mm (1.34 in) dia. b: 28 mm (1.10 in) dia.</p> </div> </div> <p style="margin-top: 10px;">NT065</p>
ST22452000 Drift	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <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> </div> </div> <p style="margin-top: 10px;">NT065</p>
ST37750000 Drift	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <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> </div> </div> <p style="margin-top: 10px;">NT065</p>

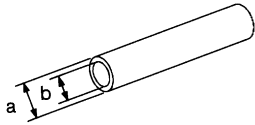
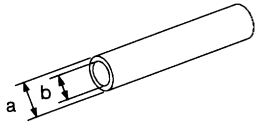
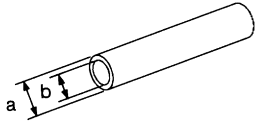
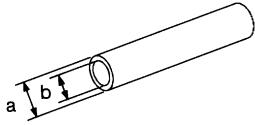
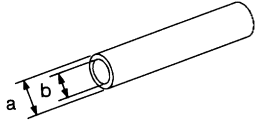
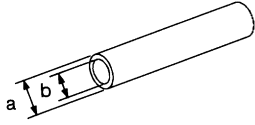
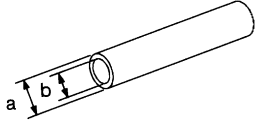
PREPARATION

RS5F70A

Commercial Service Tools

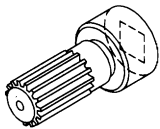
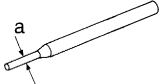
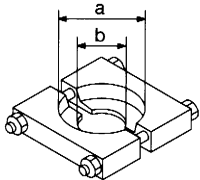
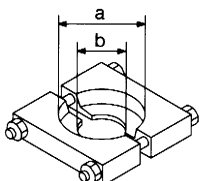
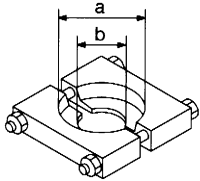
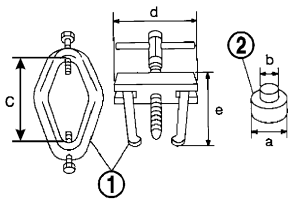
Commercial Service Tools

NLMT0033

Tool name	Description
Drift	 <p>Installing welch plug a: 12 mm (0.47 in) dia. b: 10 mm (0.39 in) dia.</p> <p>NT065</p>
Drift	 <p>Removing input shaft rear bearing Removing mainshaft rear bearing a: 22 mm (0.87 in) dia. b: 16 mm (0.63 in) dia.</p> <p>NT065</p>
Drift	 <p>Installing differential oil seal a: 58 mm (2.28 in) dia. b: 50 mm (1.97 in) dia.</p> <p>NT065</p>
Drift	 <p>Installing differential oil seal a: 54 mm (2.13 in) dia. b: 50 mm (1.97 in) dia.</p> <p>NT065</p>
Drift	 <p>Installing 2nd gear bush a: 38 mm (1.50 in) dia. b: 33 mm (1.30 in) dia.</p> <p>NT065</p>
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>
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>

Special Service Tools

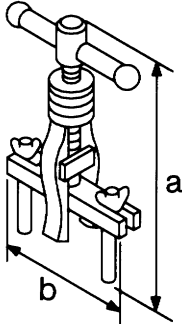
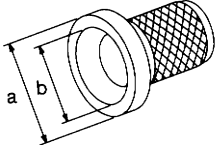
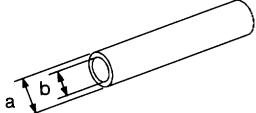
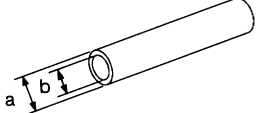
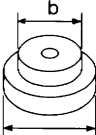
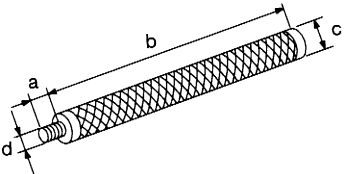
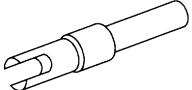
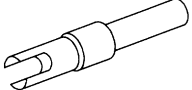
NLMT0001

Tool number Tool name	Description	
KV38105210 Preload adapter		Measuring turning torque of final drive assembly Measuring total turning torque
	NT075	
KV32101000 Pin punch		Removing and installing retaining pin a: 4 mm (0.16 in) dia.
	NT410	
ST22730000 Puller		Removing mainshaft front and rear bearing inner race a: 82 mm (3.23 in) dia. b: 30 mm (1.18 in) dia.
	NT411	
ST30031000 Puller		Removing input shaft front and rear bearing Removing 4th & 5th main gear a: 90 mm (3.54 in) dia. b: 50 mm (1.97 in) dia.
	NT411	
ST30021000 Puller		Removing 5th synchronizer Removing 3rd & 4th synchronizer Removing 2nd & 3rd main gear a: 110 mm (4.33 in) dia. b: 68 mm (2.68 in) dia.
	NT411	
ST3306S001 Differential side bearing puller set 1 ST33051001 Puller 2 ST33061000 Adapter		Removing differential side bearing inner race a: 38 mm (1.50 in) dia. b: 28.5 mm (1.122 in) dia. c: 130 mm (5.12 in) d: 135 mm (5.31 in) e: 100 mm (3.94 in)
	NT675	

PREPARATION

RS5F50A

Special Service Tools (Cont'd)

Tool number Tool name	Description
ST33290001 Puller	 <p>Removing differential oil seal Removing mainshaft rear bearing outer race Removing differential side bearing outer race a: 250 mm (9.84 in) b: 160 mm (6.30 in)</p> <p>NT414</p>
ST33400001 Drift	 <p>Installing differential oil seal a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.</p> <p>NT086</p>
ST30600000 Drift	 <p>Installing input shaft front bearing a: 36 mm (1.42 in) dia. b: 31 mm (1.22 in) dia.</p> <p>NT065</p>
ST22452000 Drift	 <p>Installing 3rd, 4th and 5th main gear a: 45 mm (1.77 in) dia. b: 36 mm (1.42 in) dia.</p> <p>NT065</p>
ST30621000 Drift	 <p>Installing mainshaft rear bearing outer race (Use with ST30611000.) a: 79 mm (3.11 in) dia. b: 59 mm (2.32 in) dia.</p> <p>NT073</p>
ST30611000	 <p>(Use with ST30621000.) a: 15 mm (0.59 in) b: 335 mm (13.19 in) c: 25 mm (0.98 in) dia. d: M12 x 1.5P</p> <p>NT419</p>
KV38107700 Preload adapter	 <p>Measuring clearance between side gear and differential case with washer</p> <p>NT087</p>
KV38106500 Preload adapter	 <p>Measuring turning torque of final drive assembly</p> <p>NT087</p>

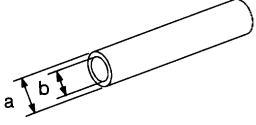
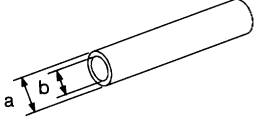
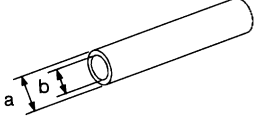
PREPARATION

RS5F50A

Commercial Service Tools

Commercial Service Tools

NLMT0002

Tool name	Description
Drift	 <p>Installing differential side bearing inner race a: 45 mm (1.77 in) dia. b: 41 mm (1.61 in) dia.</p> <p>NT065</p>
Drift	 <p>Installing differential side bearing outer race a: 69 mm (2.72 in) dia. b: 64 mm (2.52 in) dia.</p> <p>NT065</p>
Drift	 <p>Installing striking rod oil seal a: 38 mm (1.50 in) dia. b: 20 mm (0.79 in) dia.</p> <p>NT065</p>

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NLMT0003

NVH Troubleshooting Chart

NVH Troubleshooting Chart

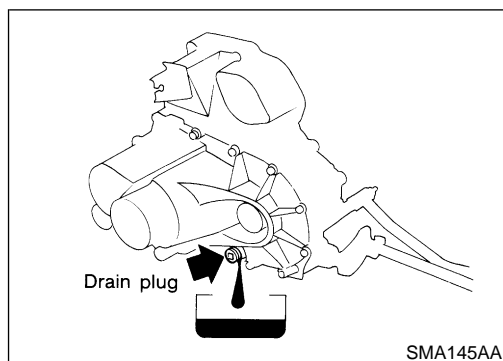
Use the chart below to help you find the cause of the symptom. The numbers indicate the order of the inspection. If necessary, repair or replace these parts.

NLMT0003S01

MANUAL TRANSAXLE

NLMT0003S0101

Reference page		MT-10 (RS5F70A), MT-11 (RS5F50A)	MT-10 (RS5F70A), MT-11 (RS5F50A)	MT-10 (RS5F70A), MT-11 (RS5F50A)	MT-62	MT-62	MT-62	MT-23	MT-64	MT-64	MT-63	MT-63	MT-63	MT-63
SUSPECTED PARTS (Possible cause)		(Oil level is low.)	(Wrong oil)	(Oil level is high.)	GASKET (Damaged)	OIL SEAL (Worn or damaged)	O-RING (Worn or damaged)	SHIFT CONTROL ROD (Worn)	CHECK PLUG RETURN SPRING AND CHECK BALL (Worn or damaged)	SHIFT FORK (Worn)	GEAR (Worn or damaged)	BEARING (Worn or damaged)	BAULK RING (Worn or damaged)	INSERT SPRING (Damaged)
Symptoms	Noise	1	2								3	3		
	Oil leakage		3	1	2	2	2							
	Hard to shift or will not shift		1	1				2					3	3
	Jumps out of gear							1	2	3	3			



Changing M/T Oil

NLMT0086

1. Drain oil from drain plug and refill with new gear oil.
2. Check oil level.

Oil grade:

API GL-4

Viscosity:

Refer to MA-20, "RECOMMENDED FLUIDS AND LUBRICANTS".

Capacity:

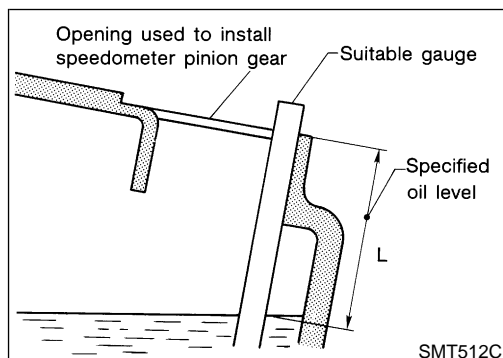
RS5F70A 3.0 ℓ (5-1/4 Imp pt)

Oil level (Reference data):

RS5F70A 75.5 - 80.5 mm (2.972 - 3.196 in)

Drain plug:

⚙️ : 25 - 34 N·m (2.5 - 3.5 kg·m, 18 - 25 ft·lb)



Checking

NLMT0087

OIL LEAK AND OIL LEVEL

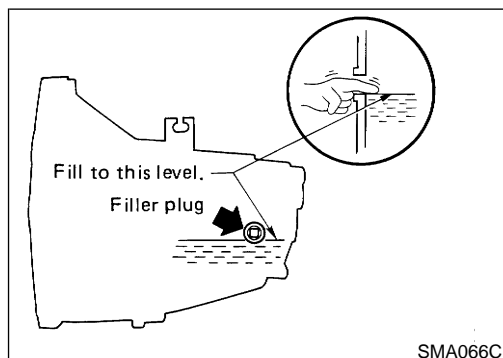
NLMT0087S01

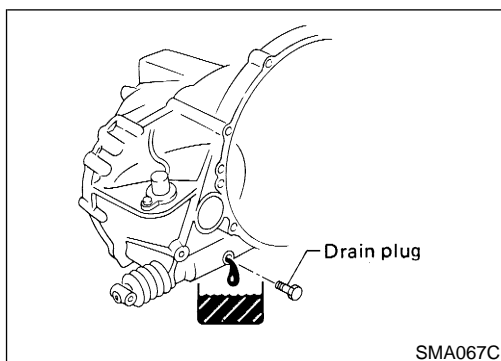
1. Check that oil is not leaking from transaxle or around it.
2. Check oil level.

Never start engine while checking oil level.

Filler plug:

⚙️ : 10 - 19 N·m (1.0 - 2.0 kg·m, 87 - 173 in·lb)

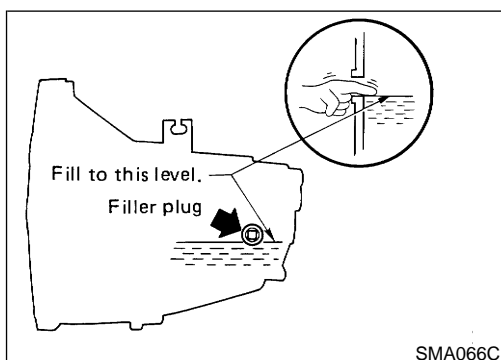




Changing M/T Oil

NLMT0088

1. Drain oil from drain plug and refill with new gear oil.
2. Check oil level.

Oil grade:**API GL-4****Viscosity:****Refer to MA-20, "RECOMMENDED FLUIDS AND LUBRICANTS".****Capacity:****RS5F50A 4.5 - 4.8 ℓ (7-7/8 - 8-1/2 Imp pt)****Drain plug:****⊗ : 15 - 20 N·m (1.5 - 2.0 kg·m, 11 - 14 ft·lb)**

Checking

NLMT0089

OIL LEAK AND OIL LEVEL

NLMT0089S01

Check for oil leakage and oil level.

Never start engine while checking oil level.**Filler plug:****⊗ : 25 - 34 N·m (2.5 - 3.5 kg·m, 18 - 25 ft·lb)**

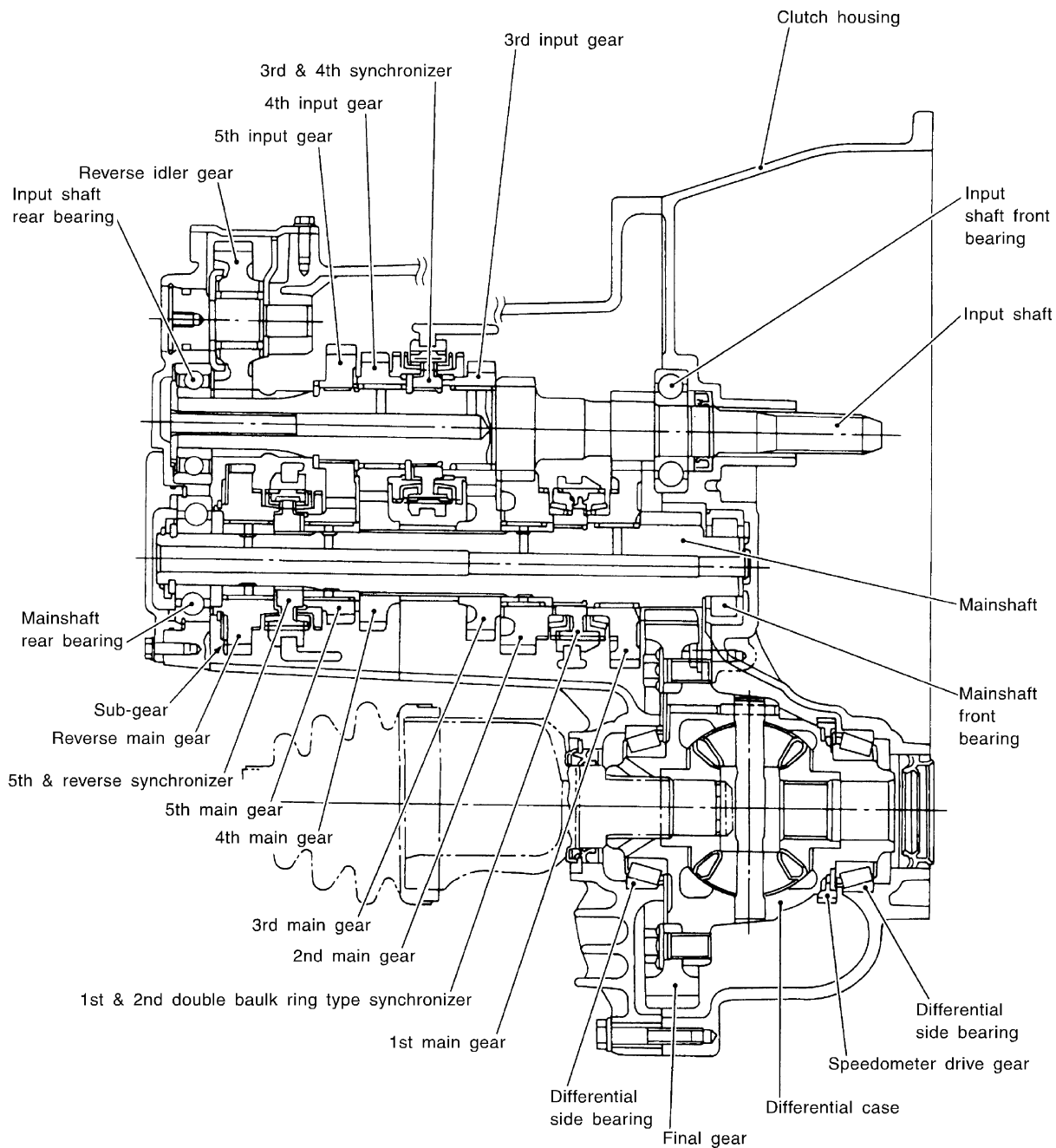
DESCRIPTION

NLMT0034

Cross-sectional View — RS5F70A

Cross-sectional View — RS5F70A

NLMT0034S03



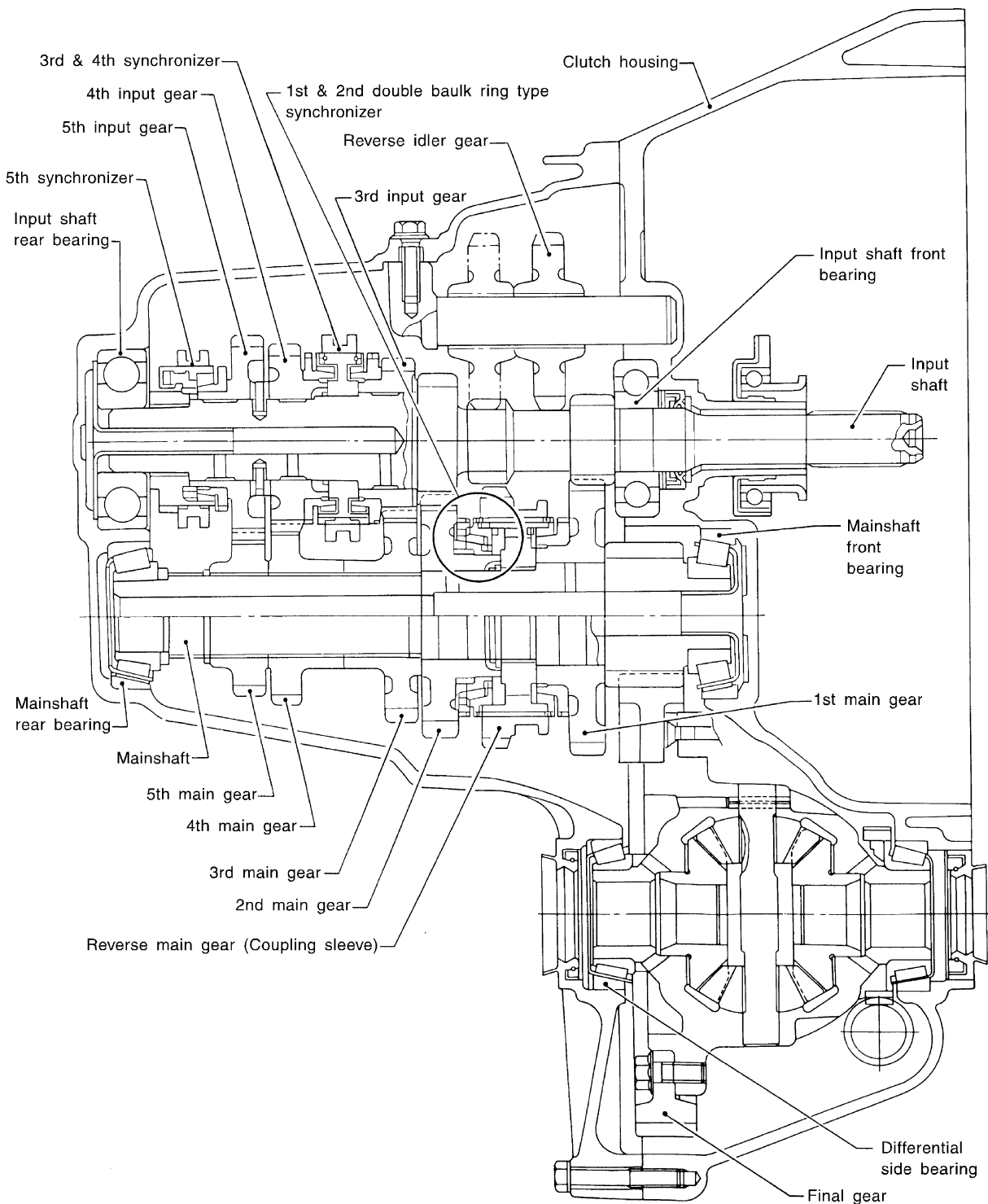
SMT924D

DESCRIPTION

Cross-sectional View — RS5F50A

Cross-sectional View — RS5F50A

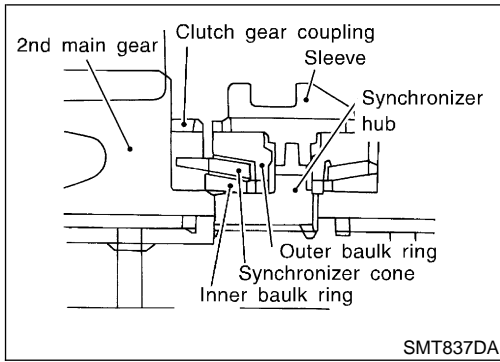
NLMT0034S04



SMT196DA

DESCRIPTION

Cross-sectional View — RS5F50A (Cont'd)

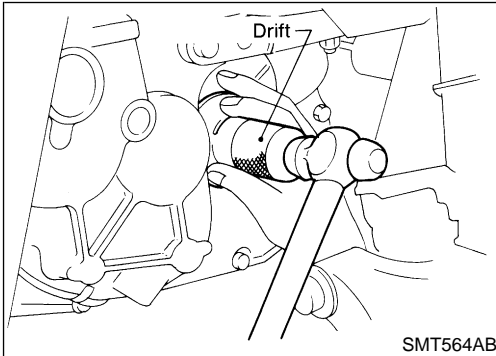
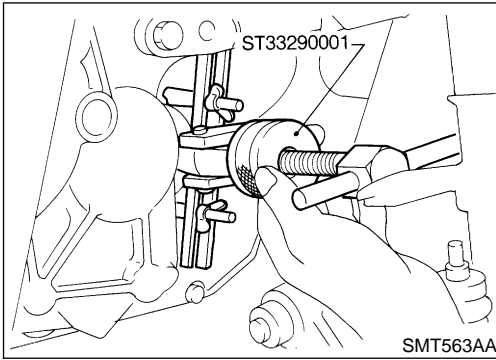


DOUBLE-CONE SYNCHRONIZER

NLMT0034S0403

— RS5F70A and RS5F50A —

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



Replacing Oil Seal DIFFERENTIAL OIL SEAL

NLMT0035

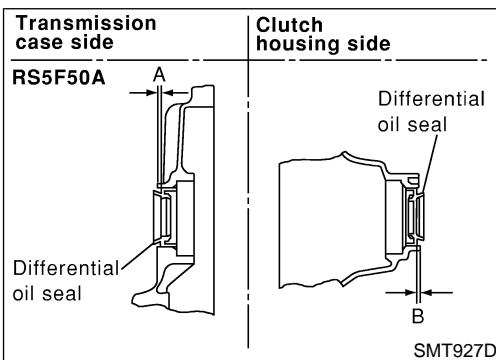
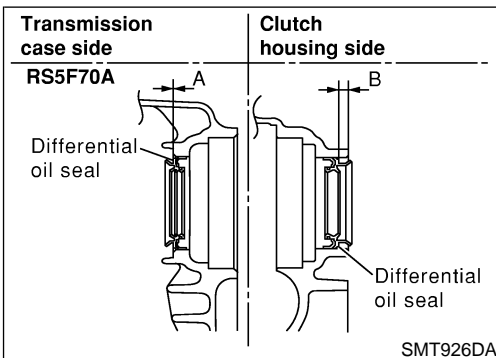
NLMT0035S01

1. Drain gear oil from transaxle.
2. Remove drive shafts. Refer to AX-11, "Removal".
3. Remove differential oil seal.
4. Install differential oil seal.
 - **Apply multi-purpose grease to seal lip of oil seal before installing.**
5. Install drive shafts. Refer to AX-11, "Installation".

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

Unit: mm (in)

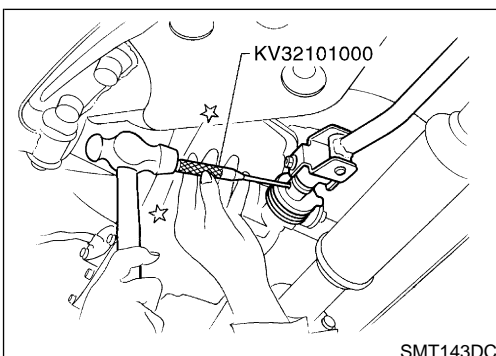
Item	Model	A	B
Dimension	RS5F70A	-0.5 (-0.020) to 0.5 (0.020)	
	RS5F50A		



STRIKING ROD OIL SEAL

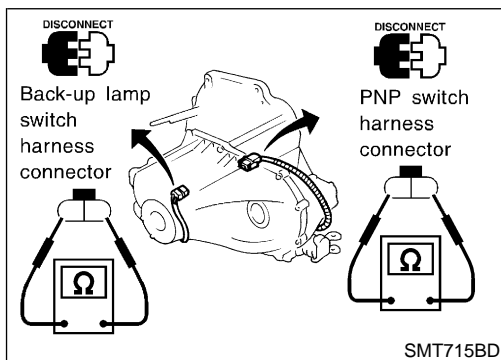
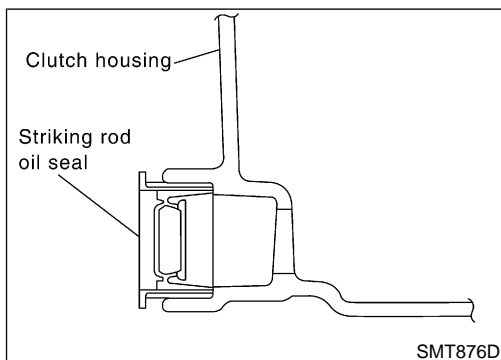
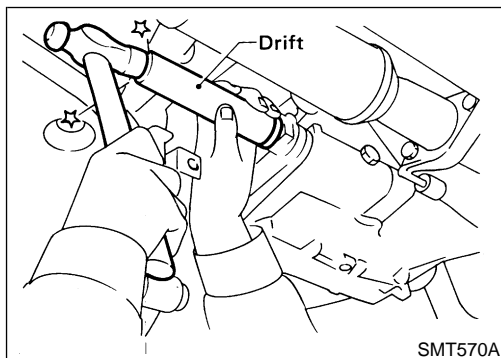
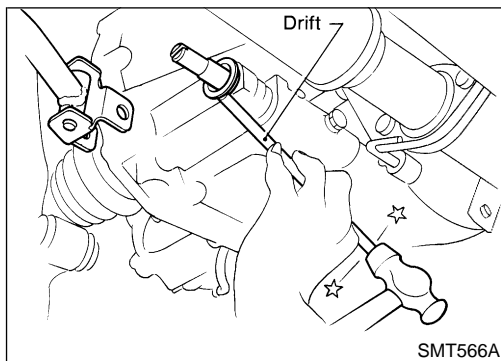
NLMT0035S02

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



ON-VEHICLE SERVICE

Replacing Oil Seal (Cont'd)



3. Remove striking rod oil seal.

4. Install striking rod oil seal.

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

- Drive it in as far as it will go.

Position Switch Check BACK-UP LAMP SWITCH

NLMT0036

NLMT0036S01

NLMT0036S0101

— RS5F70A —

- Check continuity.

Gear position	Continuity
Reverse	Yes
Except reverse	No

PNP SWITCH

NLMT0036S02

NLMT0036S0201

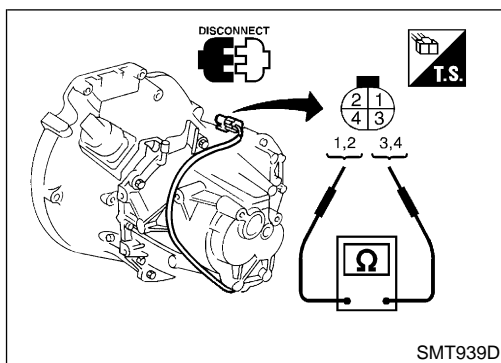
— RS5F70A —

- Check continuity.

Gear position	Continuity
Neutral	Yes
Except neutral	No

ON-VEHICLE SERVICE

Position Switch Check (Cont'd)



BACK-UP LAMP SWITCH AND PNP SWITCH

NLMT0036S03

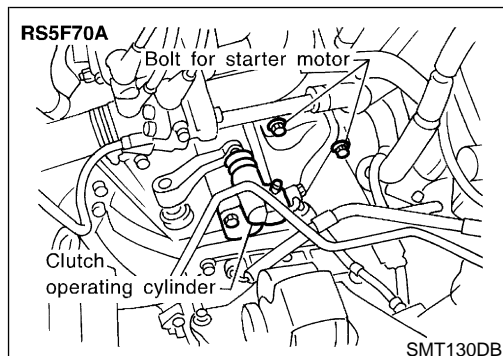
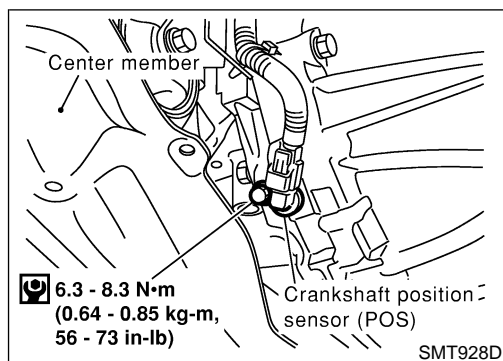
NLMT0036S0301

— RS5F50A —

- Check continuity.

Gear position	Continuity
Reverse	1 - 3
Neutral	2 - 4
Except reverse and neutral	No

Removal



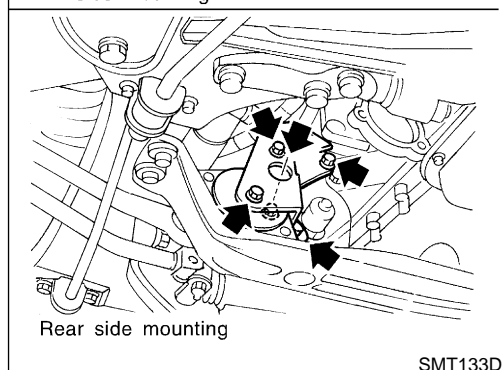
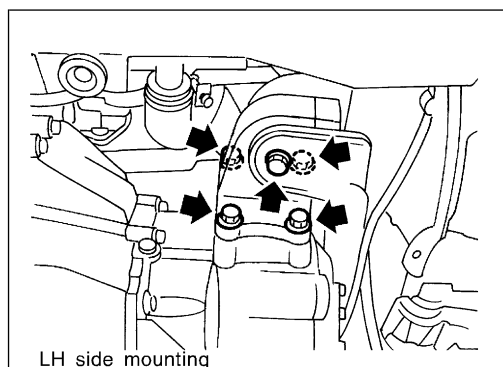
Removal

NLMT0008S01

CAUTION:

Remove the crankshaft position sensor (POS) from transaxle assembly before separating transaxle from engine. Be careful not to damage sensor edge.

1. Remove battery and its bracket.
 2. Remove air cleaner box with mass air flow sensor.
 3. Remove clutch operating cylinder from transaxle.
 4. Remove clutch hose clamp.
 5. Disconnect speedometer pinion, back-up lamp, PNP switch (F70A) harness connectors and ground harness.
 6. Remove starter motor from transaxle.
 7. Remove crankshaft position sensor (POS) from transaxle front side.
 8. Remove shift control rod and support rod bracket from transaxle.
 9. Drain gear oil from transaxle.
 10. Draw out drive shafts from transaxle. Refer to AX-11, "Removal".
 11. Support engine of transaxle by placing a jack under oil pan.
- CAUTION:**
Do not place jack under oil pan drain plug.
12. Remove bolts securing center member.

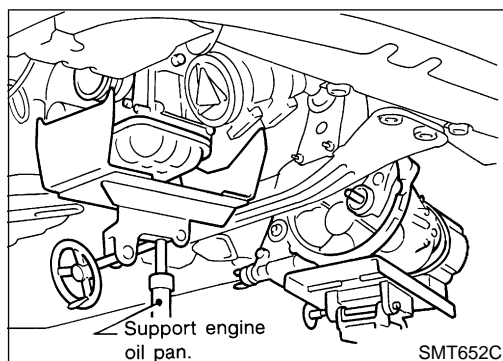


13. Remove LH mount and rear side mounting bolts. Refer to EM-49, "Removal and Installation".
14. Remove bolts securing gusset and transaxle.

REMOVAL AND INSTALLATION

RS5F70A

Removal (Cont'd)

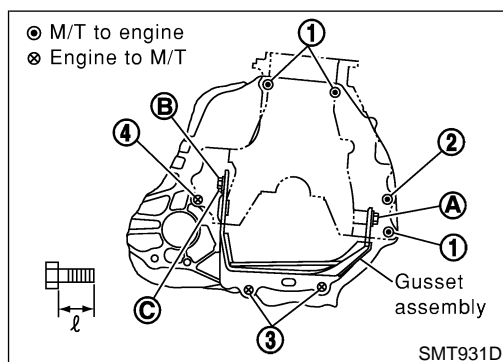


15. Lower transaxle while supporting it with a jack.

Installation

NLMT0008S02

- Tighten LH mount, rear side mount and center member bolts. Refer to EM-49, "Removal and Installation".
- Tighten clutch operating cylinder bolts. Refer to CL-15, "Installation".
- Tighten starter motor bolts. Refer to SC-19, "Removal and Installation".
- Install drive shafts. Refer to AX-11, "Installation".
- Tighten all transaxle bolts and any part removed.

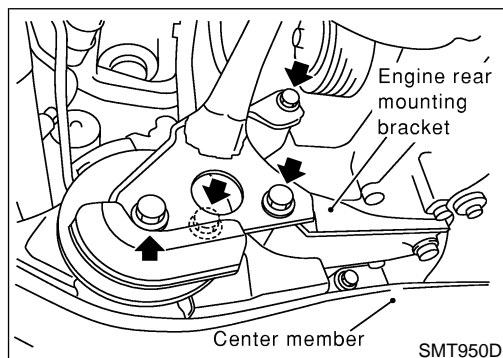
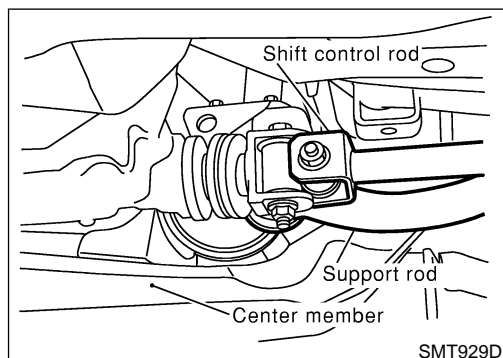
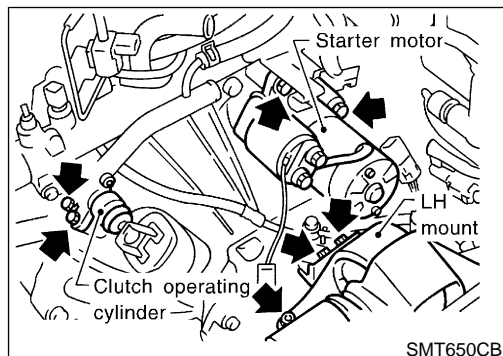
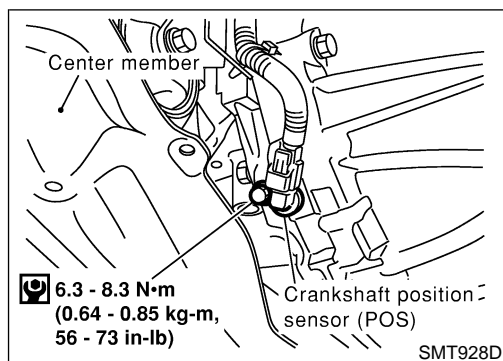


MODEL QG18DE ENGINE

NLMT0008S0202

Bolt No.	Tightening torque	N-m (kg-m, ft-lb)	"ℓ"	mm (in)
1	31 - 40	(3.1 - 4.1, 23 - 29)	70	(2.76)
2	31 - 40	(3.1 - 4.1, 23 - 29)	80	(3.15)
3	16 - 21	(1.6 - 2.2, 12 - 15)	25	(0.98)
4	31 - 40	(3.1 - 4.1, 23 - 29)	30	(1.18)
A	31 - 40	(3.1 - 4.1, 23 - 29)	20	(0.79)
B	31 - 40	(3.1 - 4.1, 23 - 29)	20	(0.79)
C	15 - 20	(1.5 - 2.1, 11 - 15)	17.5	(0.69)

Removal



Removal

NLMT0090S01

CAUTION:

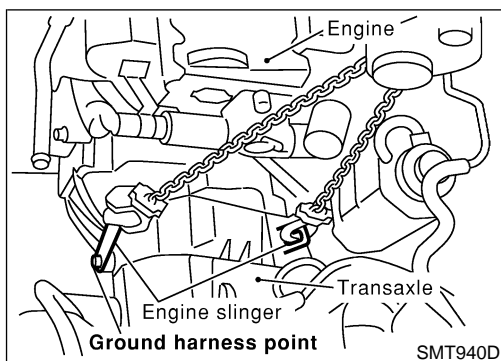
Remove the crankshaft position sensor (POS) from transaxle assembly before separating transaxle from engine. Be careful not to damage sensor edge.

1. Remove battery and its bracket.
2. Remove fuse box from battery bracket.
3. Remove air cleaner box with mass air flow sensor.
4. Remove air breather hose and vacuum pump hose.
5. Remove fuel filter bracket bolts.
6. Remove terminal and connector from starter motor.
7. Remove starter motor from transaxle.
8. Remove clutch hose clamp.
9. Remove clutch operating cylinder from transaxle.
10. Disconnect speedometer pinion, PNP switch harness connectors and ground harness.
11. Remove crankshaft position sensor (POS) from transaxle front side.
12. Remove front exhaust tube.
13. Remove shift control rod and support rod bracket from transaxle.
14. Drain gear oil from transaxle.
15. Draw out drive shafts from transaxle. Refer to AX-11, "Removal".
16. Support engine and transaxle by placing a jack under the transaxle.
17. Remove bolts securing center member.
18. Take out engine mounting bracket and transaxle installation bolts. Refer to EM-49, "Removal and Installation".
19. Remove bolts securing transaxle under side.
20. Temporarily tighten center member.
21. Lower the lift.

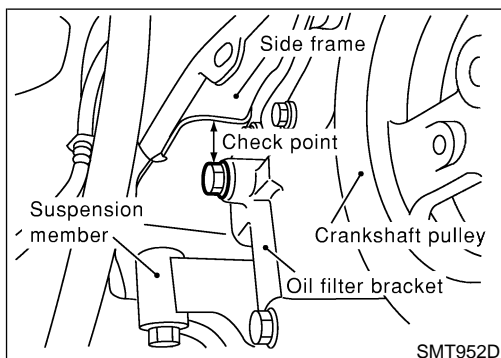
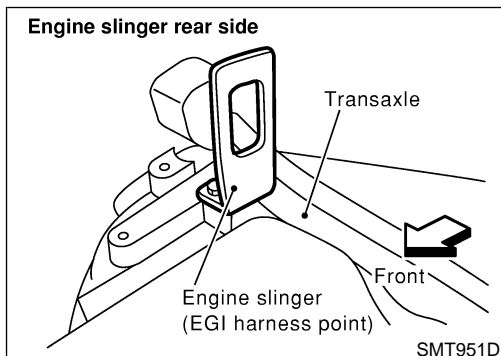
REMOVAL AND INSTALLATION

RS5F50A

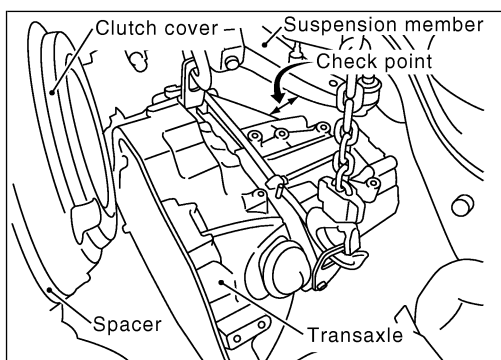
Removal (Cont'd)



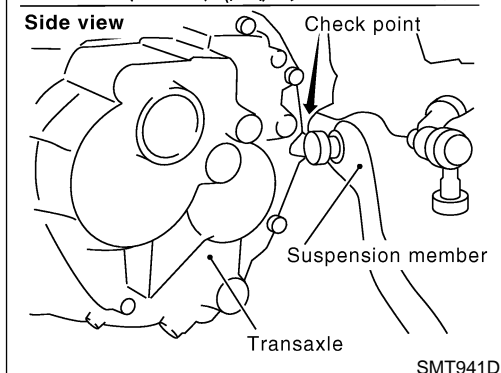
22. Pick up EGI harness clamp and install engine slinger. Next, set chain block.
23. Jack up the air compressor engine bracket.
24. Remove engine front mounting.
25. Remove LH side mounting. Refer to EM-49, "Removal and Installation".



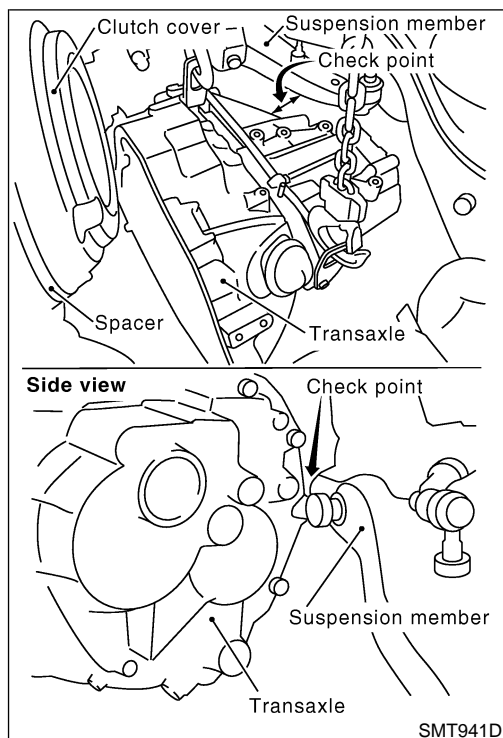
26. Jack up until engine oil filter bracket bolts are just about to touch the side frame.



27. Remove bolts securing transaxle.
28. While the transaxle is suspended, withdraw the transaxle case from the engine without hitting suspension member.
 - **Open the front of the transaxle when the clutch cover appears. Then, lower the transaxle pulling it toward the right front.**
 - **The spacer between the engine and transaxle should be left at the engine side.**
29. Remove spacer.



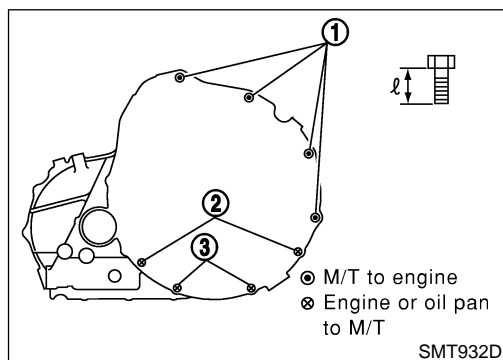
Installation



Installation

NLMT0090S02

1. Put transaxle under the engine compartment.
2. Set chain block on transaxle and hang.
3. Lift up transaxle case so as not to hit against the side frame and suspension member.
4. Assemble transaxle to engine.
 - Tighten LH mount, rear side mount and center member bolts. Refer to EM-49, "Removal and Installation".
 - Tighten clutch operating cylinder bolts. Refer to CL-15, "Installation".
 - Tighten starter motor bolts. Refer to SC-19, "Removal and Installation".
 - Install drive shafts. Refer to AX-11, "Installation".
 - Tighten all transaxle bolts and any part removed.



MODEL YD ENGINE

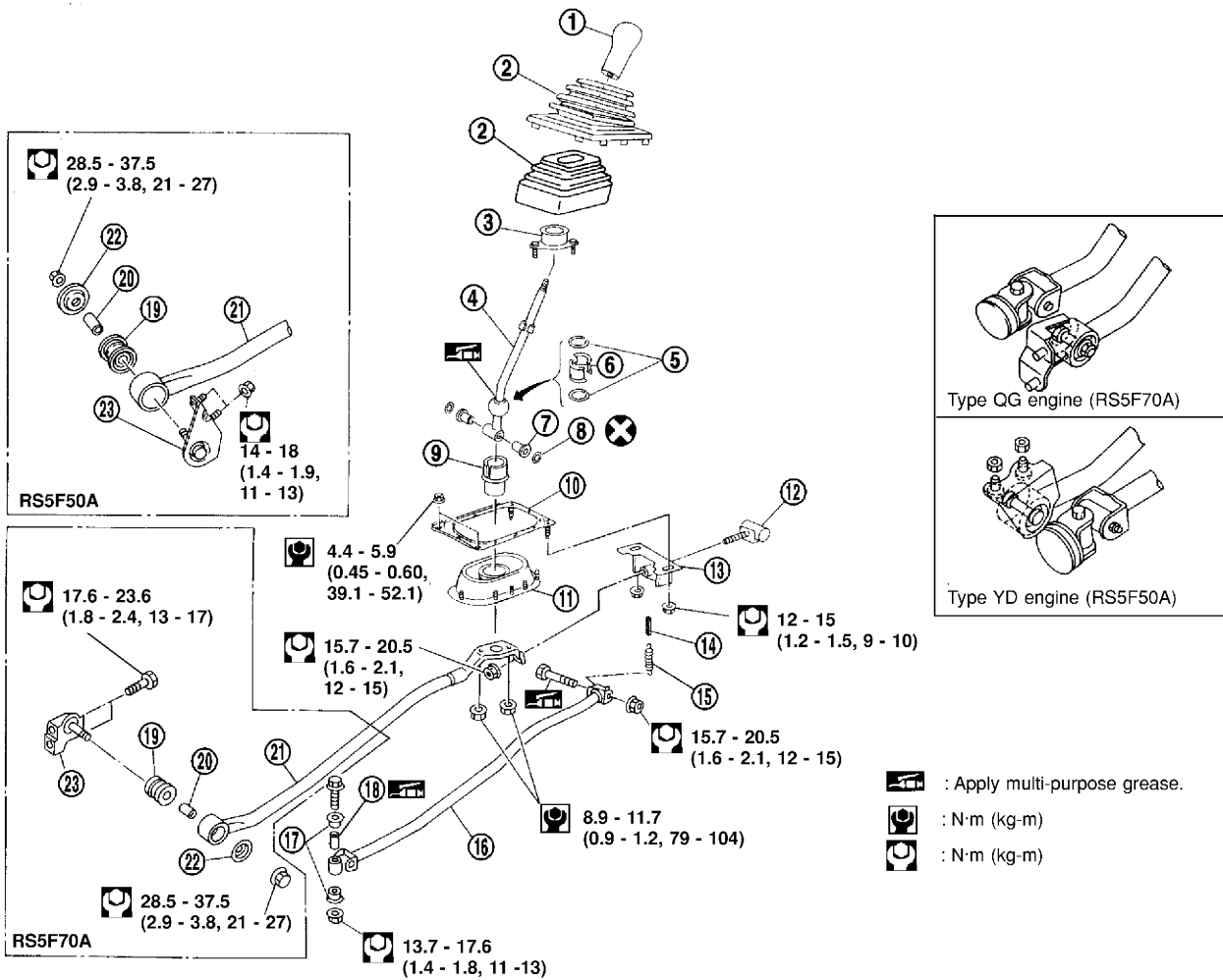
NLMT0090S0201

Bolt No.	Tightening torque	N-m (kg-m, ft-lb)	"ℓ" mm (in)
1	40 - 49	(4.0 - 5.0, 29 - 36)	70 (2.76)
2	30.4 - 36.3	(3.1 - 3.7, 23 - 26)	60 (2.36)
3	30.4 - 36.3	(3.1 - 3.7, 23 - 26)	55 (2.17)

TRANSAXLE GEAR CONTROL

Components

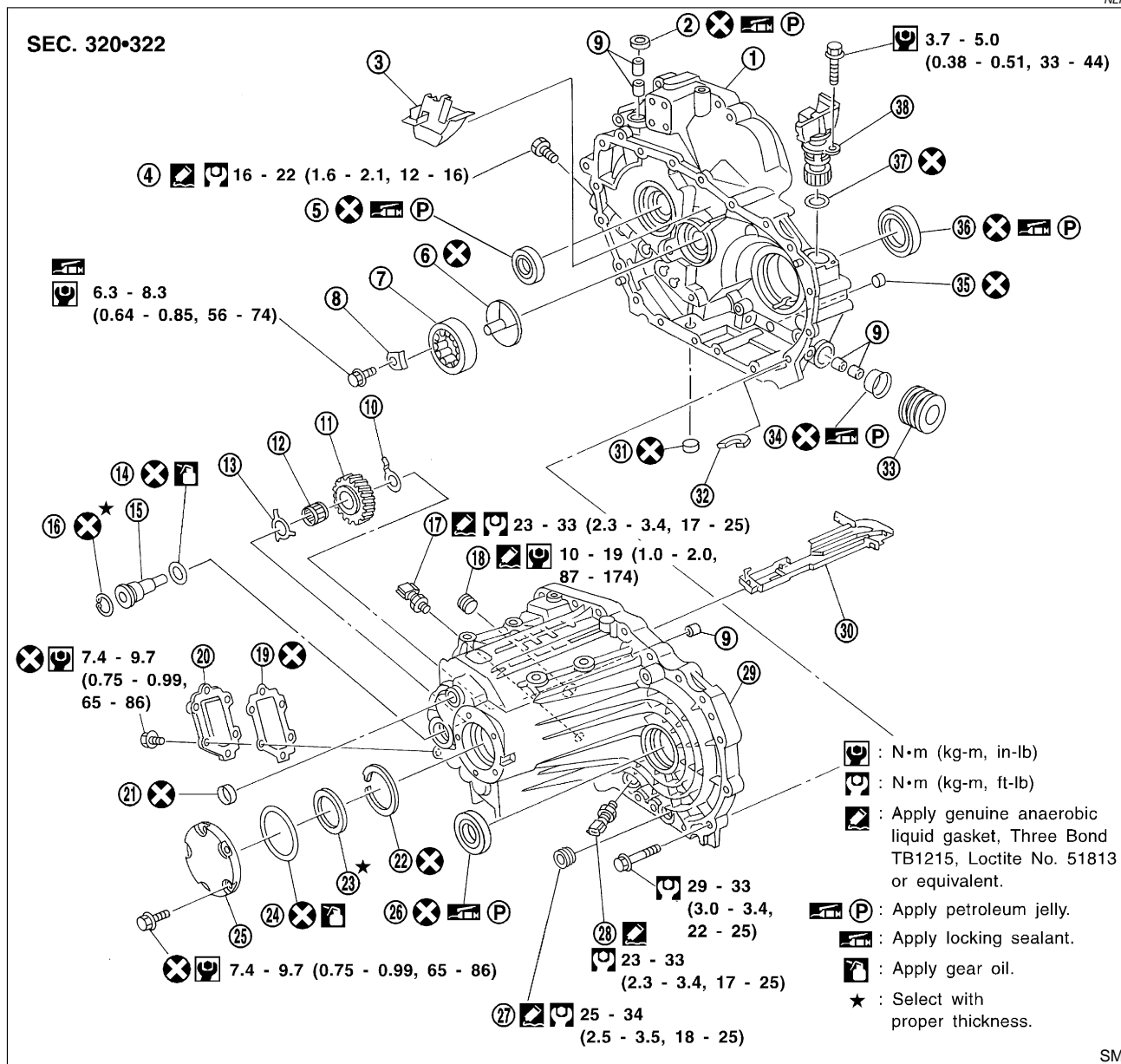
SEC. 341



NMT133

- | | | |
|-------------------------|--------------------------|-------------------------|
| 1. Control lever knob | 9. Hand lever socket | 17. Bush |
| 2. Boot | 10. Plate bolt | 18. Collar |
| 3. Control lever socket | 11. Transaxle hole cover | 19. Bush |
| 4. Control lever | 12. Mass damper | 20. Collar |
| 5. Bearing seat spring | 13. Holder bracket | 21. Support rod |
| 6. Seat | 14. Return spring rubber | 22. Plate |
| 7. Bush | 15. Return spring | 23. Support rod bracket |
| 8. O-ring | 16. Control rod | |

Case Components

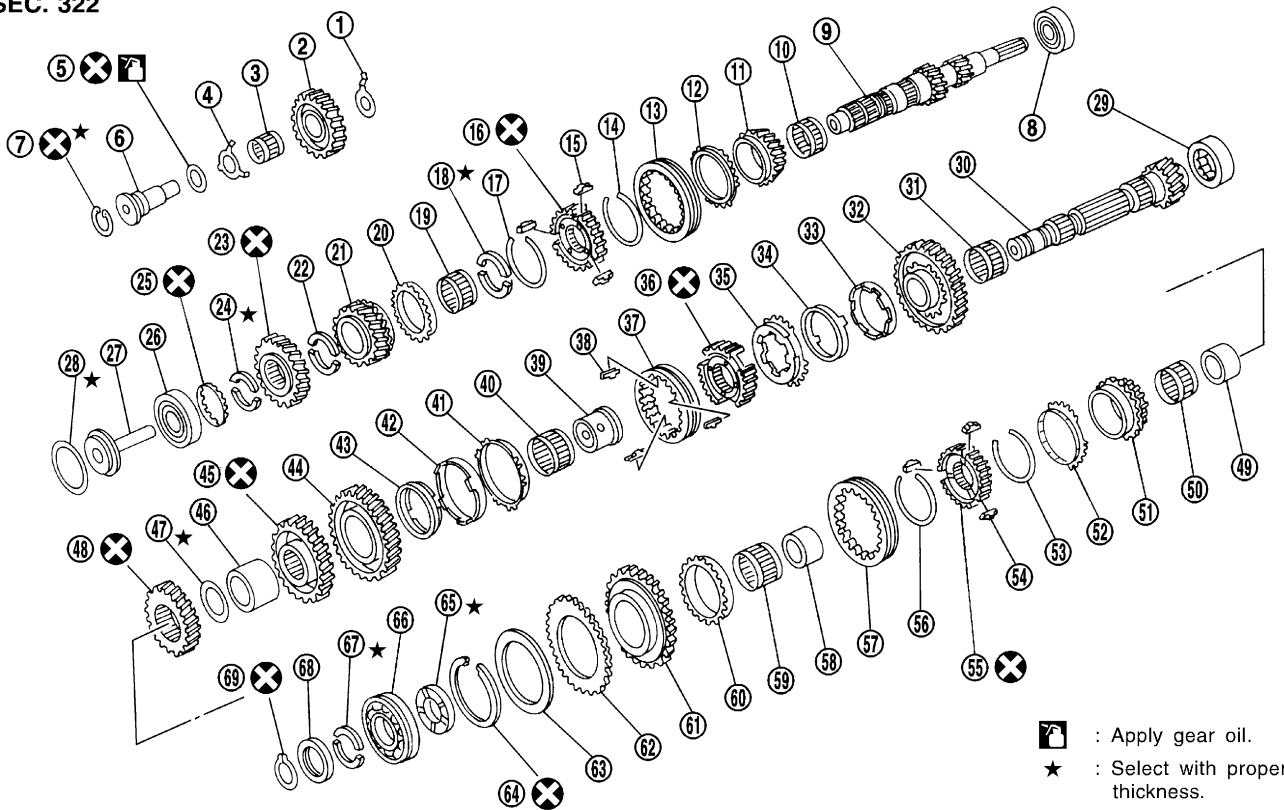
SEC. 320-322


SMT942D

- | | | |
|--|---|---------------------------|
| 1. Clutch housing | 14. O-ring | 26. Differential oil seal |
| 2. Dust seal | 15. Reverse idler gear shaft | 27. Drain plug |
| 3. Oil pocket | 16. Snap ring | 28. PNP switch |
| 4. Check plug | 17. Reverse switch | 29. Transmission case |
| 5. Input shaft oil seal | 18. Filler plug | 30. Oil gutter |
| 6. Oil channel | 19. Side cover gasket | 31. Welch plug |
| 7. Mainshaft front bearing | 20. Side cover | 32. Magnet |
| 8. Bearing retainer | 21. Welch plug | 33. Boot |
| 9. Bush | 22. Mainshaft bearing snap ring | 34. Striking rod oil seal |
| 10. Reverse idler gear front thrust washer | 23. Mainshaft rear bearing adjusting shim | 35. Welch plug |
| 11. Reverse idler gear | 24. O-ring | 36. Differential oil seal |
| 12. Reverse idler gear bearing | 25. Rear cover | 37. O-ring |
| 13. Reverse idler gear rear thrust washer | | 38. Speedometer pinion |

Gear Components

=NLMT0054S03

SEC. 322


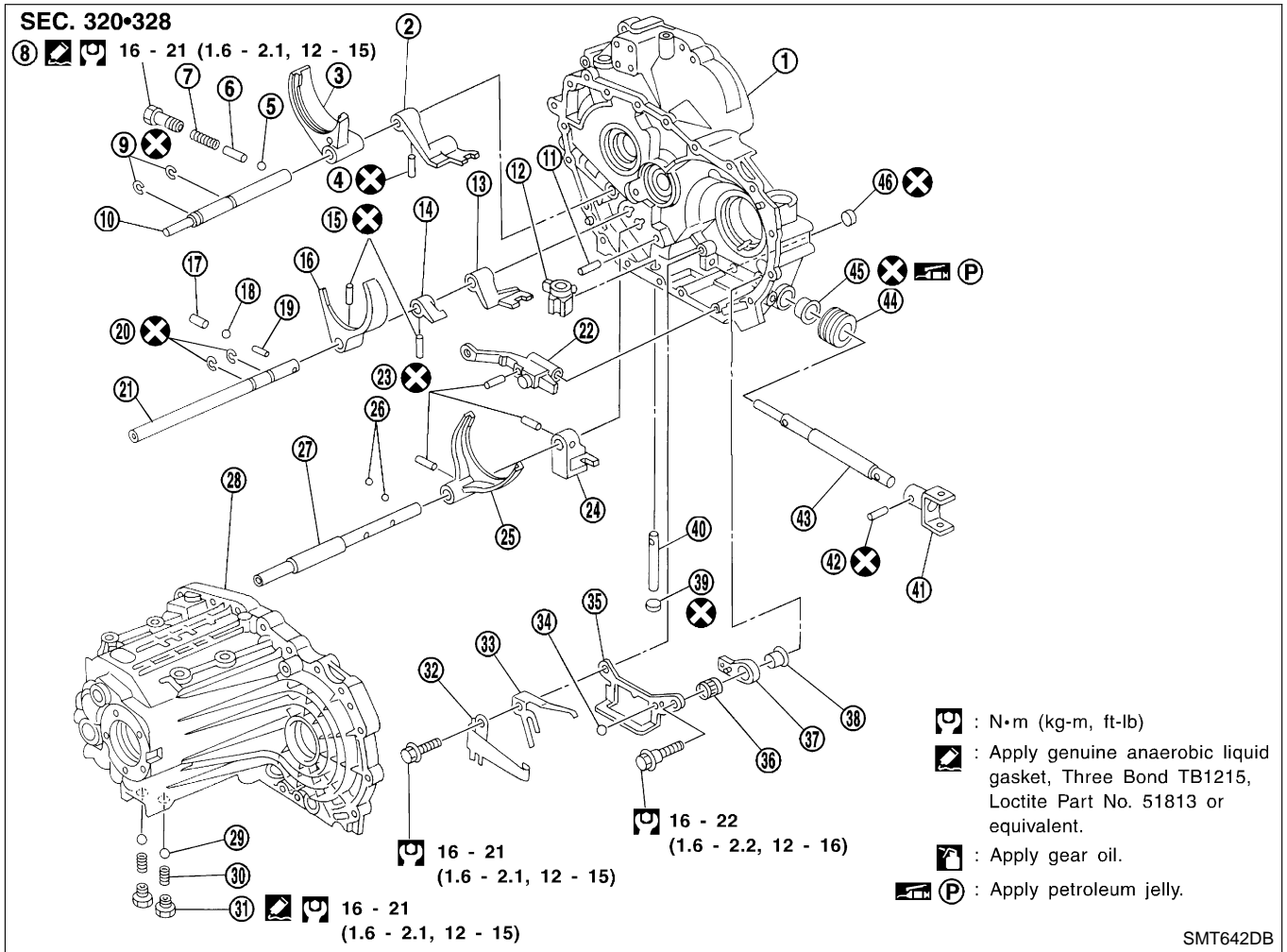
: Apply gear oil.
 : Select with proper thickness.

SMT641DA

- | | | |
|---|---|------------------------------------|
| 1. Reverse idler gear front thrust washer | 24. 5th gear rear C-ring | 47. Mainshaft adjusting shim |
| 2. Reverse idler gear | 25. C-ring holder | 48. 4th main gear |
| 3. Reverse idler gear bearing | 26. Input shaft rear bearing | 49. 5th gear bush |
| 4. Reverse idle gear rear thrust washer | 27. Oil channel | 50. 5th gear needle bearing |
| 5. O-ring | 28. Input shaft rear bearing adjusting shim | 51. 5th main gear |
| 6. Reverse idler gear shaft | 29. Mainshaft front bearing | 52. 5th gear baulk ring |
| 7. Snap ring | 30. Mainshaft | 53. Spread spring |
| 8. Input shaft front bearing | 31. 1st gear needle bearing | 54. Shifting insert |
| 9. Input shaft | 32. 1st main gear | 55. 5th & reverse synchronizer hub |
| 10. 3rd gear needle bearing | 33. 1st inner baulk ring | 56. Spread spring |
| 11. 3rd input gear | 34. 1st synchronizer cone | 57. Coupling sleeve |
| 12. 3rd gear baulk ring | 35. 1st outer baulk ring | 58. Reverse gear bush |
| 13. Coupling sleeve | 36. 1st & 2nd synchronizer hub | 59. Reverse gear needle bearing |
| 14. Spread spring | 37. Coupling sleeve | 60. Reverse gear baulk ring |
| 15. Shifting insert | 38. Insert spring | 61. Reverse main gear |
| 16. 3rd & 4th synchronizer hub | 39. 2nd gear bush | 62. Sub-gear |
| 17. Spread spring | 40. 2nd gear needle bearing | 63. Sub-gear washer |
| 18. 4th gear C-ring | 41. 2nd gear outer baulk ring | 64. Snap ring |
| 19. 4th gear needle bearing | 42. 2nd gear synchronizer cone | 65. Mainshaft thrust washer |
| 20. 4th gear baulk ring | 43. 2nd inner baulk ring | 66. Mainshaft rear bearing |
| 21. 4th input gear | 44. 2nd main gear | 67. Mainshaft C-ring |
| 22. 5th gear front C-ring | 45. 3rd main gear | 68. C-ring holder |
| 23. 5th input gear | 46. Spacer | 69. Snap ring |

Shift Control Components

=NLMT0054S04

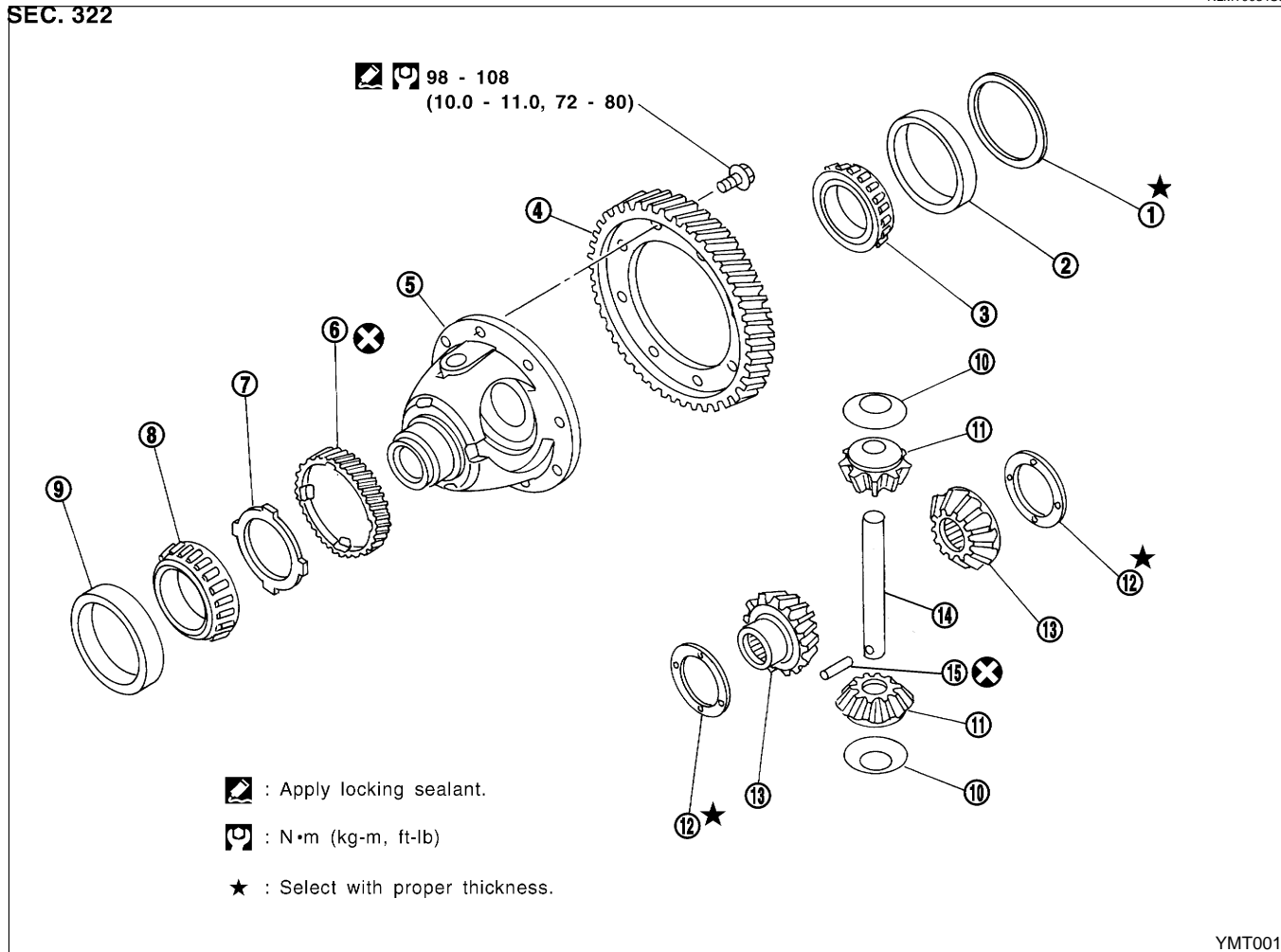


- | | | |
|--|--|---|
| <ul style="list-style-type: none"> 1. Clutch housing 2. 3rd & 4th bracket 3. 3rd & 4th shift fork 4. Retaining pin 5. Check ball 6. Check pin 7. Check spring 8. Check plug 9. Stopper ring 10. 3rd & 4th fork rod 11. Selector shaft pin 12. Selector 13. 5th & reverse bracket 14. Reverse switch bracket 15. Retaining pin 16. 5th & reverse shift fork | <ul style="list-style-type: none"> 17. Interlock plunger 18. Check ball 19. Interlock pin 20. Stopper ring 21. 5th & reverse fork rod 22. Striking lever 23. Retaining pin 24. 1st & 2nd bracket 25. 1st & 2nd shift fork 26. Check ball 27. 1st & 2nd fork rod 28. Transaxle case 29. Check ball 30. Check spring 31. Check plug | <ul style="list-style-type: none"> 32. Select check leaf spring 33. Return spring 34. Steel ball 35. Reverse gate 36. Return bearing 37. Selector arm 38. Bush 39. Welch plug 40. Selector shaft 41. Striking yoke 42. Retaining pin 43. Striking rod 44. Dust boot 45. Striking rod oil seal 46. Welch plug |
|--|--|---|

Final Drive Components

=NLMT0054S05

SEC. 322



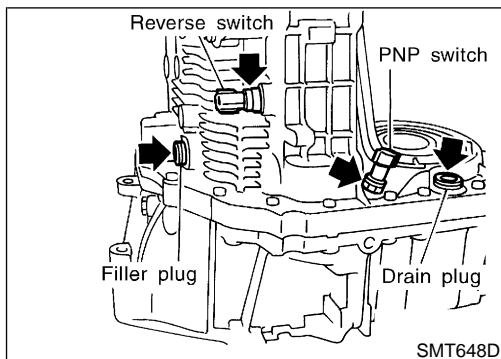
YMT001

- | | | |
|---|---|---|
| <ol style="list-style-type: none"> 1. Differential side bearing adjusting shim 2. Differential side bearing outer race 3. Differential side bearing 4. Final gear 5. Differential case | <ol style="list-style-type: none"> 6. Speedometer drive gear 7. Speedometer stopper 8. Differential side bearing 9. Differential side bearing outer race 10. Pinion mate thrust washer | <ol style="list-style-type: none"> 11. Pinion mate gear 12. Side gear thrust washer 13. Side gear 14. Pinion mate shaft 15. Lock pin |
|---|---|---|

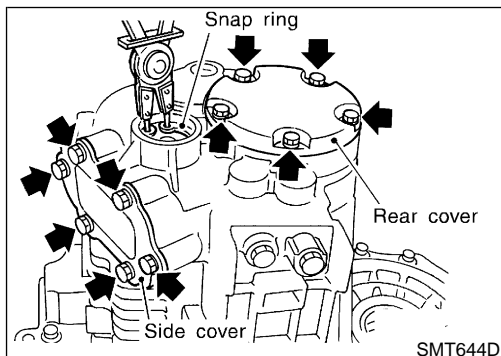
Transaxle Case

Transaxle Case

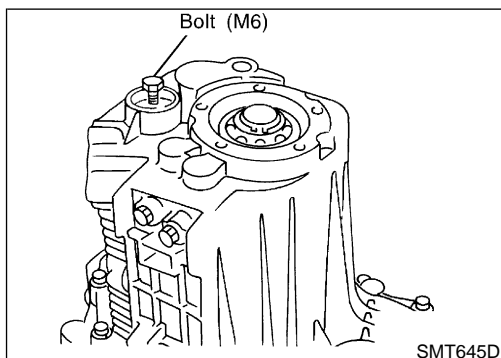
NLMT0055S01



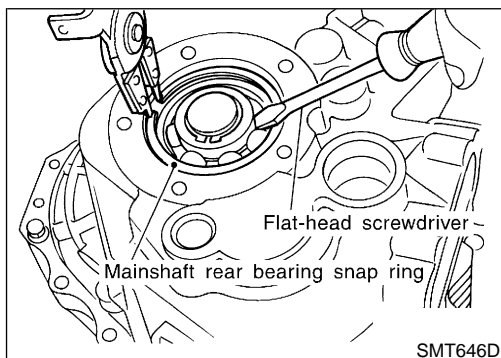
1. Remove reverse switch, PNP switch, drain plug, and filler plug from transaxle case.



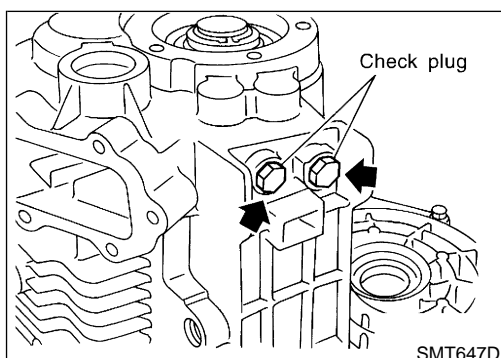
2. Remove snap rings from reverse idler shaft.
3. Remove side cover and rear cover from case.
4. Remove O-ring and mainshaft bearing adjusting shim.



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 (front, rear), and bearing from case.



7. Remove snap ring of mainshaft bearing from case.

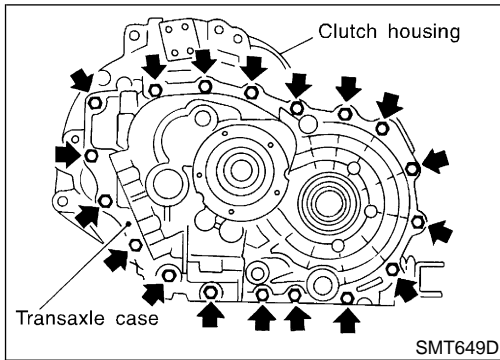


8. Remove check plugs, springs, and check balls from case.

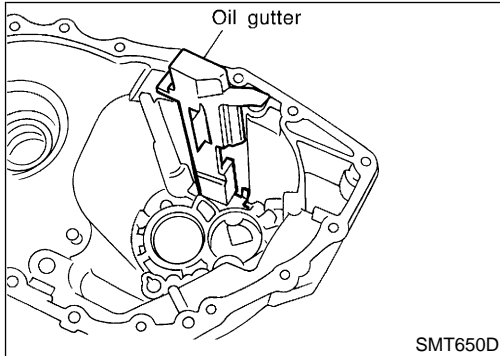
DISASSEMBLY

RS5F70A

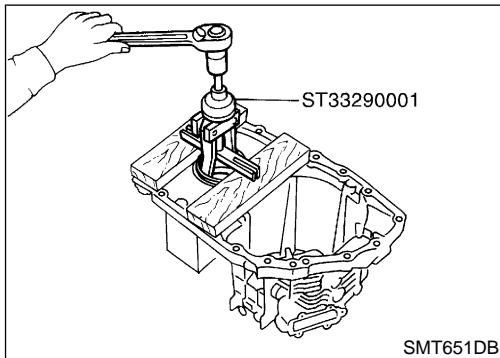
Transaxle Case (Cont'd)



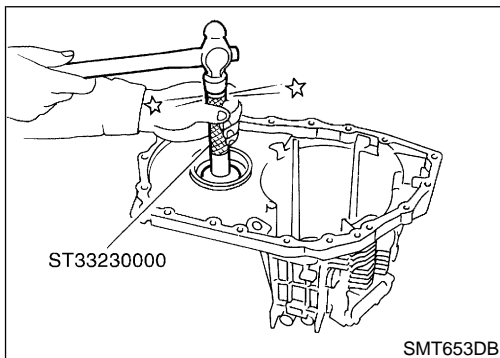
9. Remove mounting bolts.
10. Remove input shaft rear bearing adjusting shim from transaxle case.



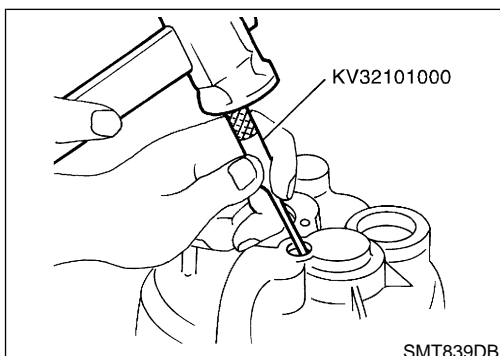
11. Remove oil gutter from case.



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



13. Remove differential oil seal from case.

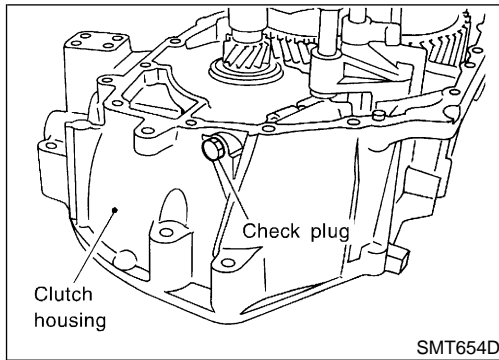


14. Remove welch plugs from case.

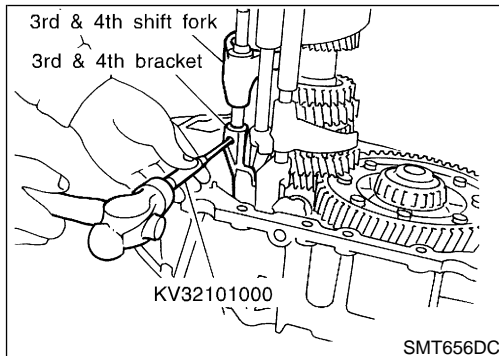
Clutch Housing

NLMT0055S02

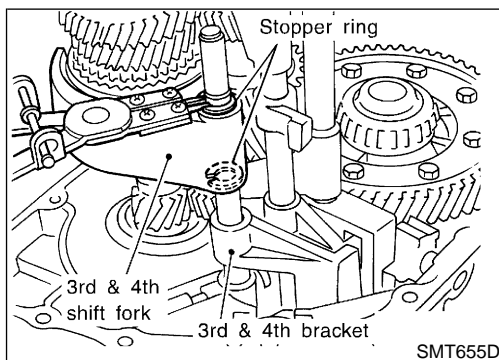
Clutch Housing



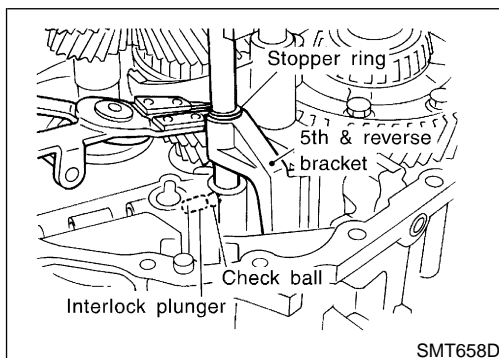
1. Remove transaxle case from clutch housing.
2. Remove magnet from housing.
3. Remove check plugs, check springs, check pins, and check balls from housing.



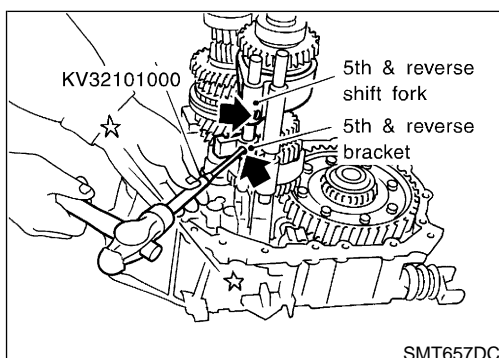
4. Remove 3rd & 4th bracket retaining pin.



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.

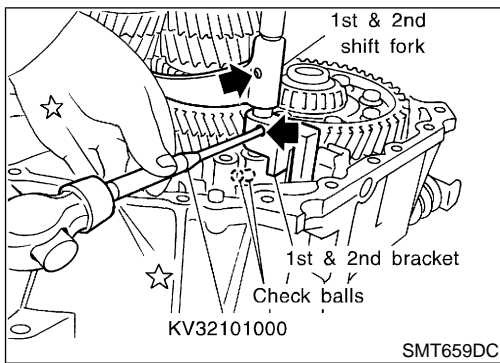


10. Remove retaining pin from 5th & reverse shift fork and reverse switch bracket.
11. Remove 5th & reverse fork rod.
12. Remove interlock pin from 5th & reverse fork rod.
13. Remove reverse switch bracket and 5th & reverse bracket.

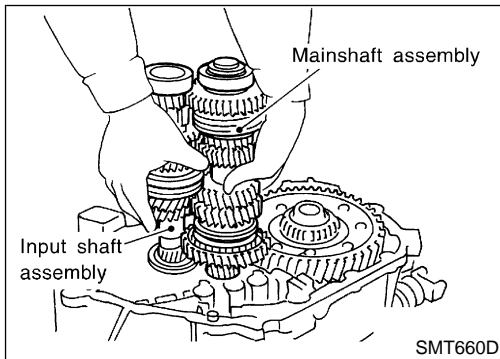
DISASSEMBLY

RS5F70A

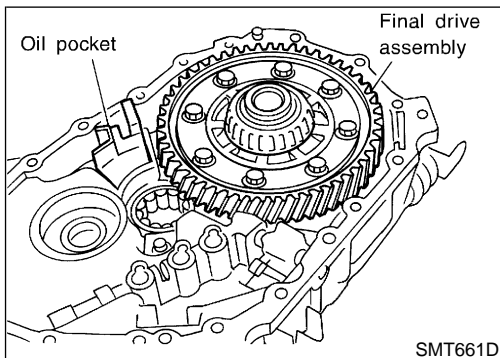
Clutch Housing (Cont'd)



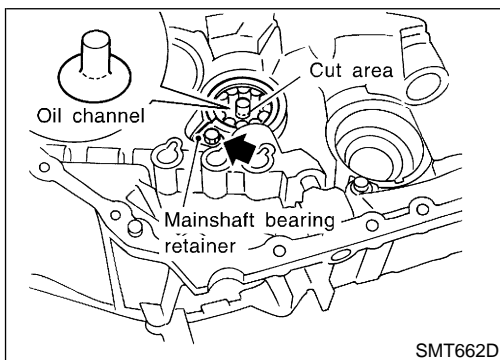
14. Remove check ball from housing.
15. Remove retaining pin for 1st & 2nd shift fork and bracket.
16. Remove 1st & 2nd fork rod.
17. Remove 5th & reverse and 1st & 2nd shift forks, and 1st & 2nd bracket.



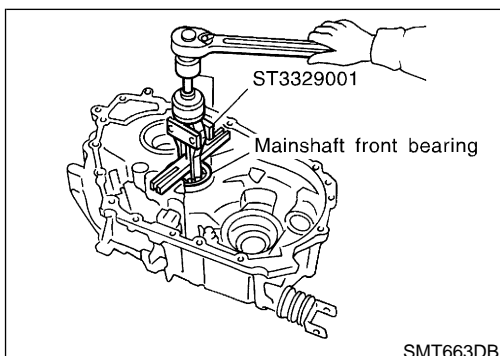
18. Remove both input shaft and mainshaft assemblies from housing.



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

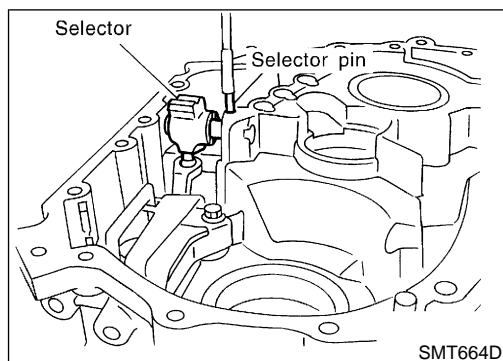


21. Remove mainshaft bearing retainer from housing.
22. Cut off oil channel using a cutter as shown in the figure.

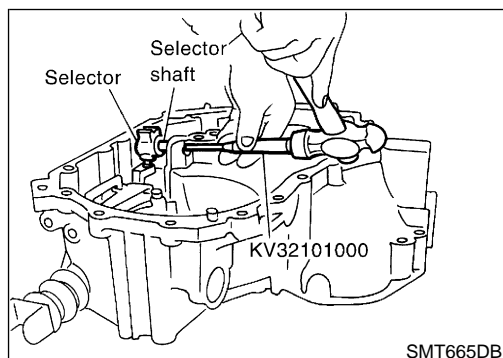


23. Remove mainshaft front bearing from housing.

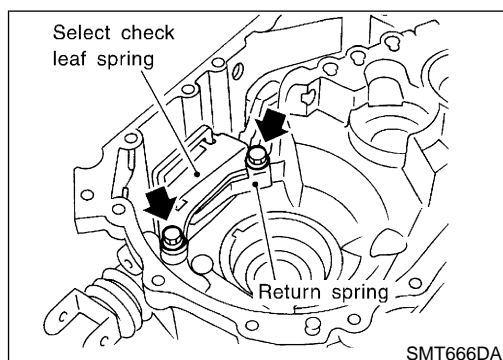
Clutch Housing (Cont'd)



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

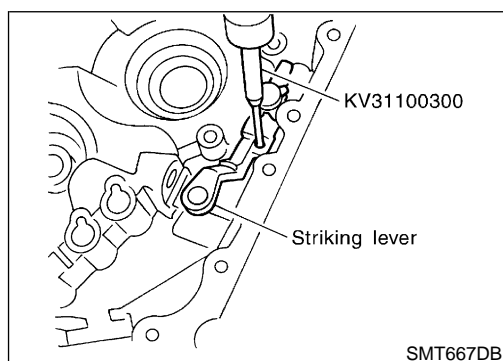


25. Remove selector shaft and plug, then remove selector.



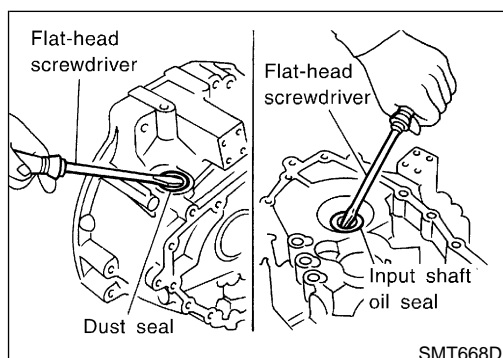
26. Remove reamer bolt, then remove select check leaf spring, return spring, steel ball, reverse gate, selector arm, bearing, and bushing.

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.



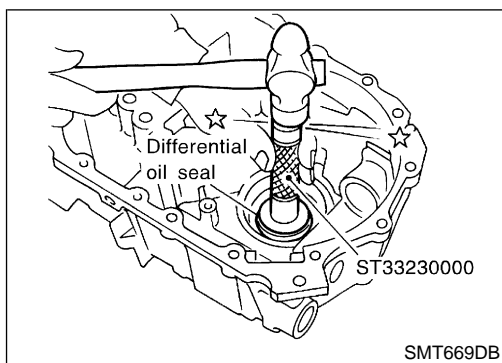
29. Using a flat-head screwdriver or other suitable tool, remove dust seal, input shaft oil seal, and striking rod oil seal from housing.

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

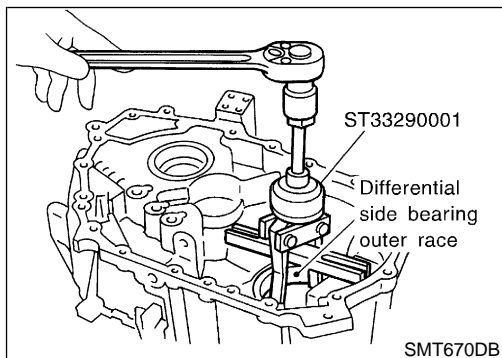
DISASSEMBLY

RS5F70A

Clutch Housing (Cont'd)

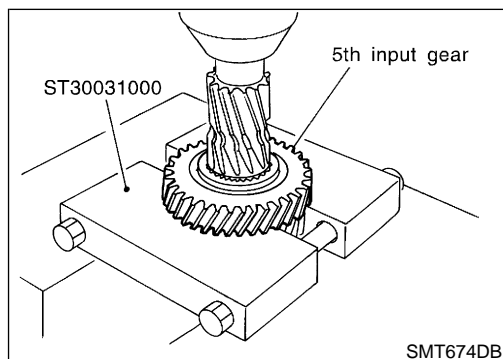
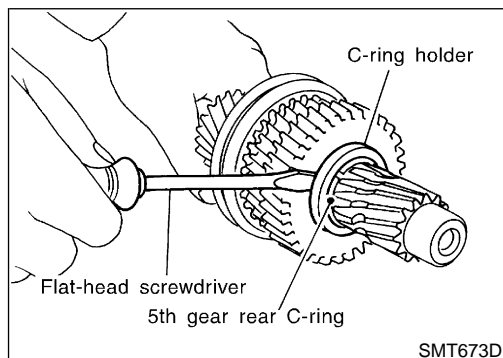
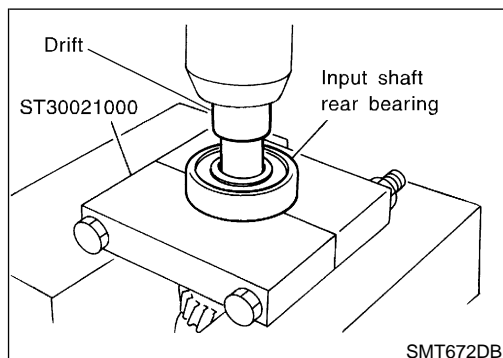
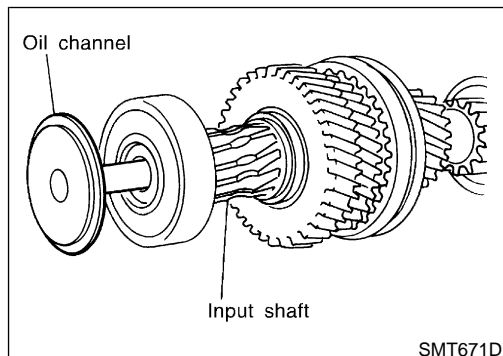
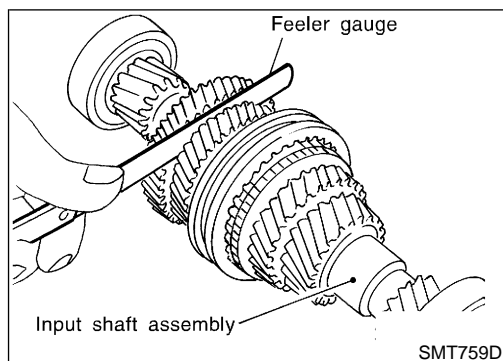


30. Remove differential oil seal from housing.



31. Remove differential side bearing outer race from housing.

Input Shaft and Gears



Input Shaft and Gears

DISASSEMBLY

NLMT0056

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

Gear end play:

Refer to SDS, MT-89.

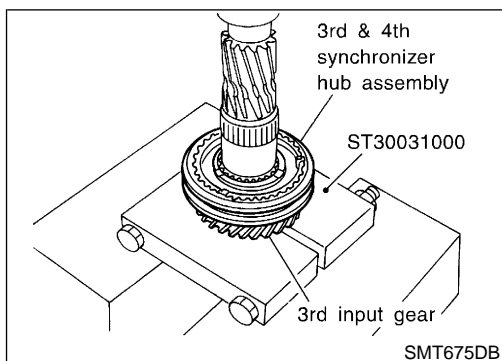
- If end play is not within specification, disassemble and check the parts.

2. Remove oil channel from input shaft rear bearing.

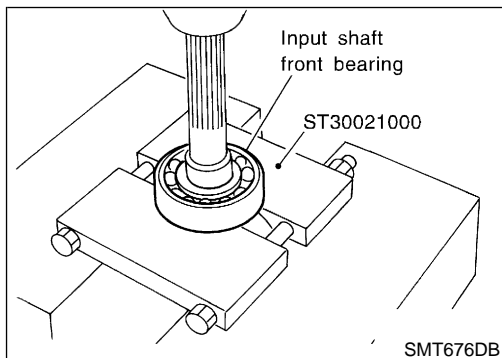
3. Press out input shaft rear bearing.

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

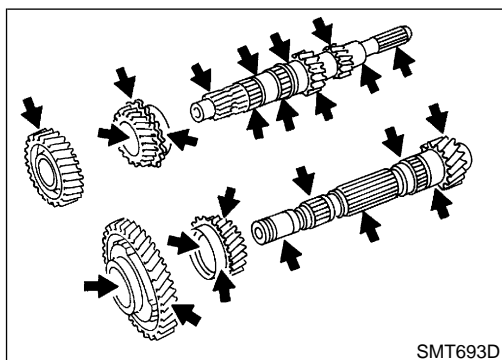
6. Remove 5th input gear from input shaft.
7. Remove 5th gear front C-ring.



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.



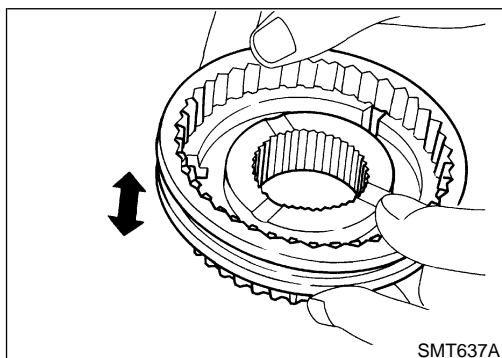
INSPECTION

Input Shaft and Gears

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

NLMT0057

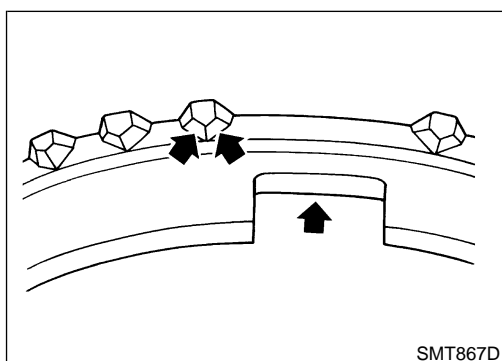
NLMT0057S01



Synchronizers

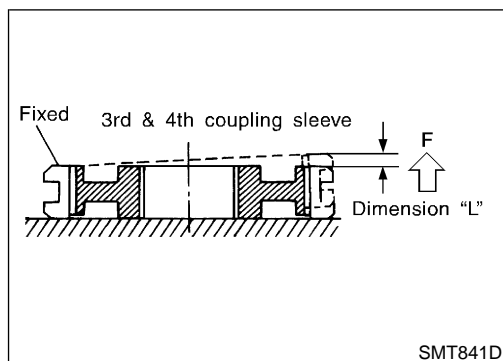
- Check spline area of coupling sleeves, hubs and gears for wear or cracks.
- Check baulk rings for cracks or deformation.
- Check insert springs for wear or deformation.

NLMT0057S02



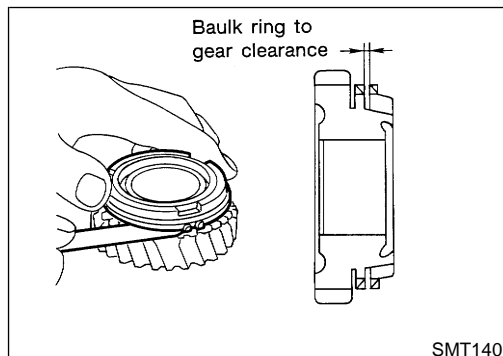
- If any crack, damage, or excessive wear is found on cam face of baulk ring or working face of insert, replace it.

Input Shaft and Gears (Cont'd)



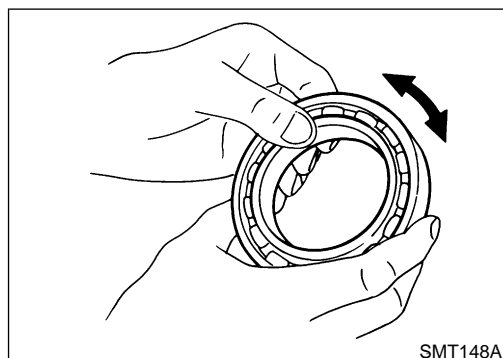
- Measure the movement (play, dimension "L") of 3rd & 4th coupling sleeve with their end fixed and the other end lifted as shown in the figure. If the movement exceeds specification, replace the sleeve.

Coupling sleeve length "L":
Refer to SDS, MT-89.



- Measure clearance between baulk ring and gear.

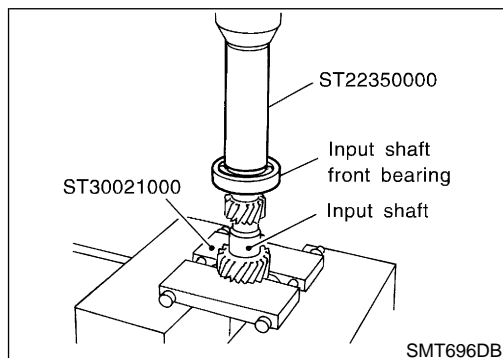
Clearance between baulk ring and gear:
Refer to SDS, MT-89.



Bearing

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

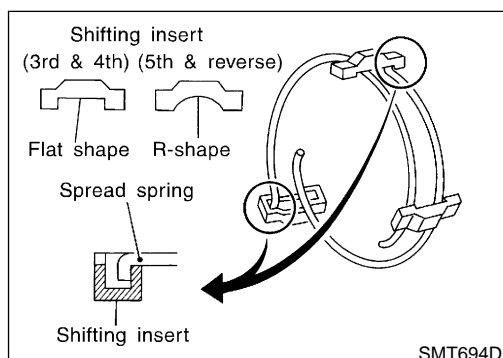
NLMT0057S03



ASSEMBLY

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

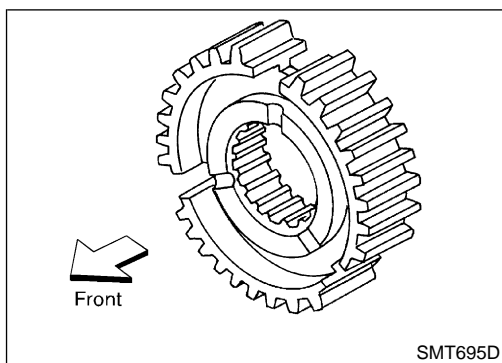
NLMT0058



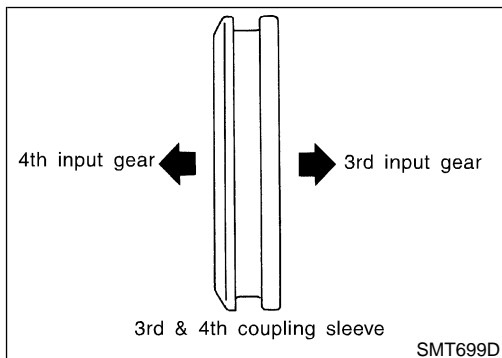
3. Install spread spring, shifting insert, and 3rd & 4th synchronizer hub onto 3rd & 4th coupling sleeve.

- 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.

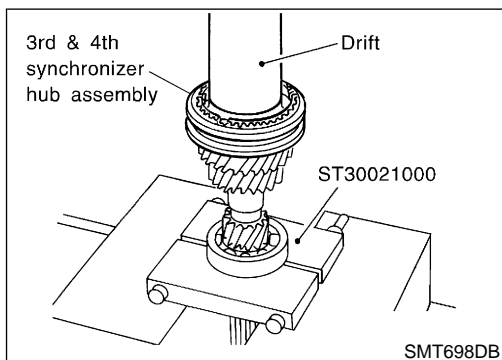
CAUTION:
Do not reuse 3rd & 4th synchronizer hub.



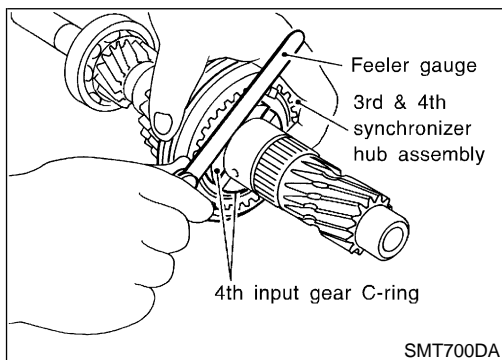
- Install synchronizer hub with its three grooves facing the front side (3rd input gear side).



- 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.

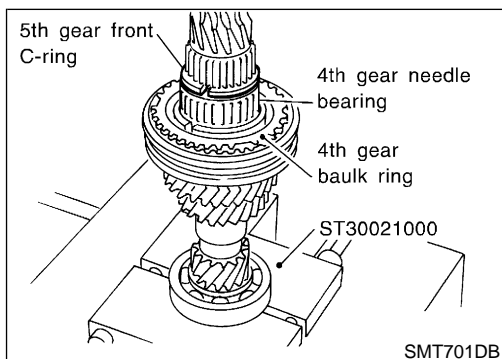
End play:

0 - 0.06 mm (0 - 0.0024 in)

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

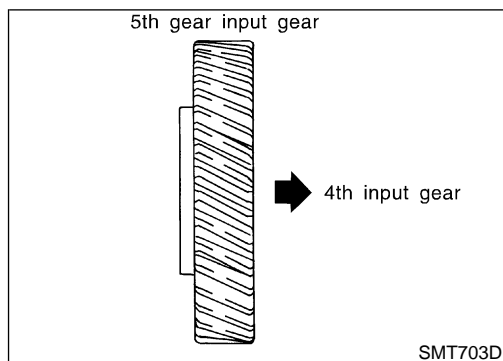
4th input gear C-ring:

Refer to SDS, MT-90.

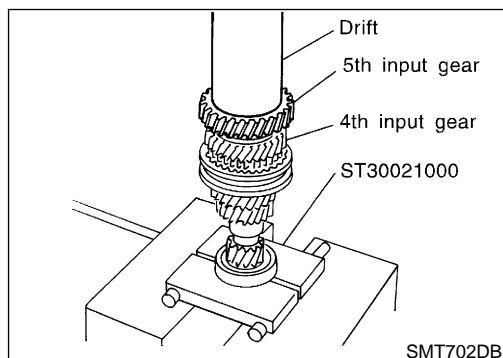


8. Install 4th gear needle bearing, 4th gear baulk ring, and 5th gear front C-ring.
9. Install 4th input gear.

Input Shaft and Gears (Cont'd)



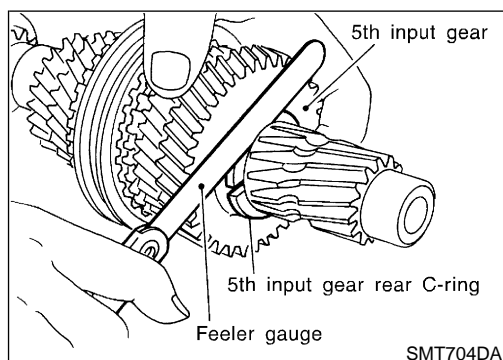
10. Position 5th input gear as shown in the figure, and install it on input shaft.



11. Install 5th input gear.

CAUTION:
Do not reuse 5th input gear.

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

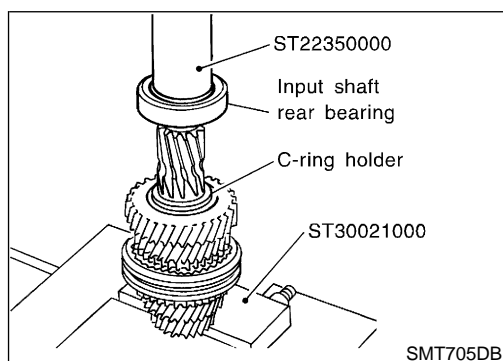


13. Measure the end play of 5th input gear, and check if it is within the allowable specification below.

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

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

5th input gear rear C-ring:
Refer to SDS, MT-90.

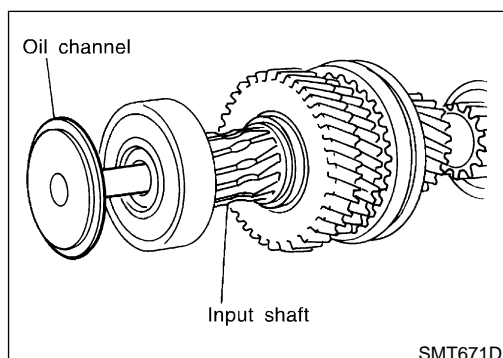


15. Install C-ring holder onto 5th gear rear C-ring.

CAUTION:
Do not reuse C-ring holder.

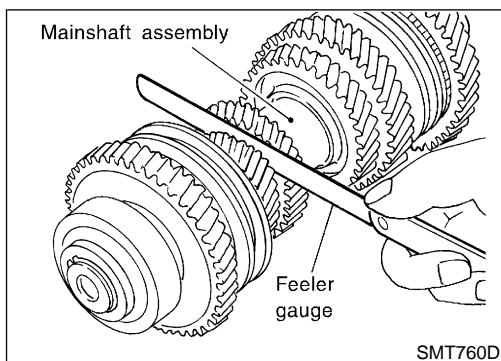
16. Install input shaft rear bearing.

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



17. Install oil channel onto input shaft.

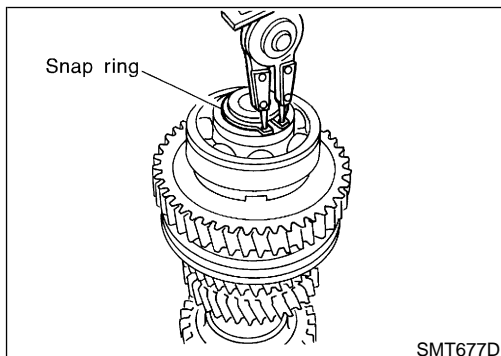
18. Measure gear end play as a final check. Refer to, MT-34.



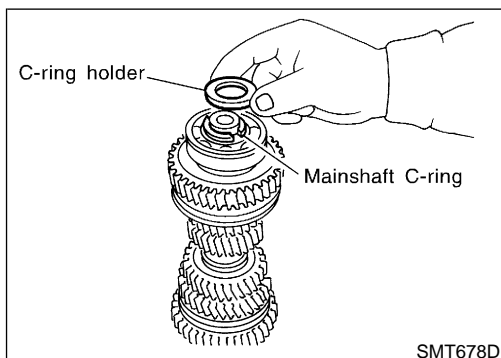
Mainshaft and Gears DISASSEMBLY

NLMT0059

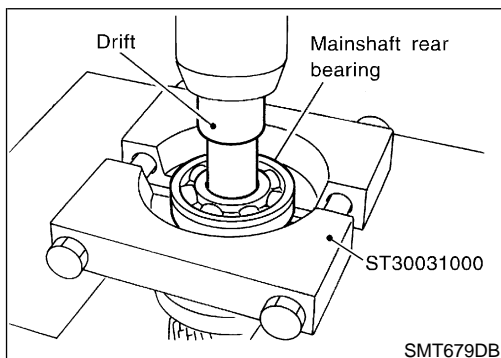
1. Before disassembly, measure gear end play.
 - Gear end play:**
Refer to SDS, MT-89.
 - If end play is not within the specified limit, disassemble and check the parts.



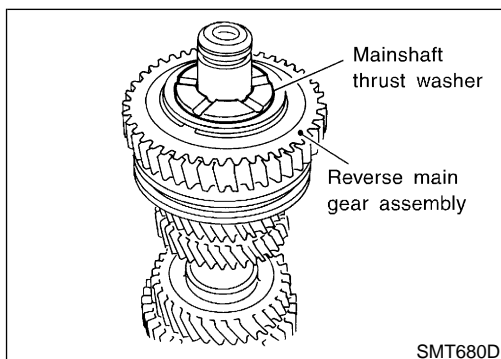
2. Remove snap ring.



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

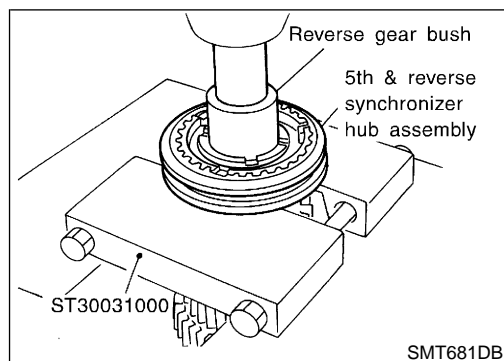


4. Press out mainshaft rear bearing from mainshaft.

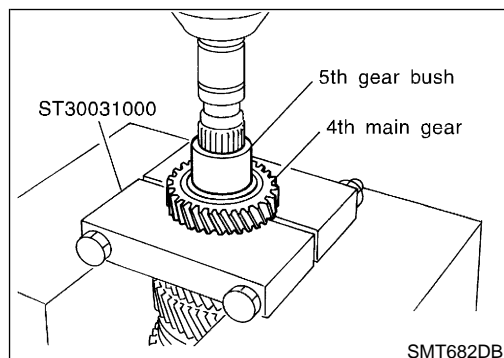


5. Remove mainshaft thrust washer.
6. Remove snap ring from mainshaft. Then, remove reverse main gear assembly, reverse gear needle bearing, and reverse gear baulk ring.

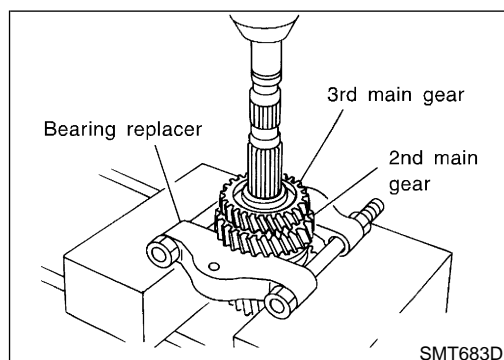
Mainshaft and Gears (Cont'd)



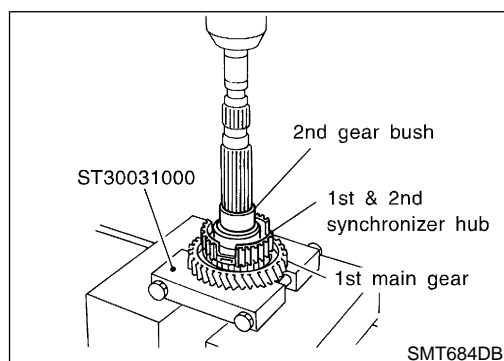
7. Place bearing replacer between 5th & reverse synchronizer hub and 5th main gear, and press out both reverse gear bushing and 5th & reverse synchronizer assembly.
8. Remove 5th main gear, 5th gear baulk ring, and 5th gear needle bearing.



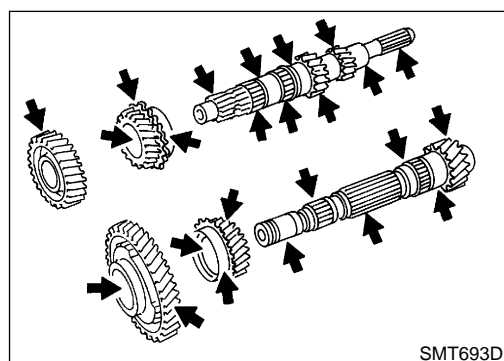
9. Place bearing replacer between 3rd and 4th main gears, and press out both 5th gear bushing and 4th main gear.



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.



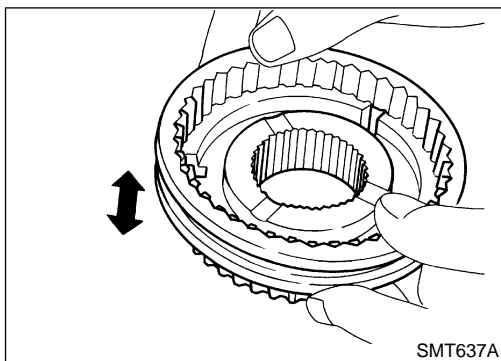
INSPECTION

Mainshaft and Gears

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

NLMT0060

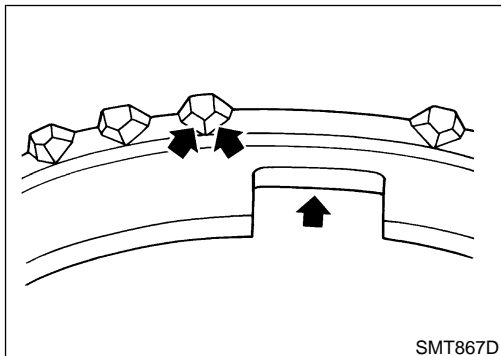
NLMT0060S01



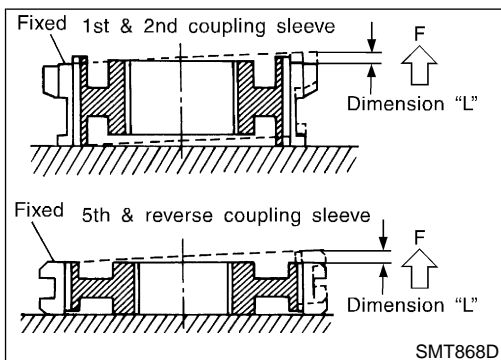
Synchronizers

NLMT0060S02

- 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.

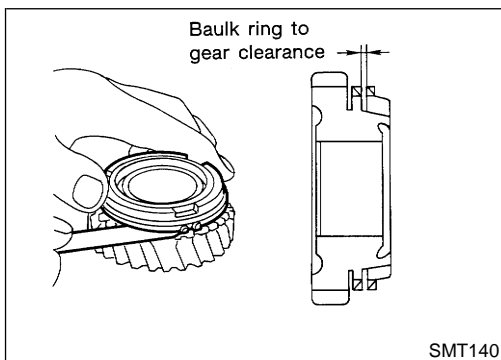


- If any crack, damage, or excessive wear is found on cam face of baulk ring or working face of insert, replace it.

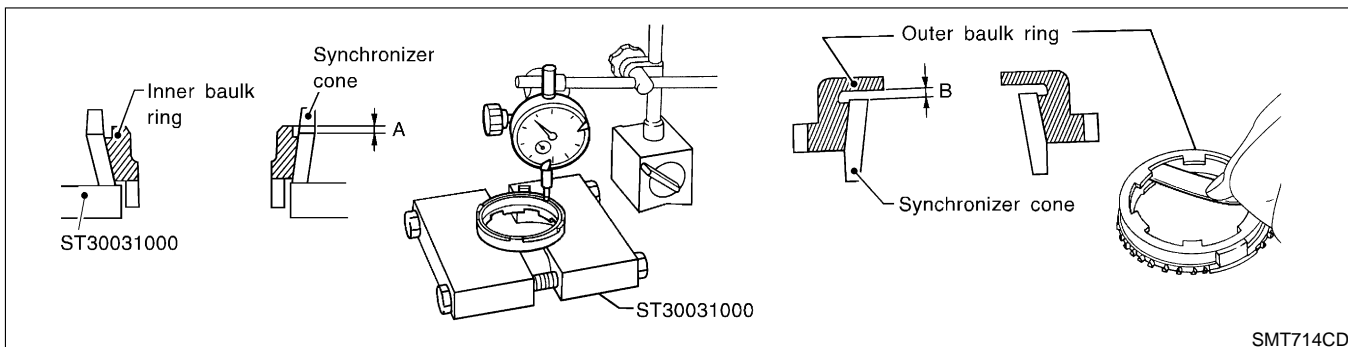


- Measure the movement (play, dimension "L") of 1st & 2nd coupling sleeve and 5th & reverse coupling sleeve with their end fixed and the other end lifted as shown in the figure. If the movement exceeds specification, replace the sleeve.

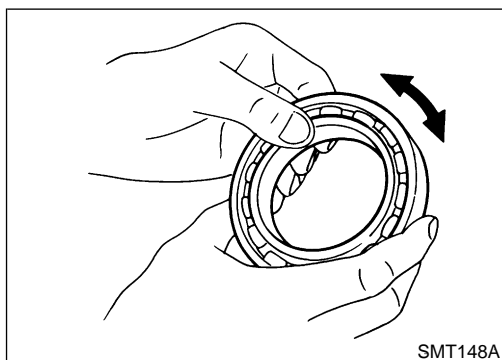
Coupling sleeve length "L":
Refer to SDS, MT-89.



- Measure clearance between baulk ring and gear.
Clearance between baulk ring and gear:
Refer to SDS, MT-89.

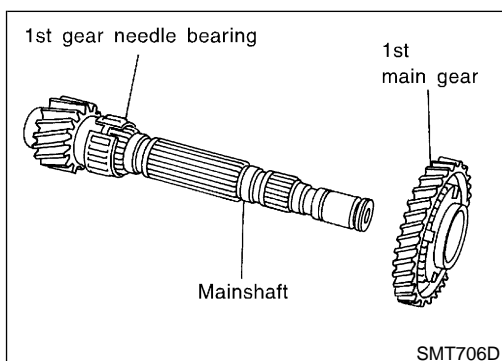


- Measure wear of 1st and 2nd baulk ring.
- a) Place baulk rings in position on synchronizer cone.
- b) While holding baulk ring against synchronizer cone as far as it will go, measure dimensions "A" and "B".
 - Standard:**
 - A 0.6 - 0.8 mm (0.024 - 0.031 in)**
 - B 0.6 - 1.1 mm (0.024 - 0.043 in)**
 - 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.



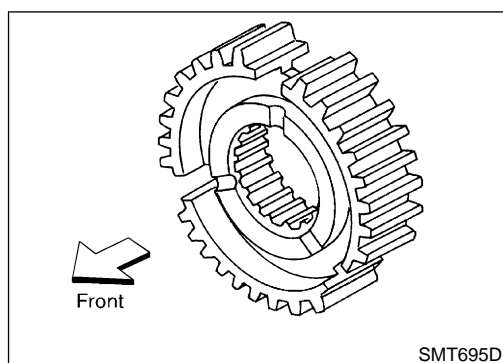
Bearing

- Make sure bearings roll freely and are free from noise, cracks, pitting or wear. NLMT0060S03



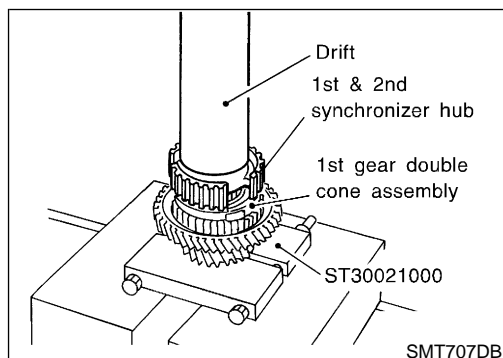
ASSEMBLY

1. Install 1st gear needle bearing and 1st main gear onto mainshaft. NLMT0061
2. Install 1st double cone assembly onto mainshaft.

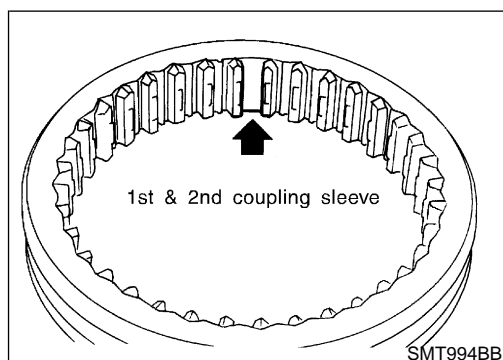


3. Install 1st & 2nd synchronizer hub with its three grooves facing the front side (1st main gear side) onto mainshaft.

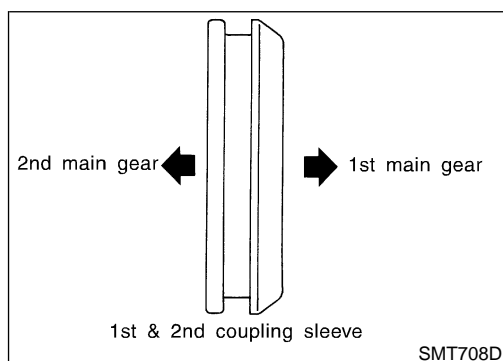
CAUTION:
Do not reuse 1st & 2nd synchronizer hub.



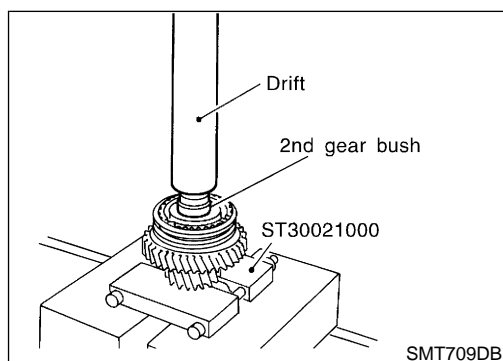
4. Install 1st & 2nd synchronizer hub.



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

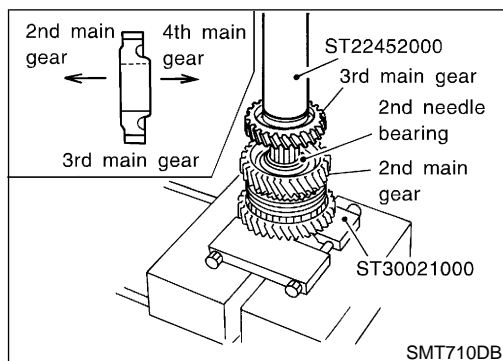


6. Install 1st & 2nd coupling sleeve with its chamfered surface facing the 1st main gear side onto 1st & 2nd synchronizer hub.



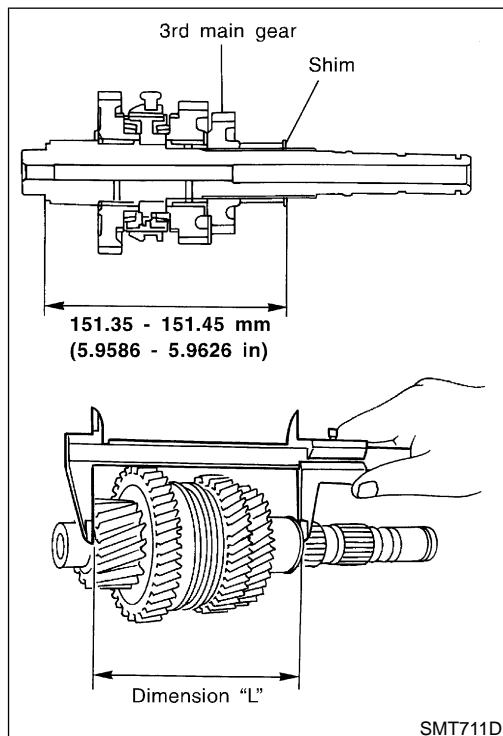
7. Install 2nd gear bushing with its flange surface facing 1st & 2nd synchronizer hub side.

Mainshaft and Gears (Cont'd)



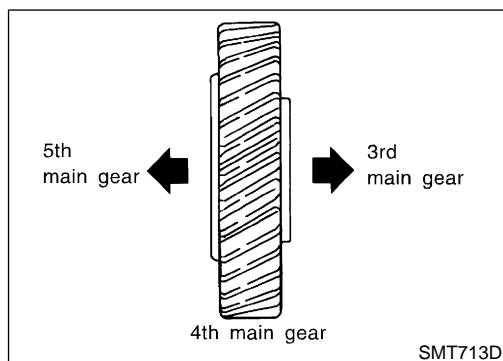
8. Install 2nd needle bearing, 2nd double cone assembly, and 2nd main gear onto mainshaft.
9. Position 3rd main gear as shown in the figure, and install it.

CAUTION:
Do not reuse 3rd main gear.

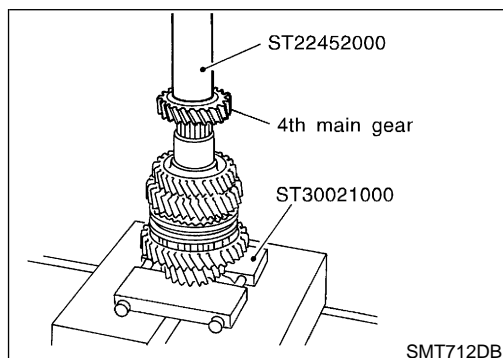


10. Install spacer and mainshaft adjusting shim onto mainshaft.
11. Select a mainshaft adjusting shim suitable to satisfy the following specification of dimension "L" and install it onto mainshaft.

Specification of dimension "L":
151.35 - 151.45 mm (5.9586 - 5.9626 in)
Mainshaft adjusting shims:
Refer to SDS, MT-93.

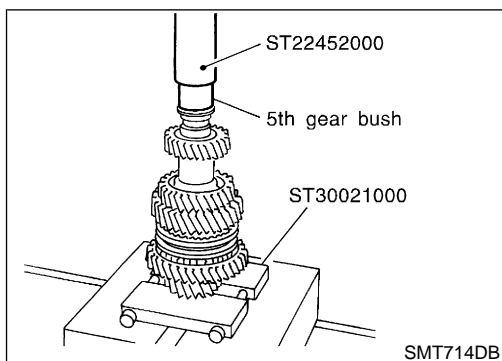


12. Position 4th main gear as shown in the figure, and install it onto mainshaft.

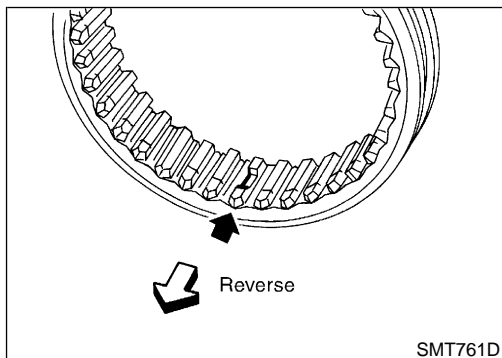


13. Install 4th main gear onto mainshaft.

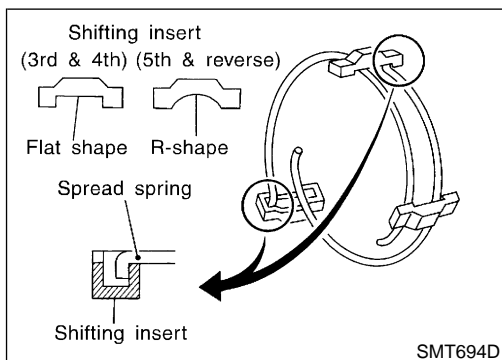
CAUTION:
Do not reuse 4th main gear.



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

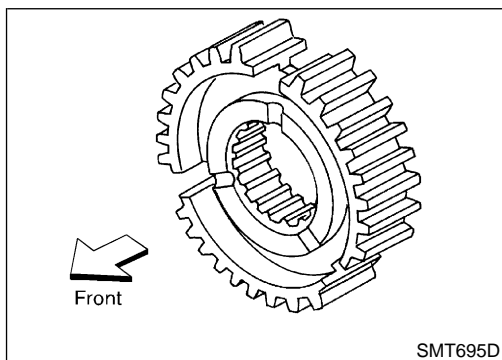


15. Install 5th needle bearing, 5th main gear, and 5th gear baulk ring onto mainshaft.



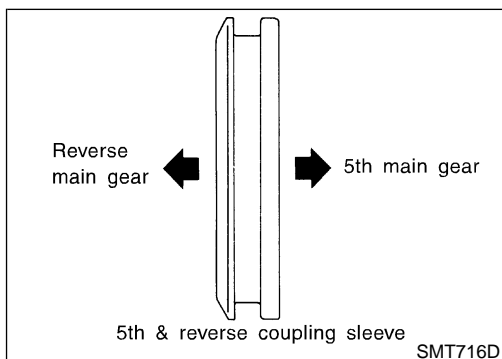
16. Being careful of the following points, install spread spring, shifting insert, and 5th & reverse synchronizer hub onto 5th & reverse coupling sleeve.

- 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.



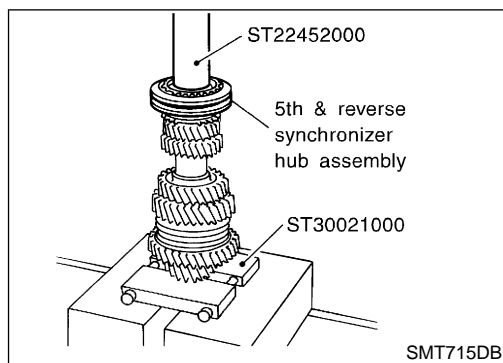
- Install synchronizer hub with its three grooves facing the front side (5th main gear side).

CAUTION:
Do not reuse 5th & reverse synchronizer hub.

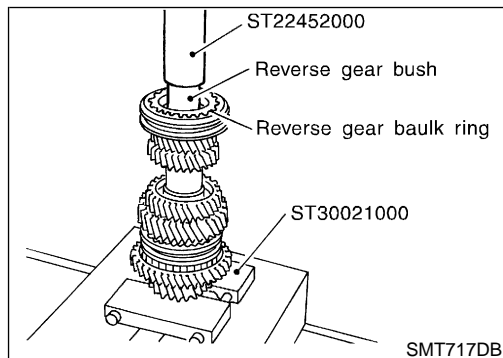


- Install 5th & reverse coupling sleeve with its chamfered surface facing the reverse main gear side.

Mainshaft and Gears (Cont'd)



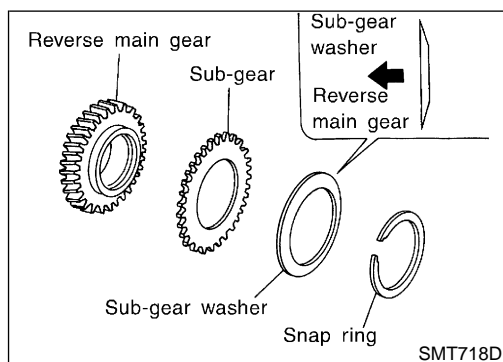
17. Install 5th & reverse synchronizer hub assembly.



18. Install reverse gear baulk ring.

19. Install reverse gear busing.

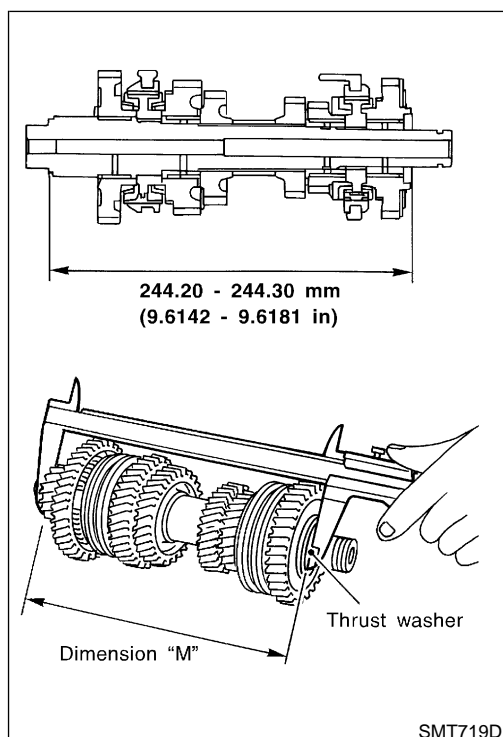
20. Install reverse gear needle bearing.



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.

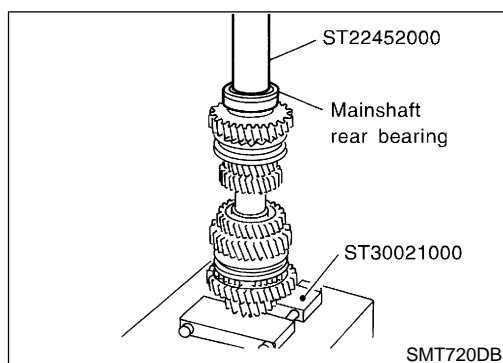
23. Select a thrust washer suitable to satisfy the following specification of dimension "M" (as shown in the figure), and install it onto mainshaft.

Specification of dimension "M":

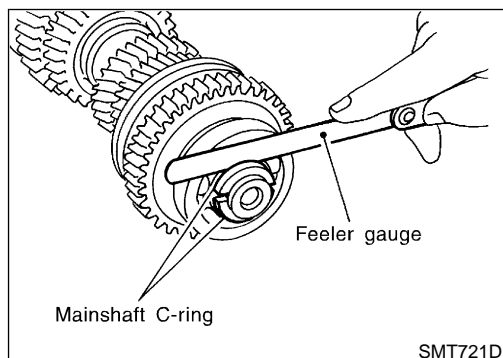
244.20 - 244.30 mm (9.6142 - 9.6181 in)

Available mainshaft thrust washers:

Refer to SDS, MT-94.



24. Install mainshaft rear bearing.



25. Install mainshaft C-ring.

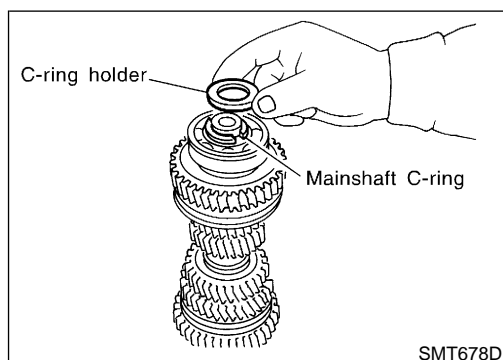
26. Using feeler gauge, measure the end play of mainshaft rear bearing, and check if it satisfies the following specification.

End play:

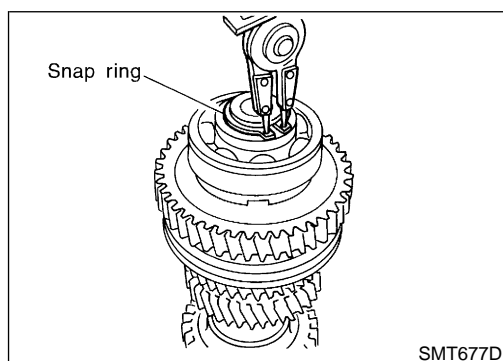
0 - 0.06 mm (0 - 0.0024 in)

Mainshaft C-rings:

Refer to SDS, MT-91.

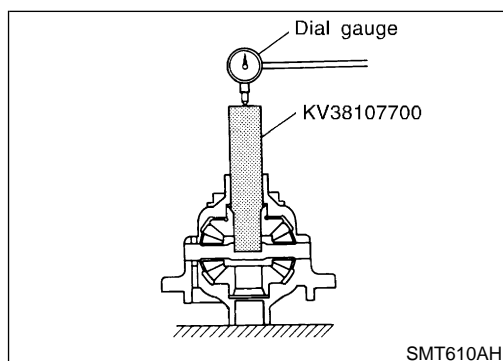


27. Install C-ring holder.



28. Install snap ring.

29. Measure gear end play as a final check. Refer to, MT-39.



Final Drive

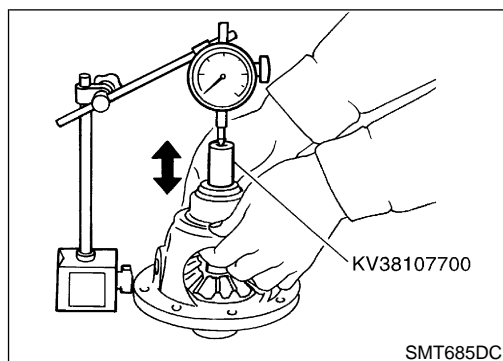
PRE-INSPECTION

● Check the clearance between side gear and differential case as follows.

NLMT0062

1. Clean final drive assembly sufficiently to prevent side gear thrust washer, differential case, side gear, and other parts from sticking by gear oil.

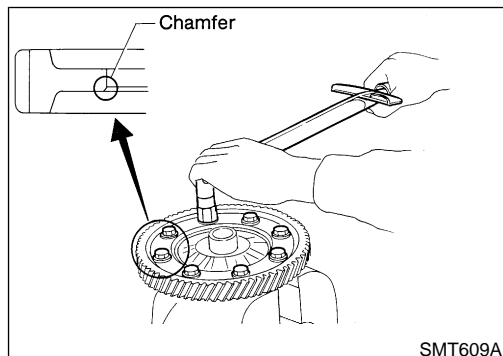
Final Drive (Cont'd)



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.

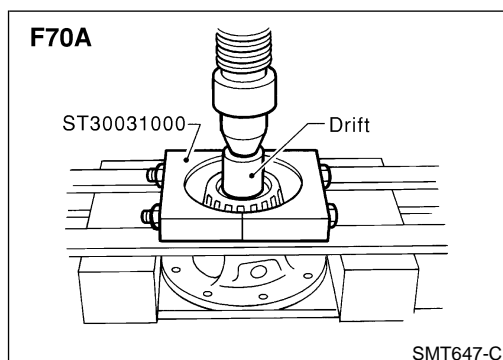
**Clearance between side gear and differential case:
0.1 - 0.2 mm (0.004 - 0.008 in)**

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.

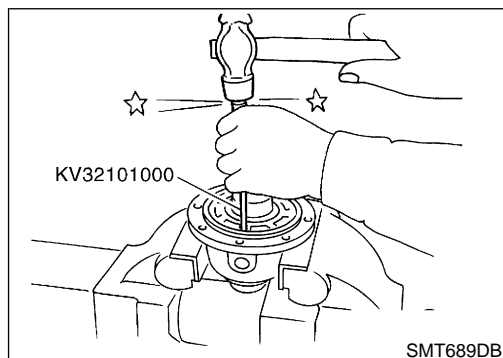


DISASSEMBLY

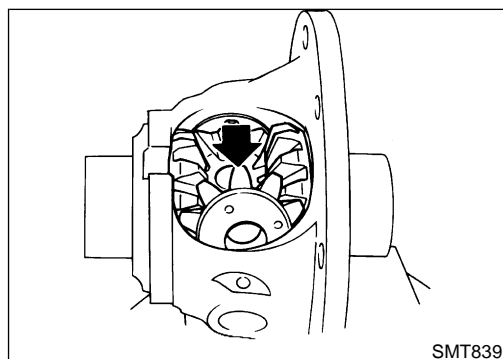
1. Remove mounting bolts. Then, separate the final gear from differential case. NLMT0063
2. Make a notch and remove speedometer drive gear using a scraper or other suitable tool.
- **Bearing replacer cannot be positioned unless speedometer drive gear is removed.**



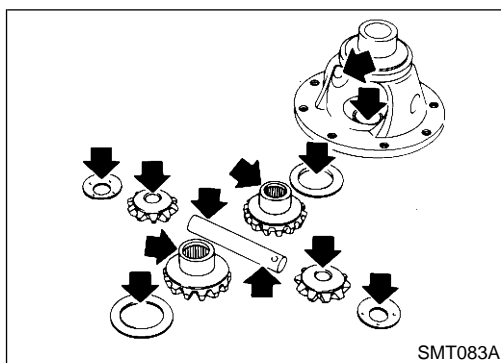
3. Remove differential side bearing of final gear side.
4. Turn differential case upside down, and remove differential side bearing of speedometer drive gear side.
- **Be careful not to mix up the differential side bearings.**
5. Remove speedometer stopper.



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.



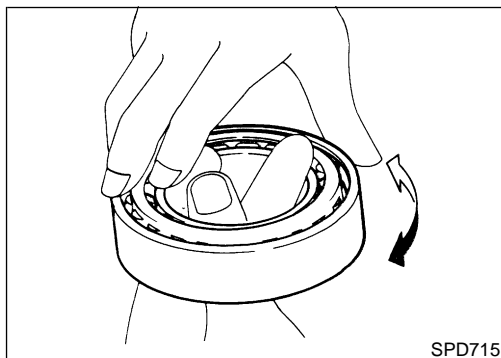
INSPECTION

Gear, Washer, Shaft and Case

NLMT0064

NLMT0064S01

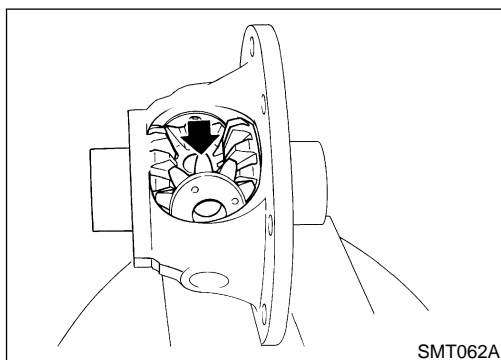
- Check mating surfaces of differential case, side gears and pinion mate gears.
- Check washers for wear.



Bearing

NLMT0064S03

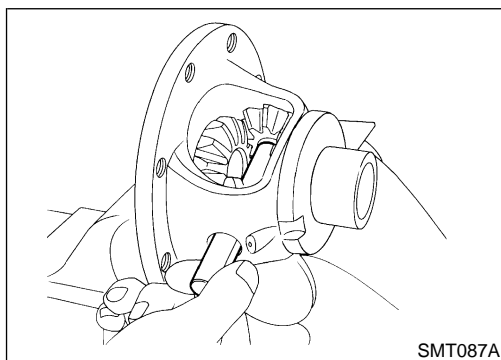
- Make sure bearings roll freely and are free from noise, cracks, pitting or wear.
- **When replacing tapered roller bearing, replace outer and inner race as a set.**



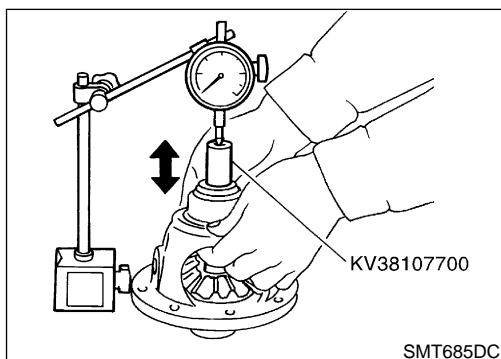
ASSEMBLY

NLMT0065

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.

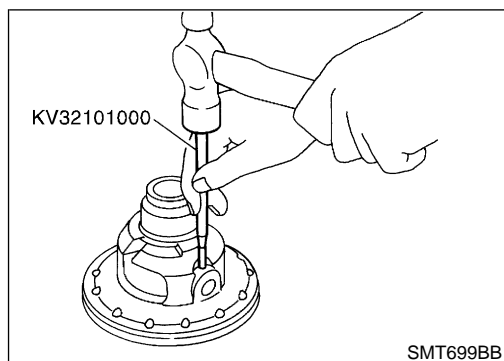
Clearance of side gear and differential case:

0.1 - 0.2 mm (0.004 - 0.008 in)

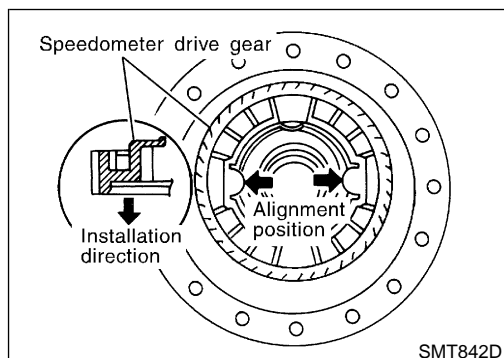
Differential side gear thrust washers:

Refer to SDS, MT-94.

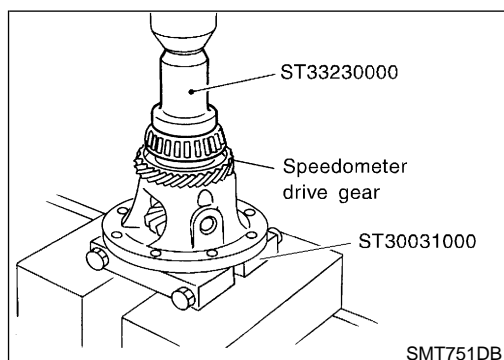
Final Drive (Cont'd)



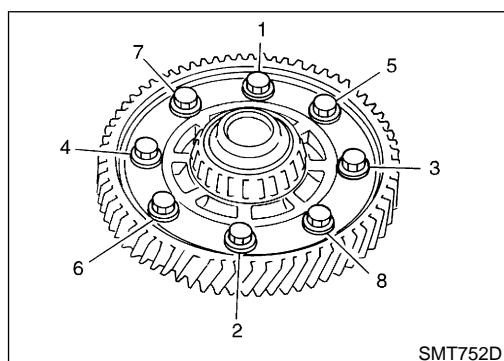
8. Install retaining pin.
 - **Make sure that retaining pin is flush with case.**



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

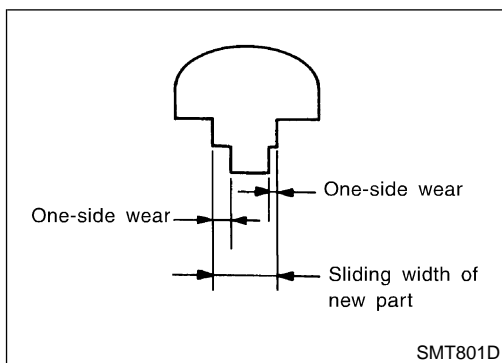


11. Install differential side bearing.
12. Turn differential case upside down, and install another differential side bearing on the other side in the same way.



13. Install differential 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-27.



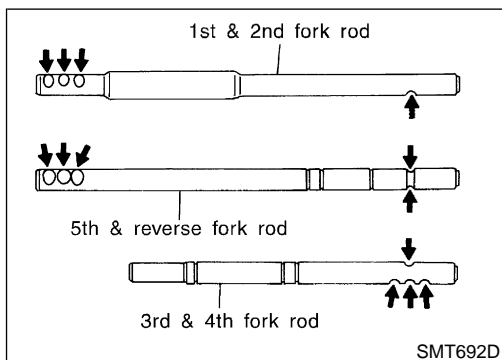
Shift Control Components

INSPECTION

=NLMT0066

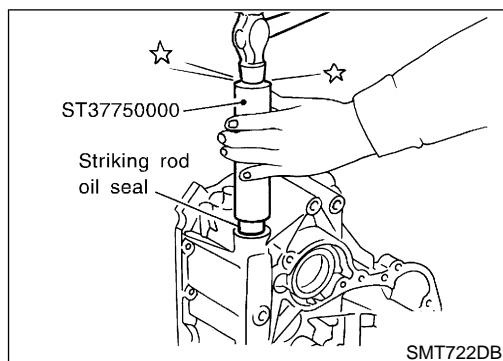
- Check if the width of shift fork hook (sliding area with coupling sleeve) is within allowable specification below.

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.

Clutch Housing

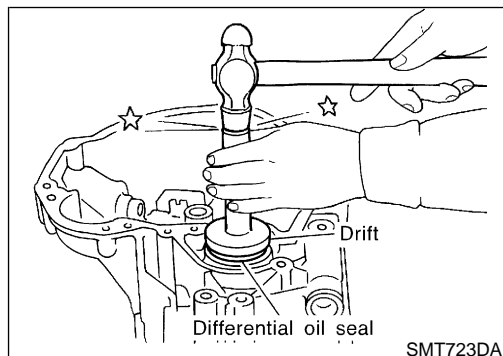


Clutch Housing

NLMT0067S01

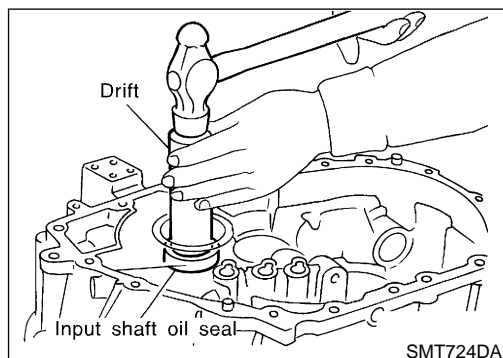
1. Hammer the striking rod oil seal into clutch housing as far as it will go.

CAUTION:
Do not reuse striking rod oil seal.



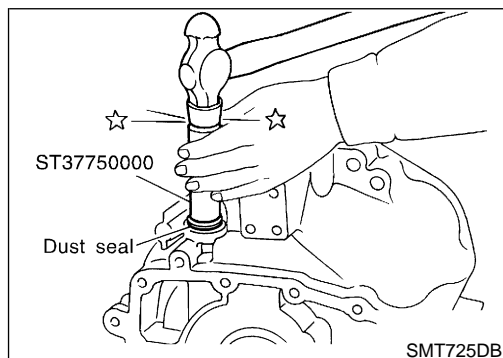
2. Hammer the differential oil seal into clutch housing until it becomes flush with clutch housing end face.

CAUTION:
Do not reuse differential oil seal.



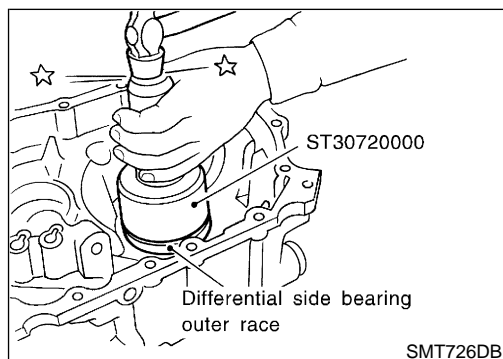
3. Hammer input shaft oil seal into clutch housing as far as it will go.

CAUTION:
Do not reuse input shaft oil seal.

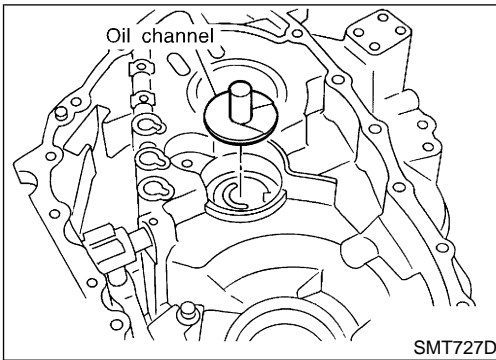


4. Hammer the dust seal into clutch housing as far as it will go.

CAUTION:
Do not reuse dust seal.

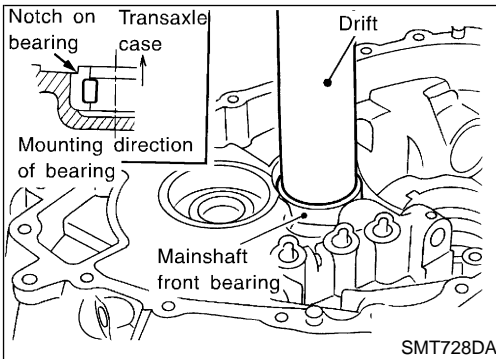


5. Install outer race of differential side bearing.

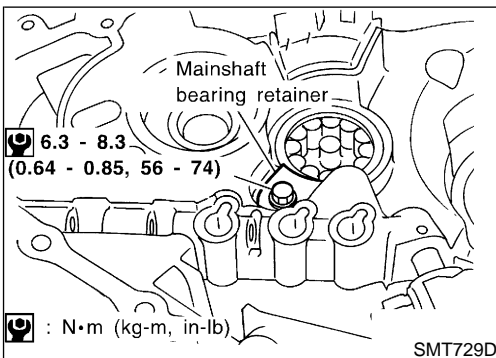


6. Install new oil channel (mainshaft).

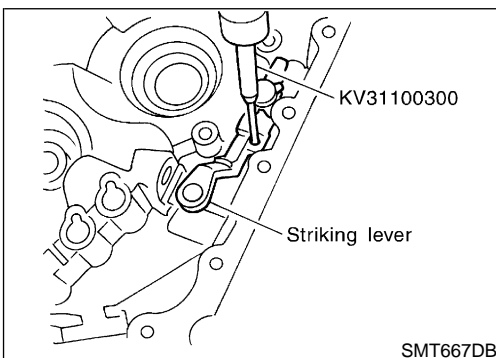
CAUTION:
Pay attention to installation direction of oil channel.



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



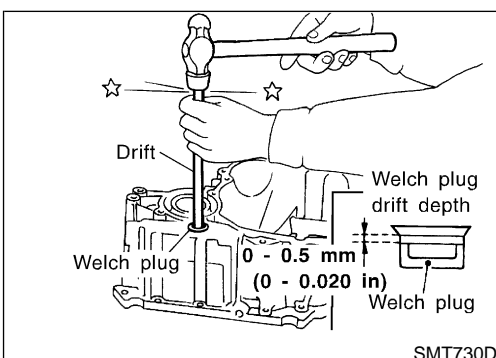
8. Install mainshaft bearing retainer, and tighten bolts with specified torque.



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

CAUTION:

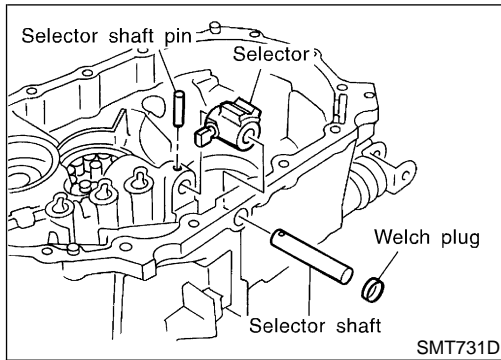
- Before installing striking rod, wrap the end with a vinyl tape or the like to prevent oil seal from being damaged.
- Do not reuse retaining pin.



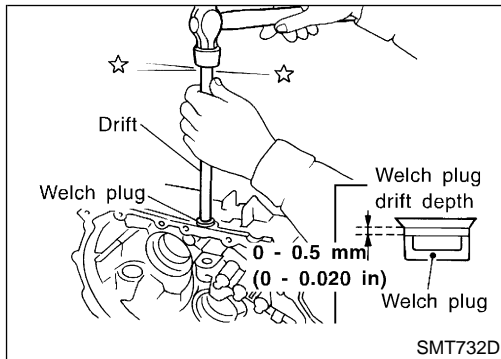
10. Hammer the welch plug (striking lever side) with a general-purpose drift [OD: 12 mm (0.47 in)].

CAUTION:
Do not reuse welch plug.

Clutch Housing (Cont'd)

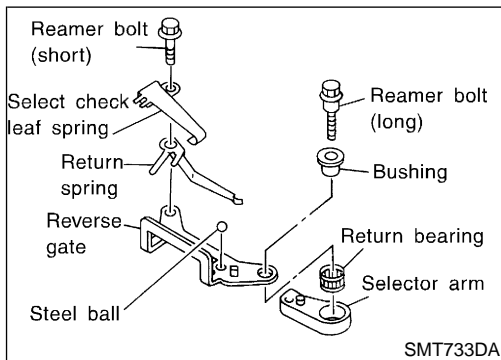


11. Install selector, selector shaft, and selector shaft pin into clutch housing.



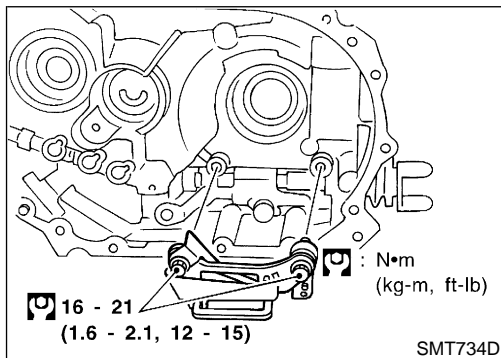
12. Hammer the welch plug (selector shaft side) with a general-purpose drift [OD: 12 mm (0.47 in)].

CAUTION:
Do not reuse welch plug.

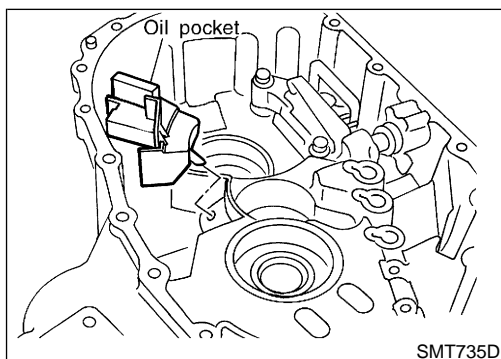


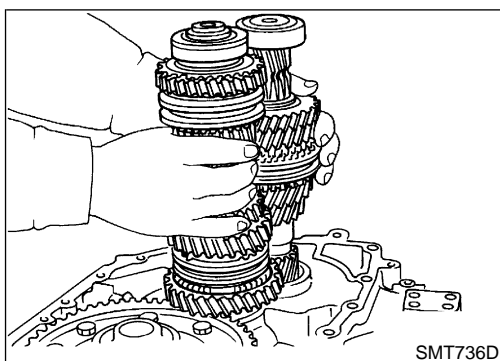
13. Install select check leaf spring, return spring, steel ball, reverse gate, selector arm, bushing, and return bearing. Then, tighten two reamer bolts with specified torque.

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



14. Install oil pocket.

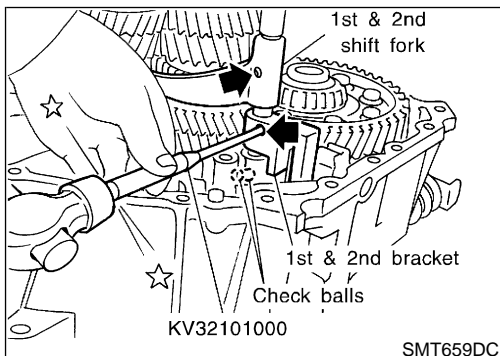




15. Install differential assembly, input shaft assembly, and main shaft assembly into clutch housing.

CAUTION:

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

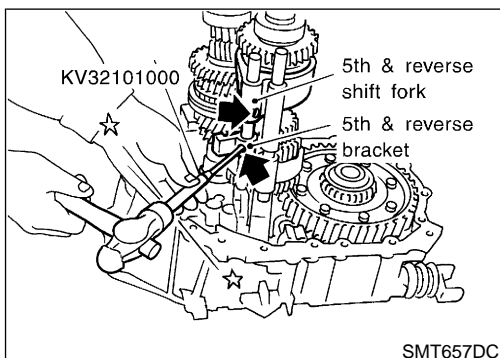


16. Install 5th & reverse shift fork.
17. Install 1st & 2nd shift fork, bracket, and fork rod.
18. Install retaining pin for 1st & 2nd bracket.

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.

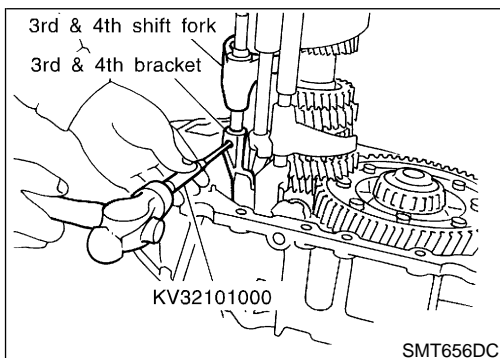
CAUTION:

Do not reuse retaining pin.

23. Install 5th & reverse bracket stopper ring.

CAUTION:

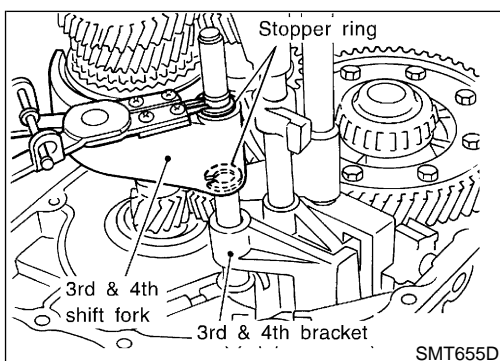
Do not reuse stopper pin.



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:

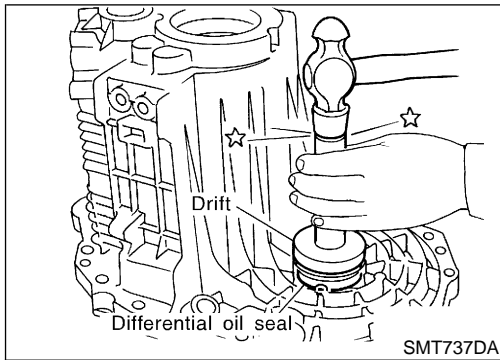
Do not reuse stopper ring.

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-26.

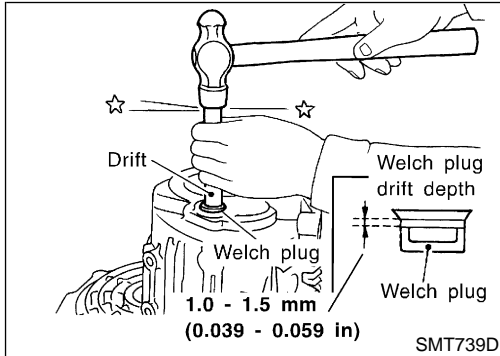
Transaxle Case



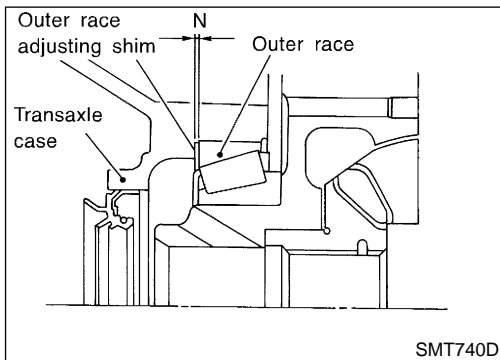
Transaxle Case

NLMT0067S02

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

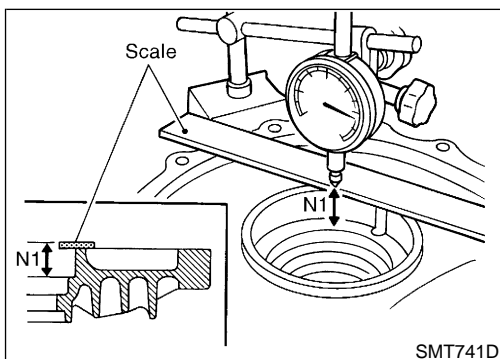
N: Thickness of adjusting shim

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

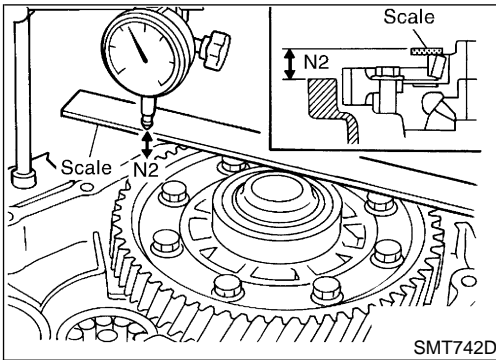
N2: Distance between differential side bearing and transaxle case

Differential side bearing adjusting shims:

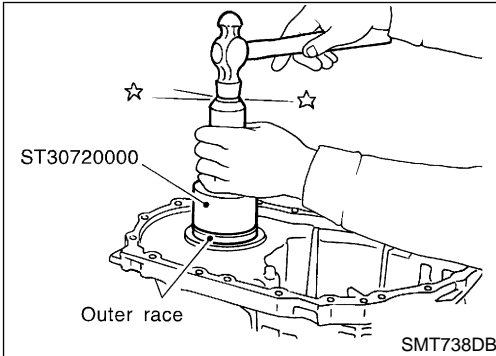
Refer to SDS, MT-95.



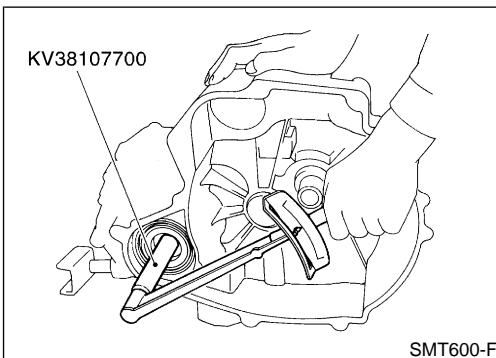
- a. Using dial gauge and scale, measure dimension "N1" between clutch housing case end face and mounting face of adjusting shim.



- 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.



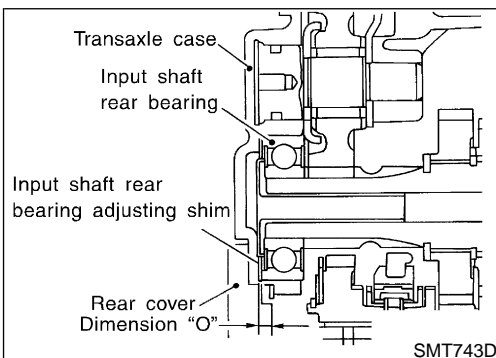
5. Measure turning torque of final drive assembly.

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

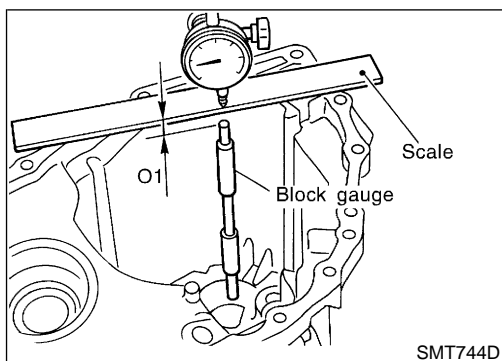
O1: Distance between transaxle case end face and mounting face of adjusting shim

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

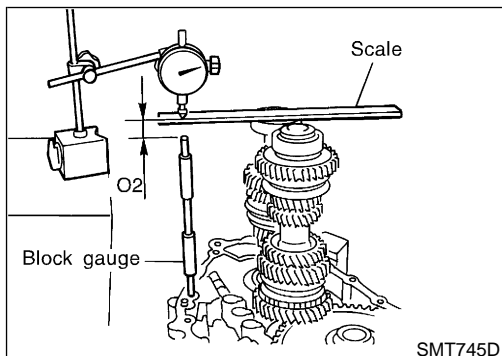
Input shaft rear bearing adjusting shims:

Refer to SDS, MT-92.

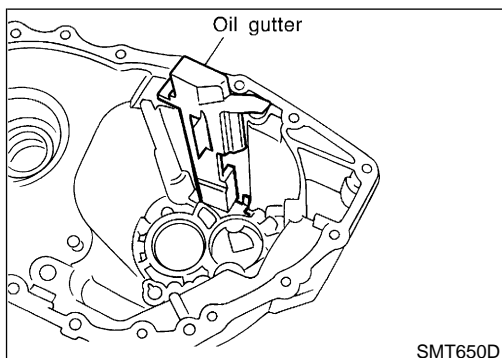
Transaxle Case (Cont'd)



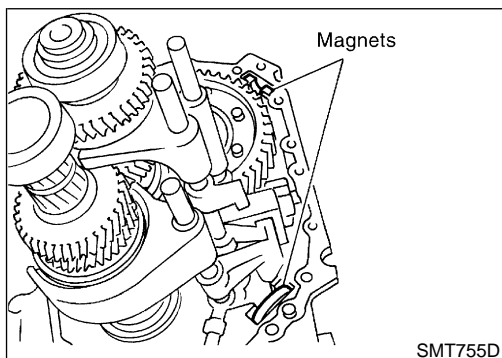
- a. Using block gauge, scale, and dial gauge, measure dimension "O1" between transaxle case end face and mounting face of adjusting shim.



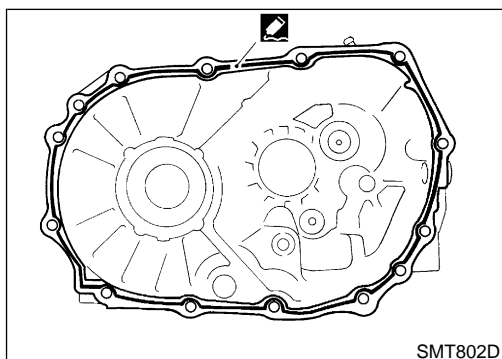
- b. Using gauge block, scale, and dial gauge as shown in the figure, measure dimension "O2" between clutch housing case end face and end face of input shaft rear bearing.
7. Install selected input shaft rear bearing adjusting shim onto input shaft.



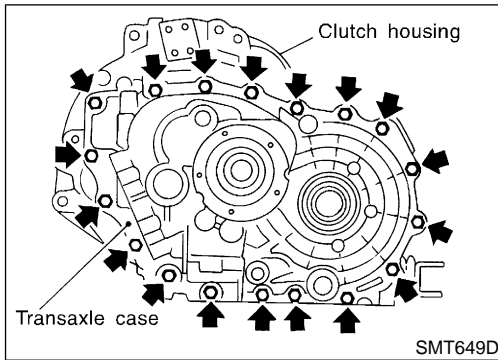
8. Install oil gutter into transaxle case.



9. Install two magnets.

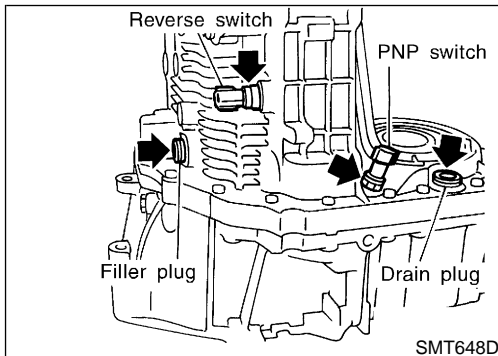


10. Clean mating surfaces of clutch housing and transaxle case. Check for cracks and damage. Then, apply Three Bond TB1215, Loctite Part No. 51813 or equivalent.



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

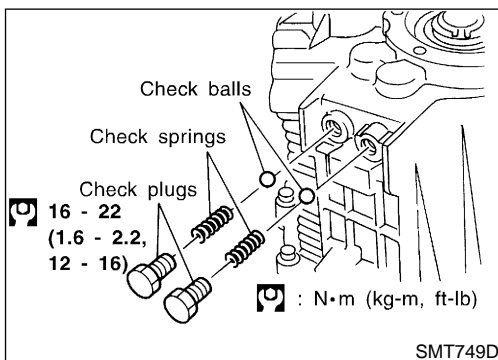
Tightening torque:
Refer to MT-24.



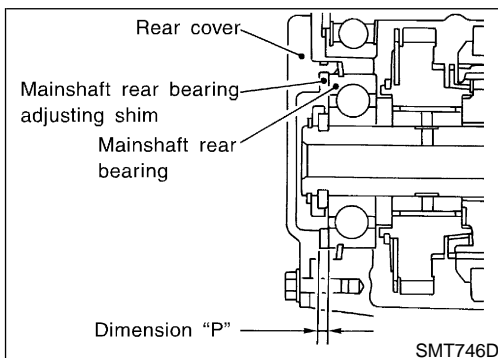
12. Apply Three Bond TB1215, Loctite Part No. 51813 or equivalent to threads of reverse switch, PNP switch, and drain plug, and install them. (Fill the case with oil before installation of filler plug.)

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

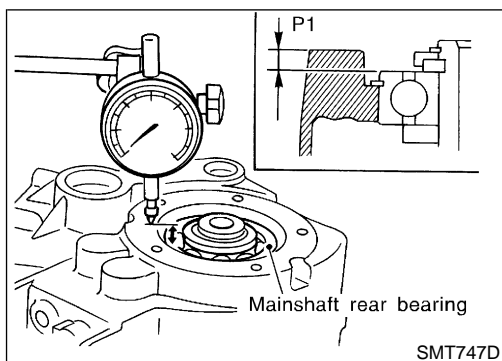
P1: Distance between transaxle case end face and mainshaft rear bearing

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

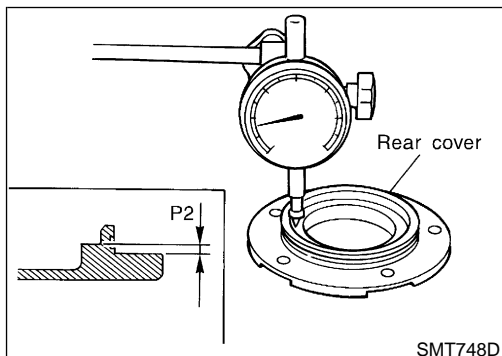
Mainshaft rear bearing adjusting shims:

Refer to SDS, MT-93.

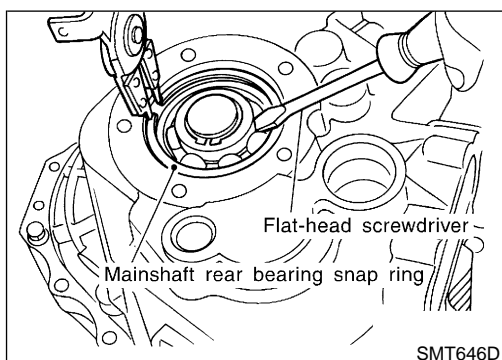
Transaxle Case (Cont'd)



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



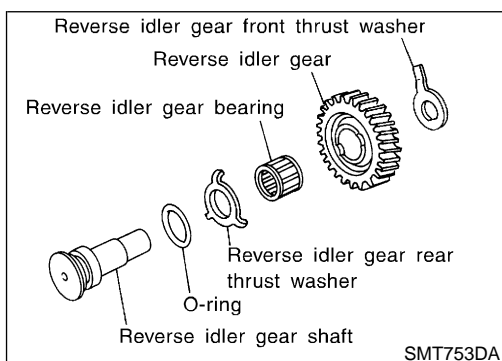
- b. Using dial gauge as shown in the figure, measure dimension "P2" between adjusting shim mounting face of rear cover and transaxle mounting face.



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.

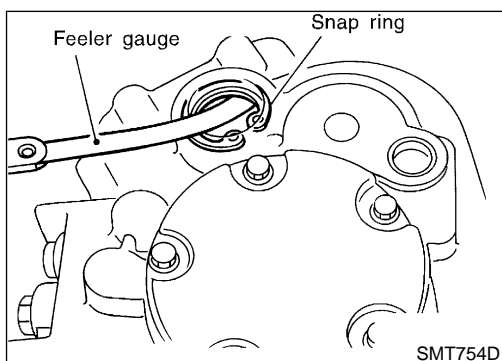


18. Install reverse idler gear, O-ring, thrust washers (front, rear), and bearing onto reverse idler shaft.

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.



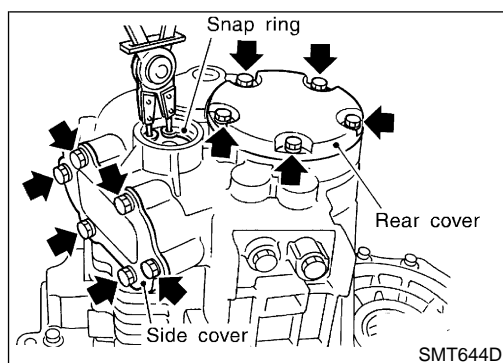
20. Using feeler gauge, measure the end play of snap ring, and select a snap ring suitable to satisfy the following specification.

End play:
0.05 - 0.25 mm (0.0020 - 0.0098 in)
Available snap ring:
Refer to SDS, MT-90.

ASSEMBLY

RS5F70A

Transaxle Case (Cont'd)



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.

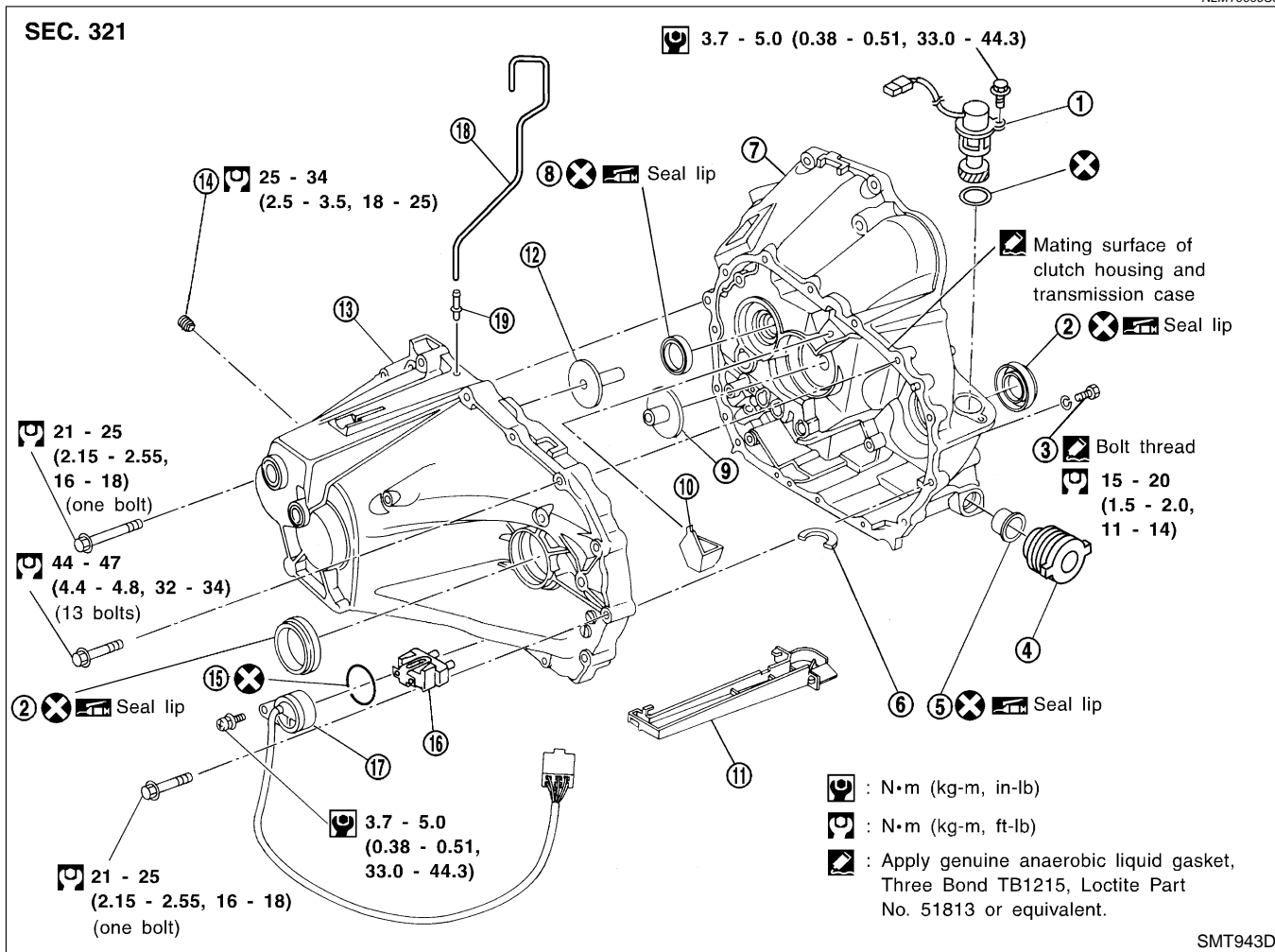
Tightening torque:

Refer to MT-24.

CAUTION:

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

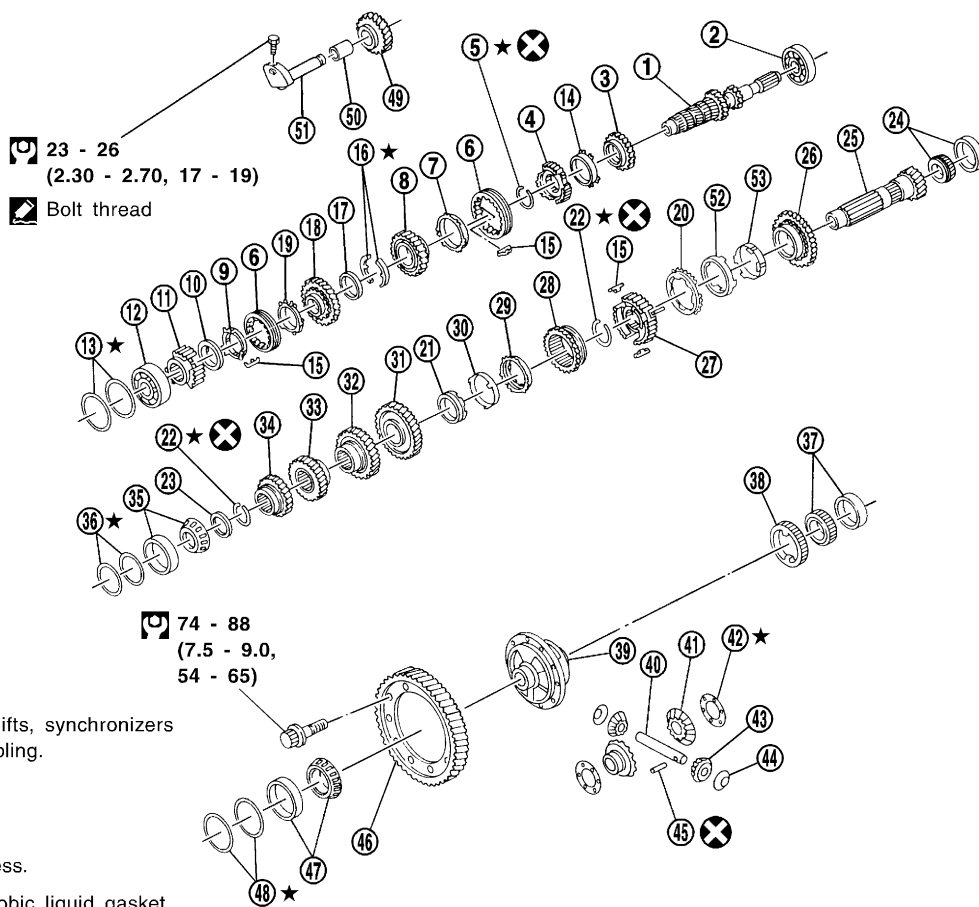
Case Components



- | | | |
|--------------------------|-------------------------------|-------------------------------|
| 1. Speedometer pinion | 8. Input shaft oil seal | 14. Filler plug |
| 2. Differential oil seal | 9. Oil channel (Mainshaft) | 15. O-ring |
| 3. Drain plug | 10. Oil pocket | 16. Movable plate assembly |
| 4. Boot | 11. Oil gutter | 17. PNP switch (where fitted) |
| 5. Striking rod oil seal | 12. Oil channel (Input shaft) | 18. Breather hose |
| 6. Magnet | 13. Transmission case | 19. Breather pipe |
| 7. Clutch housing | | |

Gear Components

NLMT0009S03

SEC. 322


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

: N·m (kg-m, in-lb)

: N·m (kg-m, ft-lb)

★ : Select proper thickness.

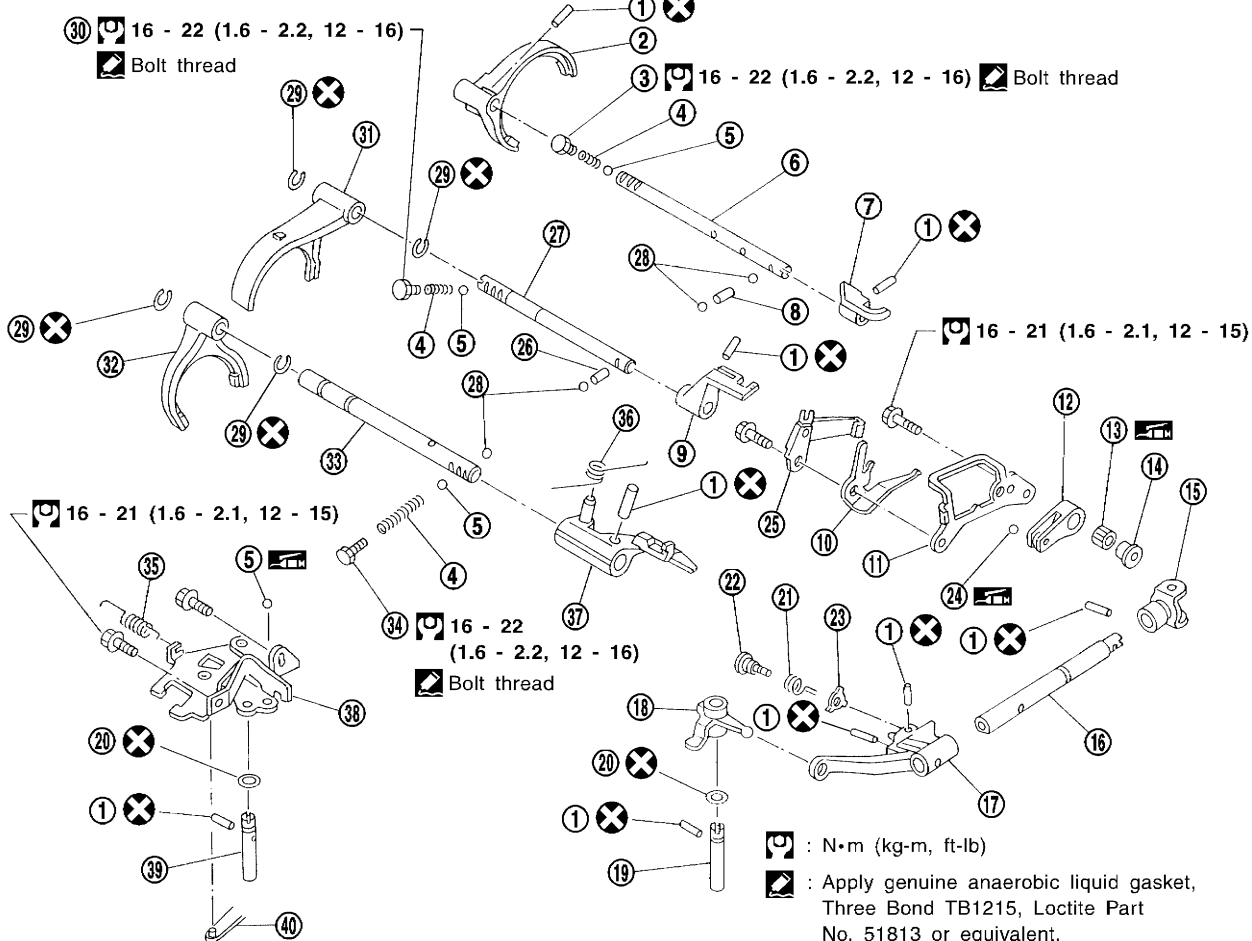
: Apply genuine anaerobic liquid gasket, Three Bond TB1215, Loctite Part No. 51813 or equivalent.

SMT937D

- | | | |
|--|---|--|
| 1. Input shaft | 19. 5th baulk ring | 37. Differential side bearing |
| 2. Input shaft front bearing | 20. 1st outer baulk ring | 38. Speedometer drive gear |
| 3. 3rd input gear | 21. 2nd inner baulk ring | 39. Differential case |
| 4. 3rd & 4th synchronizer hub | 22. Snap ring | 40. Pinion mate shaft |
| 5. Snap ring | 23. Mainshaft bearing spacer | 41. Side gear |
| 6. Coupling sleeve | 24. Mainshaft front bearing | 42. Side gear thrust washer |
| 7. 4th baulk ring | 25. Mainshaft | 43. Pinion mate gear |
| 8. 4th input gear | 26. 1st main gear | 44. Pinion mate gear thrust washer |
| 9. Reverse baulk ring | 27. 1st & 2nd synchronizer hub | 45. Retaining pin |
| 10. Reverse synchronizer cone | 28. Reverse main gear & 1st-2nd coupling sleeve | 46. Final gear |
| 11. 5th synchronizer hub | 29. 2nd outer baulk ring | 47. Differential side bearing |
| 12. Input shaft rear bearing | 30. 2nd gear synchronizer cone | 48. Differential side bearing adjusting shim |
| 13. Input shaft bearing adjusting shim | 31. 2nd main gear | 49. Reverse idler gear |
| 14. 3rd baulk ring | 32. 3rd main gear | 50. Bushing |
| 15. Insert spring | 33. 4th main gear | 51. Reverse idler shaft |
| 16. 4th input gear thrust washer | 34. 5th main gear | 52. 1st gear synchronizer cone |
| 17. Thrust washer ring | 35. Mainshaft rear bearing | 53. 1st inner baulk ring |
| 18. 5th input gear | 36. Mainshaft bearing adjusting shim | |

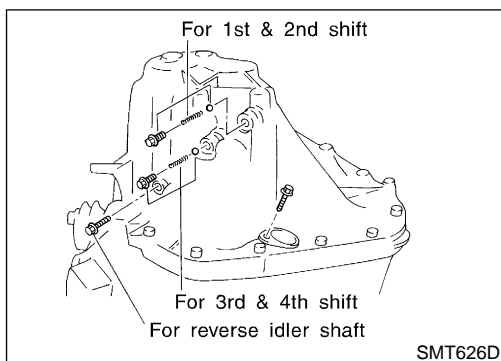
Shift Control Components

NLMT0009S04

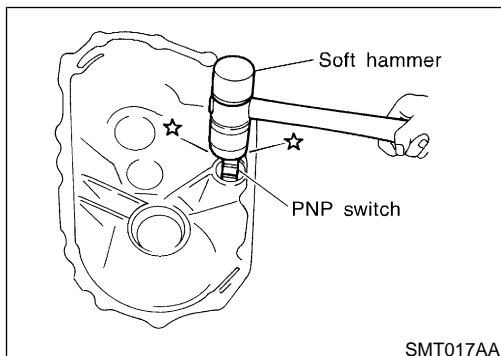
SEC. 328


SMT862CA

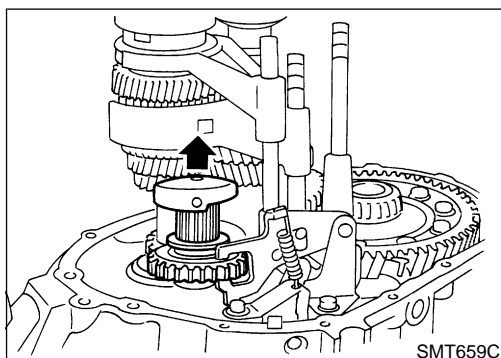
- | | | |
|---|---|---|
| 1. Retaining pin
2. 1st & 2nd shift fork
3. 1st & 2nd check plug
4. Return spring
5. Check ball
6. 1st & 2nd fork rod
7. 1st & 2nd bracket
8. Interlock plunger
9. 3rd & 4th bracket
10. Return spring
11. Reverse gate
12. Select arm
13. Return bearing
14. Bush | 15. Yoke
16. Striking rod
17. Striking lever
18. Selector
19. Selector shaft
20. O-ring
21. Return spring
22. Cam pin
23. Reverse check cam
24. Check ball
25. Select check spring
26. Interlock plunger
27. 3rd & 4th fork rod | 28. Interlock ball
29. Stopper ring
30. 3rd & 4th check plug
31. 3rd & 4th shift fork
32. 5th shift fork
33. 5th fork rod
34. 5th & reverse check plug
35. Reverse lever spring
36. Reverse lock spring
37. 5th & reverse bracket
38. Reverse lever assembly
39. Reverse arm shaft
40. Control lever spring |
|---|---|---|



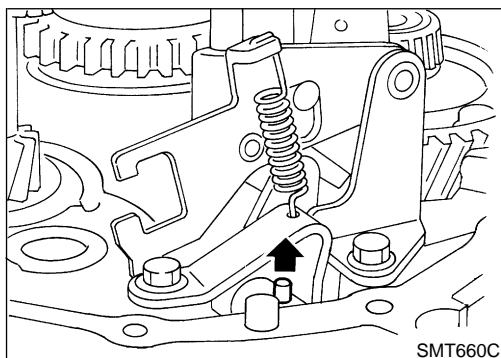
1. Before removing transmission case, remove bolts, check plugs, springs and check balls as shown left.
 - **Be careful not to lose check balls.**
2. Remove transmission case.



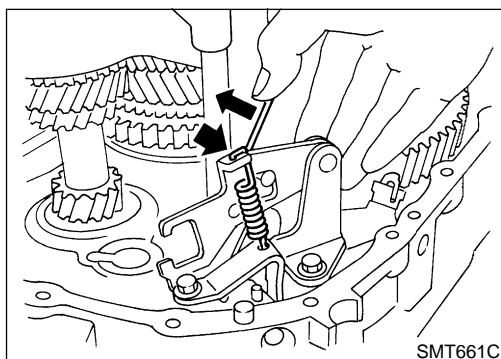
3. Remove PNP switch.



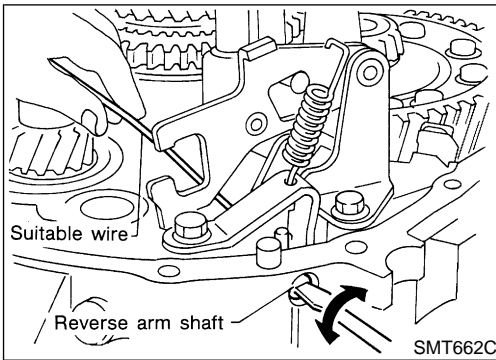
4. Mesh 4th gear, and then remove reverse idler shaft and reverse idler gear.



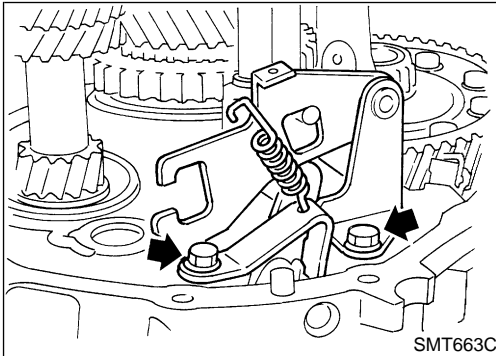
5. Pull out retaining pin.



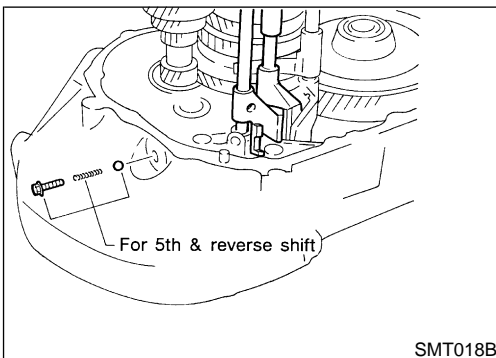
6. Remove reverse lever spring and reverse lock spring from reverse lever assembly.



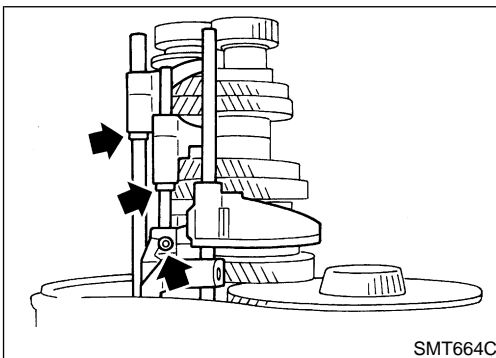
7. Remove reverse arm shaft while rotating it.



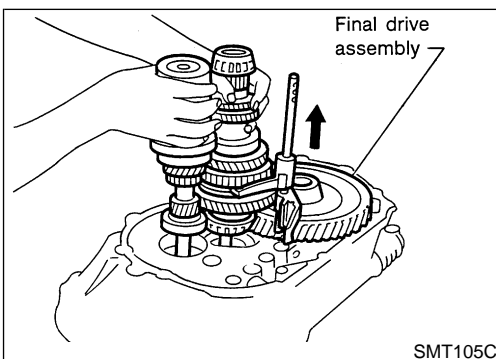
8. Remove reverse lever assembly and check ball.
 ● **Be careful not to lose check ball.**



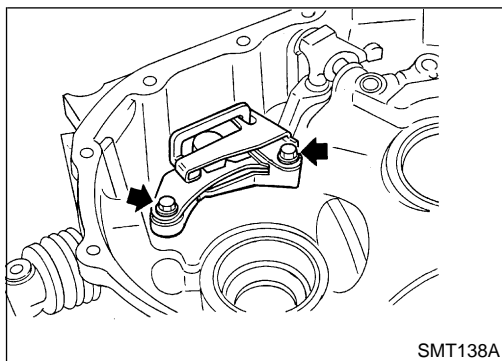
9. Remove 5th & reverse check plug, spring and ball.
 ● **Be careful not to lose check ball.**



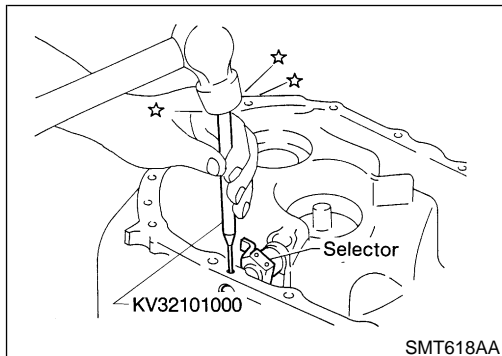
10. Remove stopper rings and retaining pins from 5th and 3rd & 4th fork rods.
 When removing stopper rings. Use snap ring remover and installer.
 11. Remove 5th and 3rd & 4th fork rods. Then remove forks and brackets.



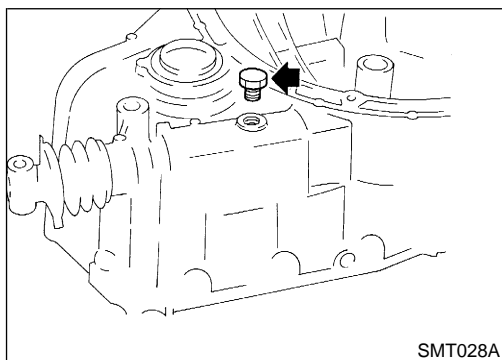
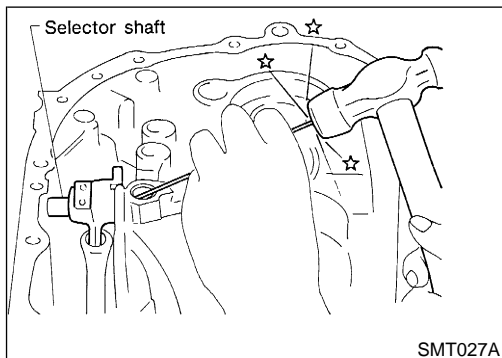
12. Remove both input and mainshafts with 1st & 2nd fork and fork rod as a set.
 13. Remove final drive assembly.
 ● **Always withdraw mainshaft straight out. Failure to do so can damage resin oil channel on clutch housing side.**



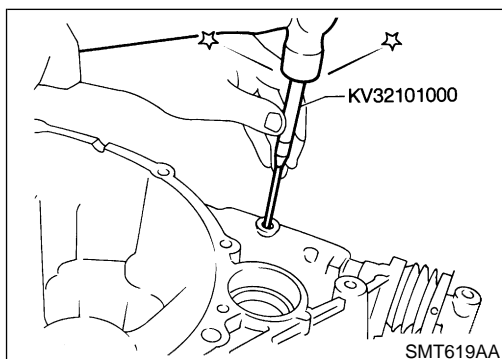
14. Remove reverse check assembly and check ball.
- **Be careful not to lose check ball.**



15. Remove retaining pin and detach the selector.

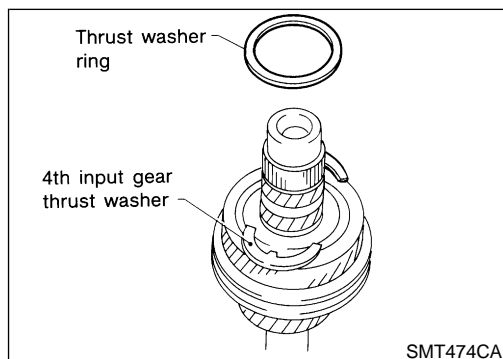
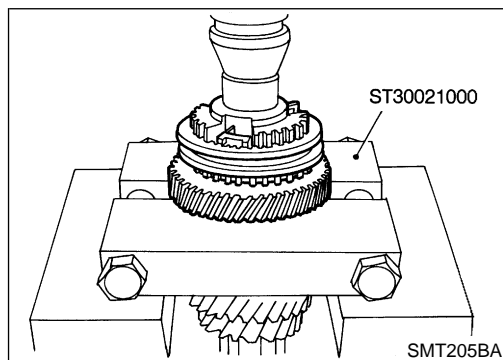
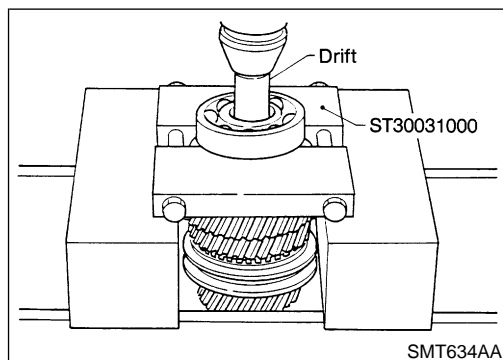
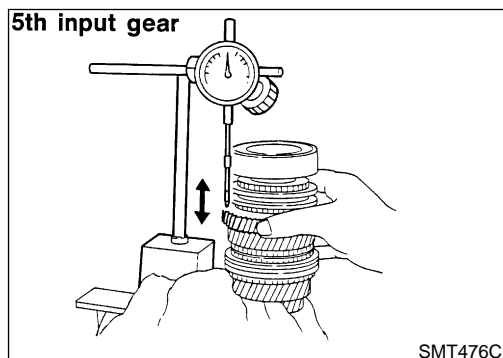
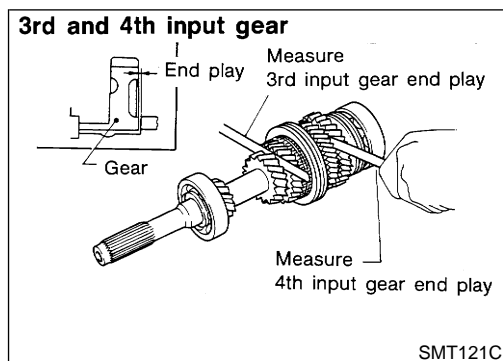


16. Remove drain plug for convenience in removing retaining pin which holds striking lever to striking rod.



17. Remove retaining pin and then withdraw striking lever and striking rod.

Input Shaft and Gears



Input Shaft and Gears

DISASSEMBLY

NLMT0011

1. Before disassembly, check 3rd, 4th and 5th input gear end plays.

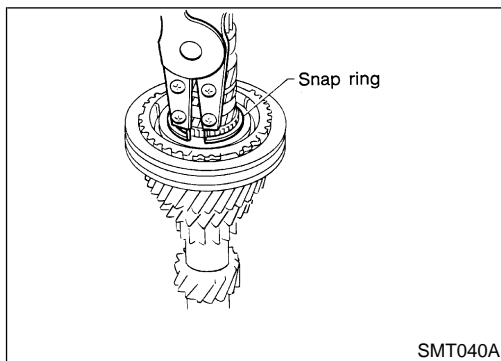
Gear end play:
Refer to SDS, MT-97.

- If not within specification, disassemble and check contact surface of gear, shaft and hub. Check clearance of snap ring groove. Refer to "ASSEMBLY", MT-70.

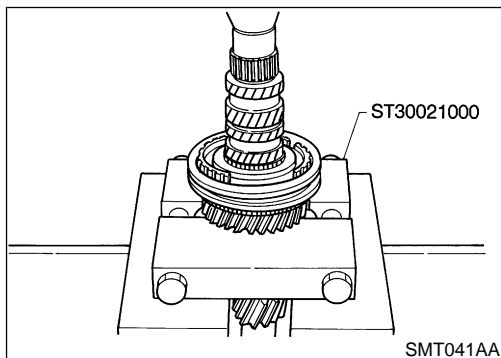
2. Remove input shaft rear bearing.

3. Remove 5th & reverse synchronizer and 5th input gear.

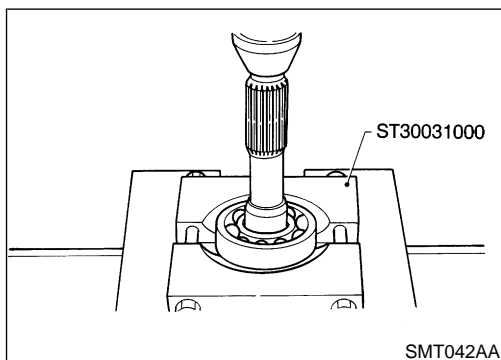
4. Remove thrust washer ring, 4th input gear thrust washers and 4th input gear.



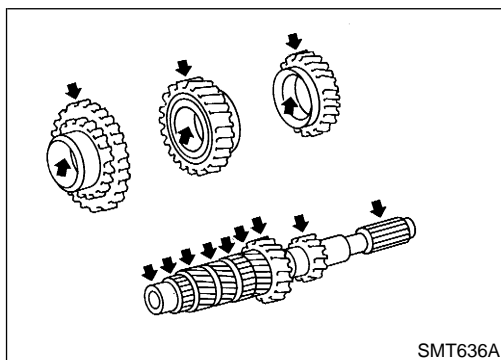
5. Remove snap ring.



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



7. Remove input shaft front bearing.



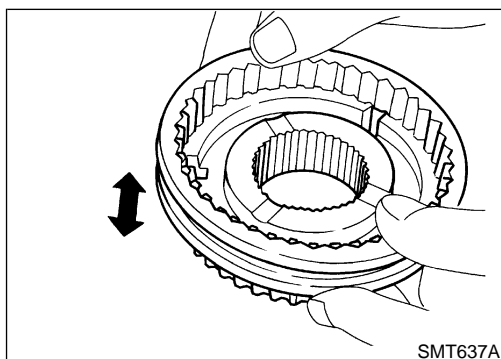
INSPECTION

Input shaft and Gears

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

NLMT0012

NLMT0012S01

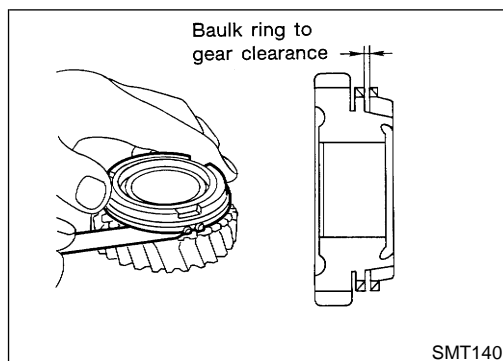


Synchronizer

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

NLMT0012S02

Input Shaft and Gears (Cont'd)



- Measure clearance between baulk ring and gear (3rd, 4th and 5th).

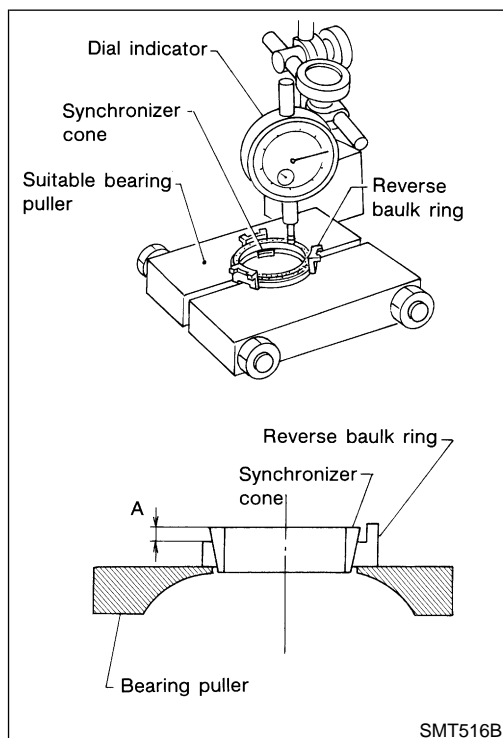
Clearance between baulk ring and gear:

Standard

1.0 - 1.35 mm (0.0394 - 0.0531 in)

Wear limit

0.7 mm (0.028 in)



- **Measure wear of reverse baulk ring.**

1. Place reverse baulk ring on disc and then place reverse synchronizer cone on reverse baulk ring.

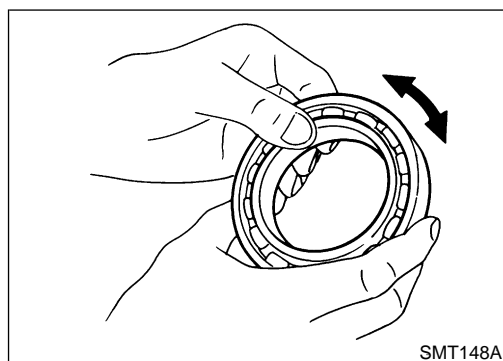
- **Make sure projection of synchronizer cone is positioned over the recess on Tool.**

2. While holding reverse synchronizer cone against reverse baulk ring as firmly as possible, measure dimension "A" with dial indicator.

Wear limit:

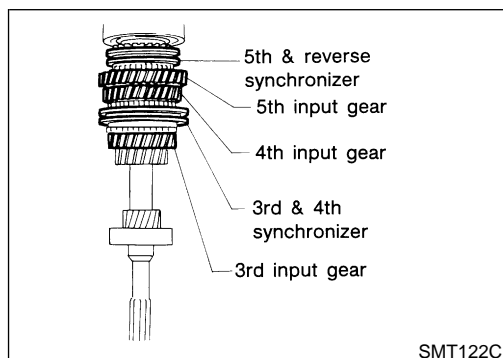
Dimension "A" 1.2 mm (0.047 in)

3. If dimension "A" is smaller than the wear limit, replace baulk ring.



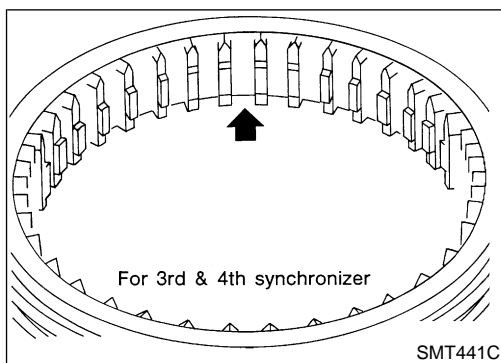
Bearing

- Make sure bearings roll freely and are free from noise, cracks, pitting or wear. NLMT0012S03

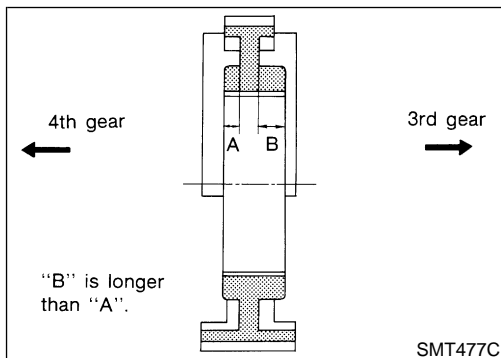


ASSEMBLY

NLMT0013



1. Place inserts in three grooves on coupling sleeve (3rd & 4th synchronizer).



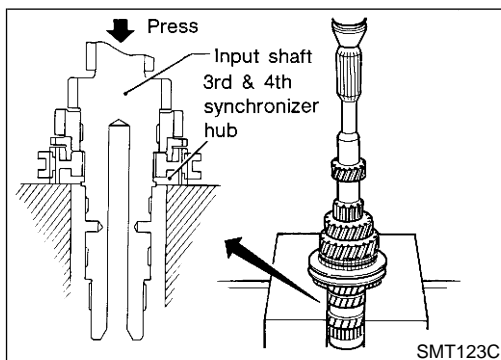
2. Install 3rd input gear and 3rd baulk ring.
3. Press on 3rd & 4th synchronizer hub.
- **Pay attention to its direction.**
4. Select proper snap ring of 3rd & 4th synchronizer hub to minimize clearance of groove, and then install it.

Allowable clearance of groove:

0 - 0.1 mm (0 - 0.004 in)

Snap ring of 3rd & 4th synchronizer hub:

Refer to SDS, MT-98.



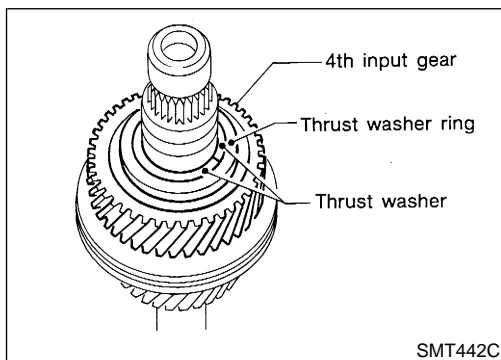
5. Install 4th input gear.
6. Select proper thrust washers to minimize clearance of groove. Then install them and thrust washer ring.

Allowable clearance of groove:

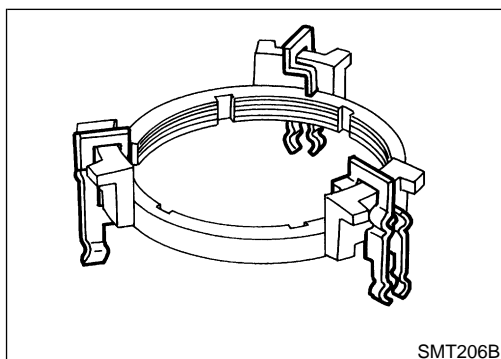
0 - 0.06 mm (0 - 0.0024 in)

4th input gear thrust washer:

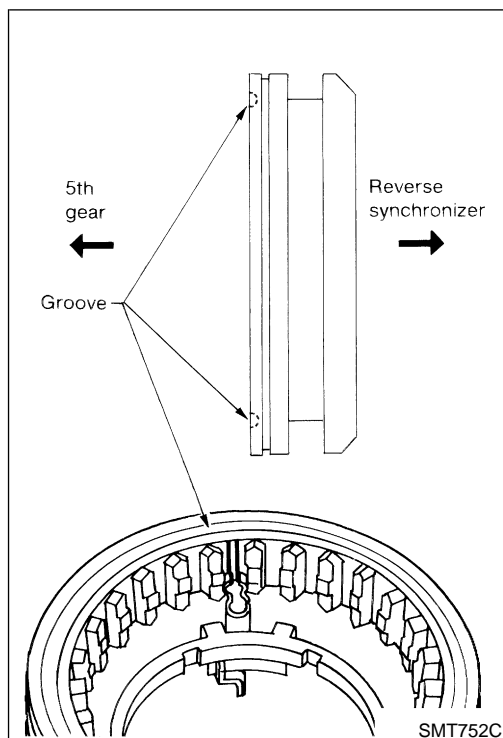
Refer to SDS, MT-98.



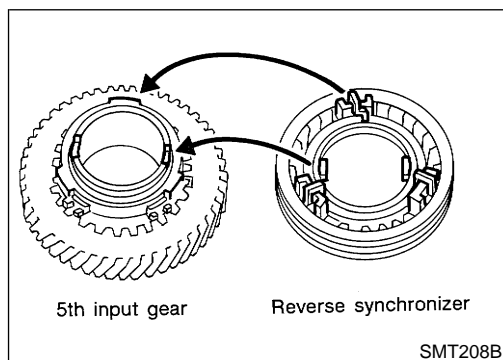
7. Install 5th & reverse synchronizer assembly.
 - a. Hook insert springs on reverse baulk ring.



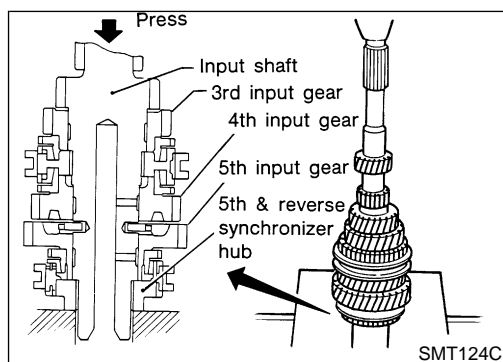
Input Shaft and Gears (Cont'd)



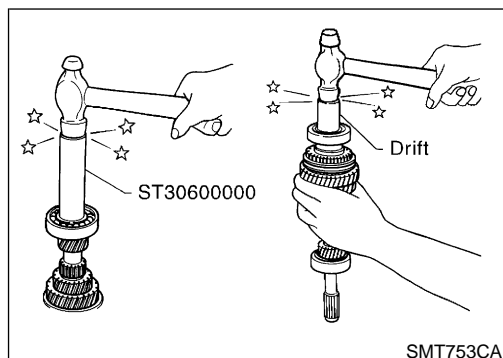
- b. Install insert springs with reverse baulk ring onto coupling sleeve.
- **Pay attention to position of insert springs.**
- c. Place 5th baulk ring on 5th input gear.
- d. Install reverse synchronizer cone on reverse baulk ring.



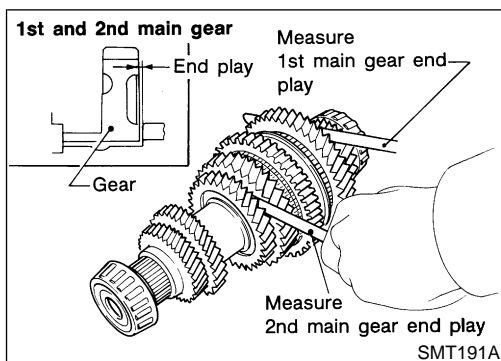
- e. Place reverse synchronizer assembly on 5th input gear.
- **Mesh recesses of 5th input gear with projections of reverse synchronizer cone.**
- **Put insert spring mounts on reverse baulk ring upon those on 5th baulk ring.**



- f. Press on 5th & reverse synchronizer assembly with 5th input gear.



8. Install input shaft front and rear bearings.
9. Measure gear end play as a final check. Refer to "DISASSEMBLY", MT-68.



Mainshaft and Gears

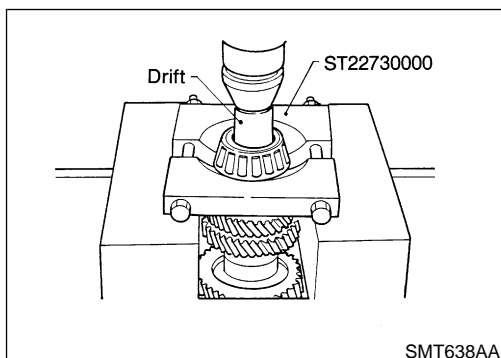
DISASSEMBLY

NLMT0014

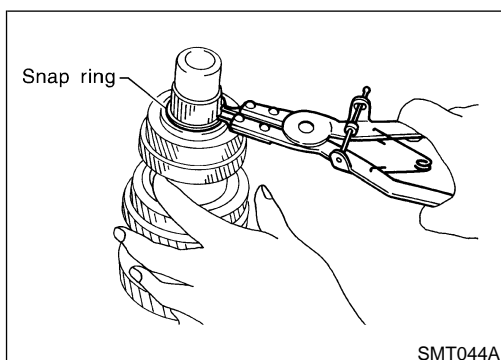
1. Before disassembly, check 1st and 2nd main gear end plays.

Gear end play:
Refer to SDS, MT-97.

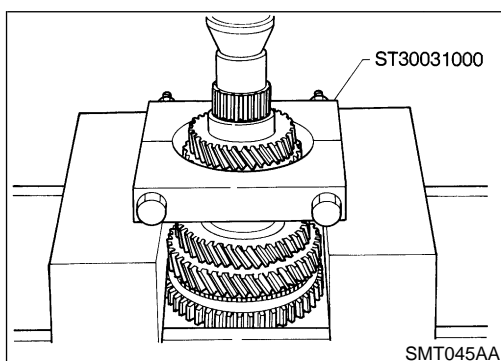
If not within specification, disassemble and check contact surface of gear, shaft and hub. Check clearance of snap ring groove. Refer to "ASSEMBLY", MT-75.



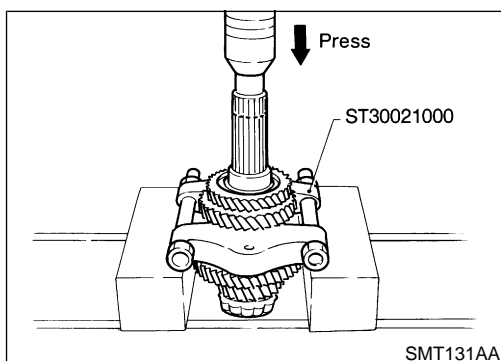
2. Press out mainshaft rear bearing.



3. Remove thrust washer and snap ring.

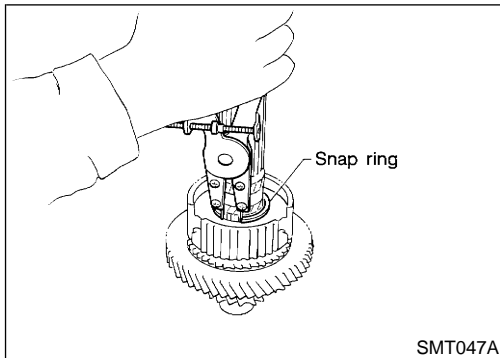


4. Press out 5th main gear and 4th main gear.

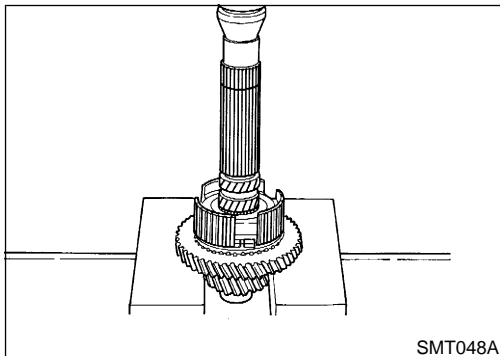


5. Press out 3rd main gear and 2nd main gear.

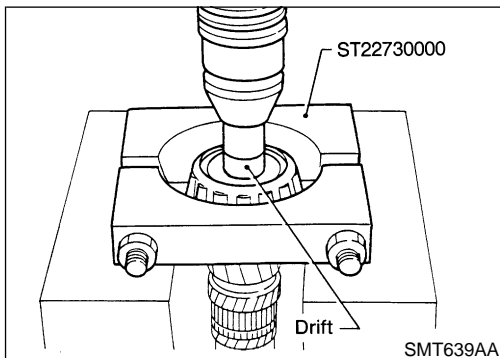
Mainshaft and Gears (Cont'd)



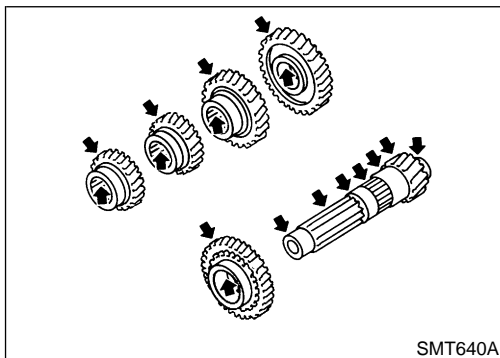
6. Remove snap ring.



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



8. Remove mainshaft front bearing.

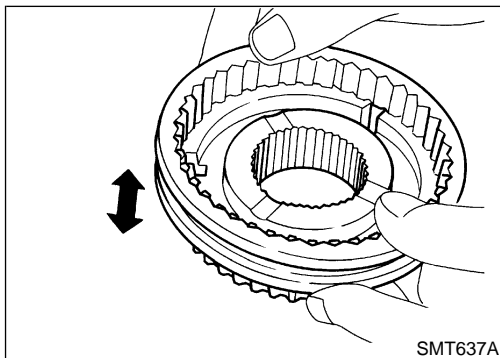


INSPECTION Mainshaft and Gears

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

NLMT0015

NLMT0015S01



Synchronizer

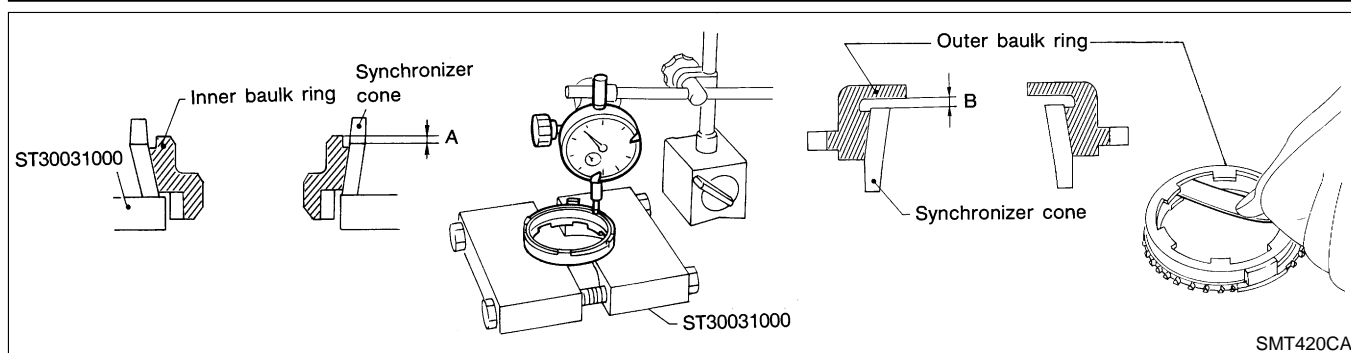
- Check spline portion of coupling sleeves, hubs and gears for wear or cracks.
- Check baulk rings for cracks or deformation.
- Check insert springs for deformation.

NLMT0015S02

REPAIR FOR COMPONENT PARTS

RS5F50A

Mainshaft and Gears (Cont'd)



- Measure wear of 1st and 2nd double baulk rings.
- 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:

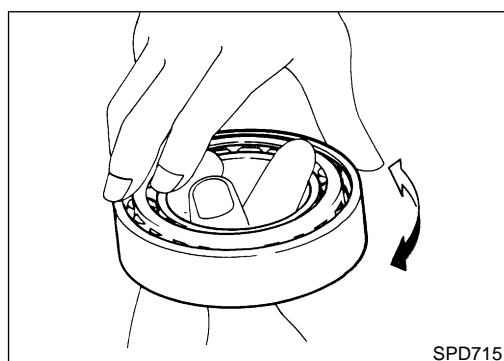
A 0.6 - 0.8 mm (0.024 - 0.031 in)

B 0.6 - 1.1 mm (0.024 - 0.043 in)

Wear limit:

0.2 mm (0.008 in)

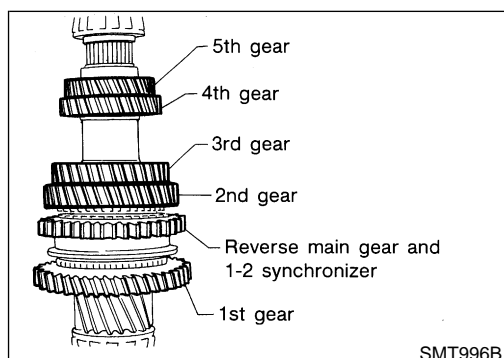
- c) If dimension "A" or "B" is smaller than the wear limit, replace outer baulk ring, inner baulk ring and synchronizer cone as a set.



Bearing

NLMT0015S03

- 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.**



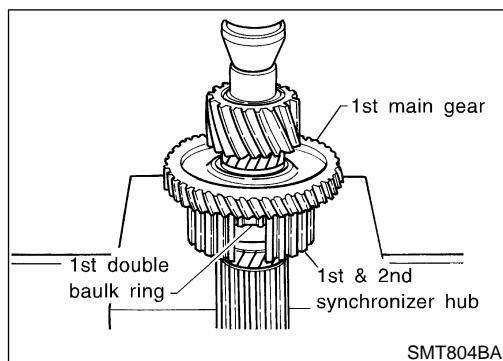
ASSEMBLY

NLMT0016

REPAIR FOR COMPONENT PARTS

RS5F50A

Mainshaft and Gears (Cont'd)



1. Press on 1st main gear, 1st synchronizer cone, inner & outer baulk rings and 1st & 2nd synchronizer hub. Refer to the illustration for step 3.

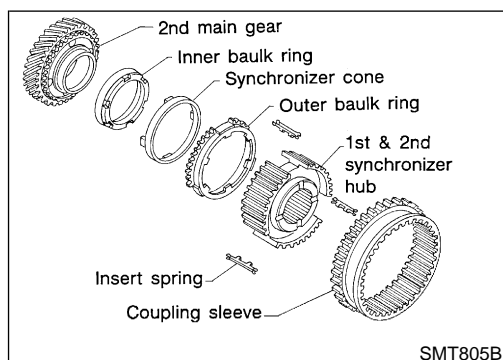
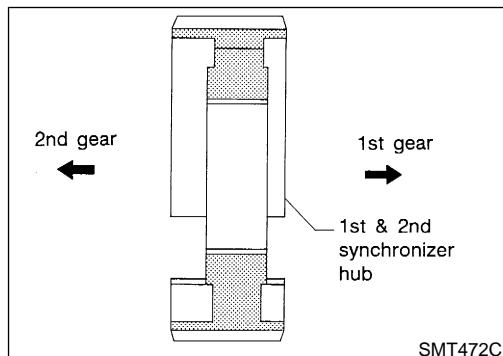
- **Pay attention to direction of 1st & 2nd synchronizer hub.**
2. Select proper snap ring of 1st & 2nd synchronizer hub to minimize clearance of groove and then install it.

Allowable clearance of groove:

0 - 0.1 mm (0 - 0.004 in)

Snap ring of 1st & 2nd synchronizer hub:

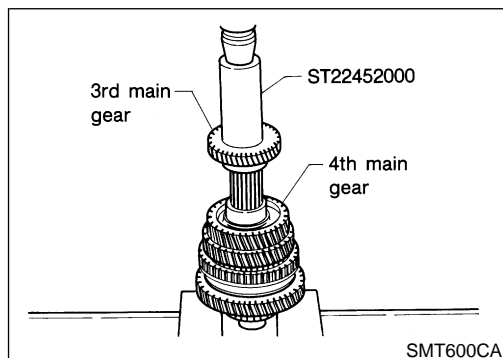
Refer to SDS, MT-98.



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

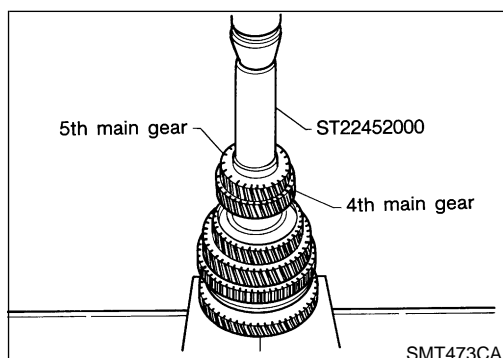
4. Install 2nd main gear.

- Ensure four protrusions of 2nd synchronizer cone are set in holes of 2nd main gear.



5. Press on 3rd main gear.

6. Press on 4th main gear.



7. Press on 5th main gear.

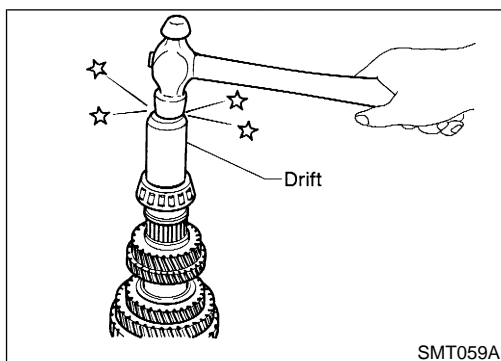
8. Select proper snap ring of 5th main gear to minimize clearance of groove and then install it.

Allowable clearance of groove:

0 - 0.15 mm (0 - 0.0059 in)

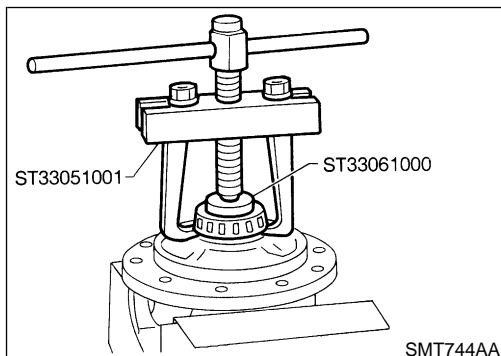
Snap ring of 5th main gear:

Refer to SDS, MT-98.



SMT059A

9. Press on thrust washer and press on mainshaft rear bearing.
10. Press on mainshaft front bearing.
11. Measure gear end play as a final check. Refer to "DISASSEMBLY", MT-73.

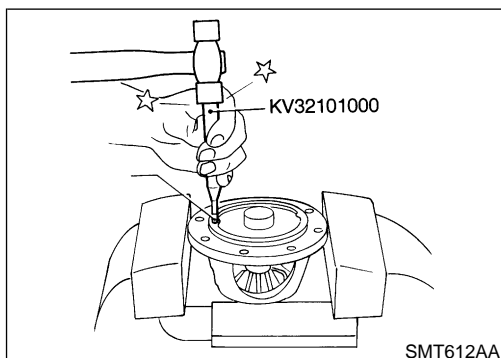


SMT744AA

Final Drive DISASSEMBLY

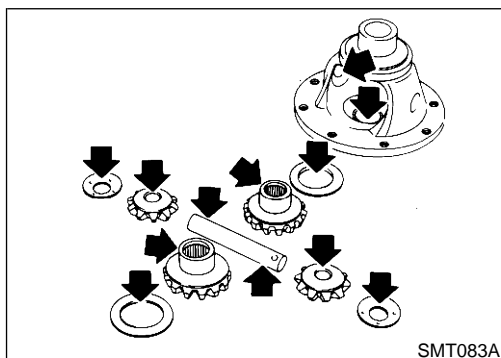
NLMT0017

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.**



SMT612AA

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



SMT083A

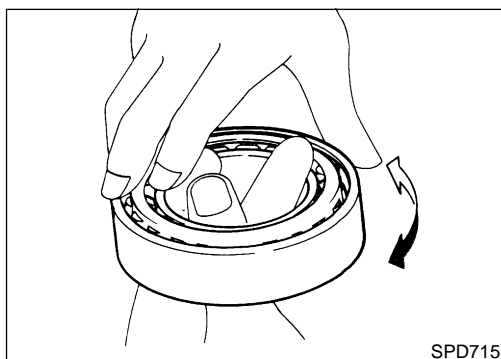
INSPECTION

NLMT0018

Gear, Washer, Shaft and Case

NLMT0018S01

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

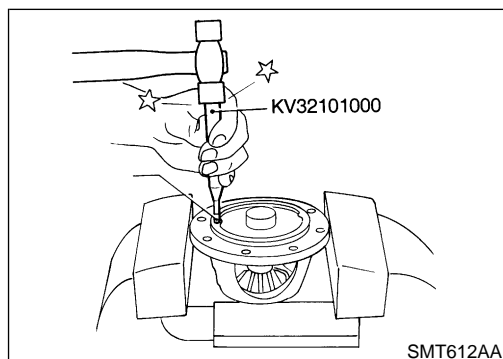
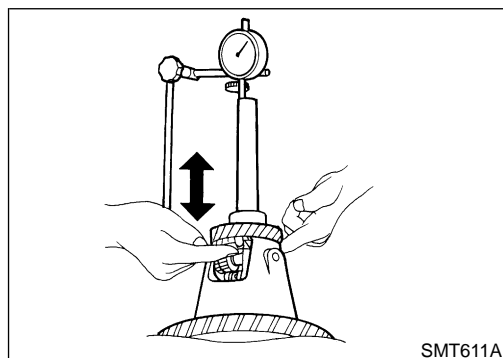
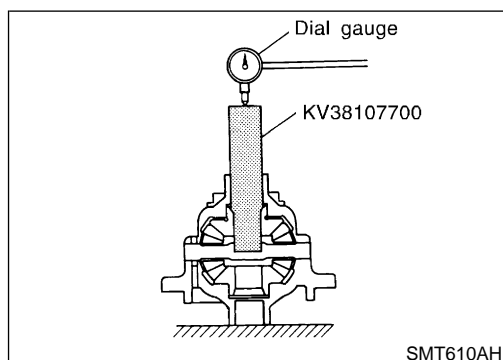
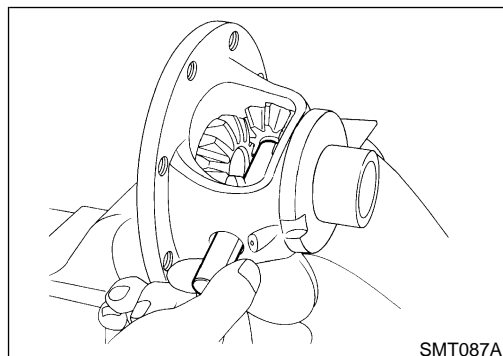
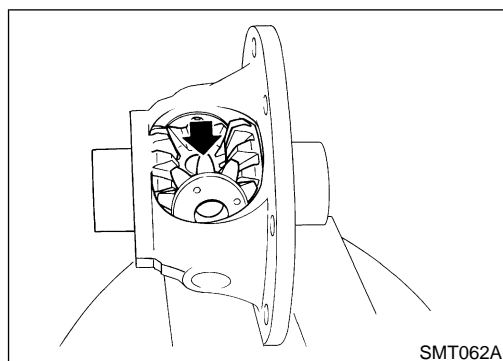


SPD715

Bearings

NLMT0018S03

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



ASSEMBLY

NLMT0019

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

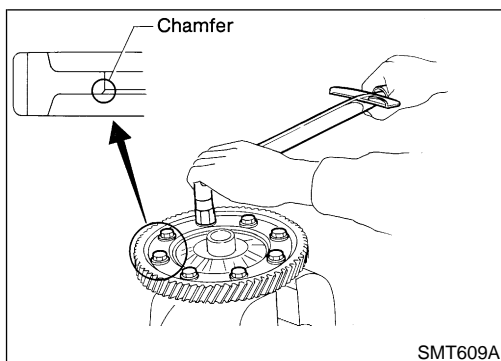
2. Insert pinion mate shaft.
 - **When inserting, be careful not to damage pinion mate thrust washers.**

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

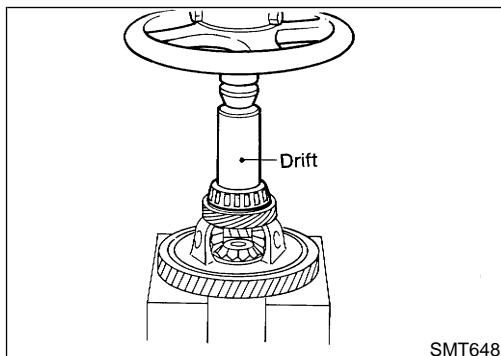
Clearance between side gear and differential case with washers:
0.1 - 0.2 mm (0.004 - 0.008 in)
 - c. If not within specification, adjust clearance by changing thickness of side gear thrust washers.

Differential side gear thrust washer:
Refer to SDS, MT-98.

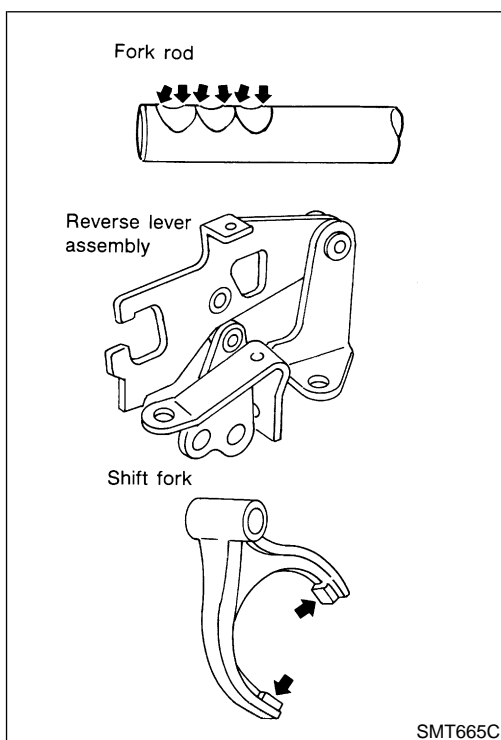
4. Install retaining pin.
 - **Make sure that retaining pin is flush with case.**



5. Install final gear.
6. Install speedometer drive gear.

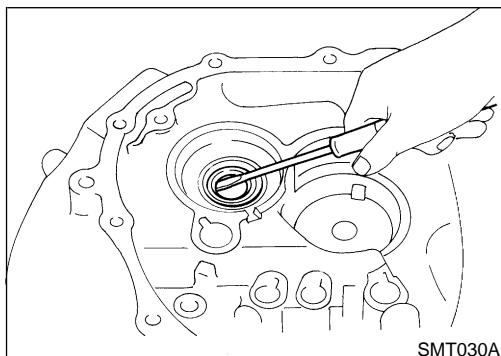


7. Press on differential side bearings.



Shift Control Components INSPECTION

- Check contact surface and sliding surface for wear, scratches, projections or other damage. NLMT0020

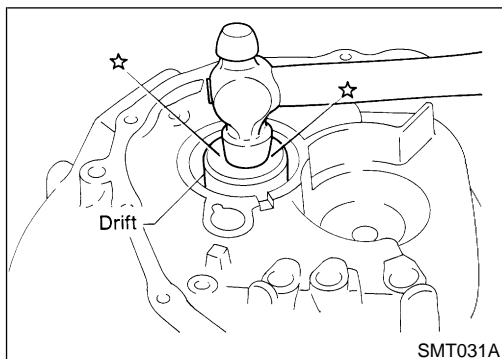


Case Components REMOVAL AND INSTALLATION Input Shaft Oil Seal

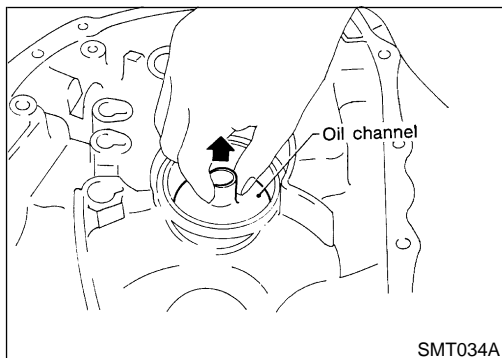
NLMT0021

NLMT0021S01

Case Components (Cont'd)



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



Mainshaft Front Bearing Outer Race

NLMT0021S02

- Extract the oil channel and remove the mainshaft front bearing outer race.

Mainshaft Rear Bearing Outer Race

NLMT0021S03

Refer to “Mainshaft Bearing Preload”, MT-99.

Differential Side Bearing Outer Race

NLMT0021S04

Refer to “Input Shaft End Play and Differential Side Bearing Preload”, MT-99.

Input Shaft End Play and Differential Side Bearing Preload

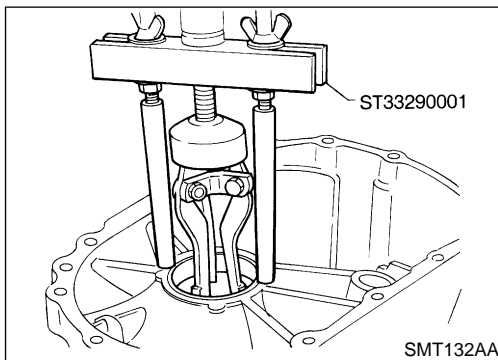
NLMT0022S01

If any of the following parts are replaced, adjust input shaft end play.

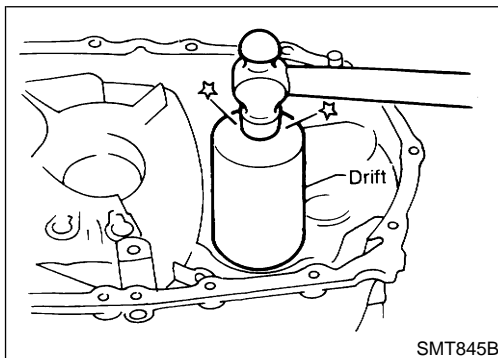
- Input shaft
- Input shaft bearing
- Clutch housing
- Transmission case

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

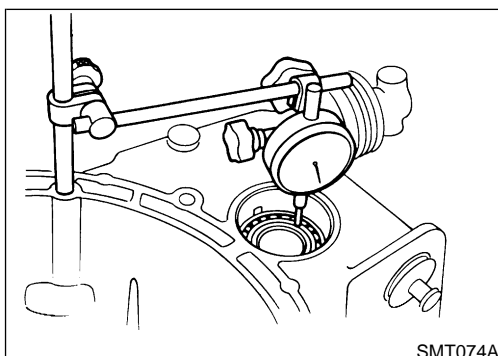
- Differential case
- Differential side bearing
- Clutch housing
- Transmission case



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



2. Reinstall differential side bearing outer race without shim(s).
3. Install input shaft and final drive assembly on clutch housing.
4. Install transmission case without input shaft bearing shim(s). Then tighten it to the specified torque. Refer to "Case Components", MT-62.



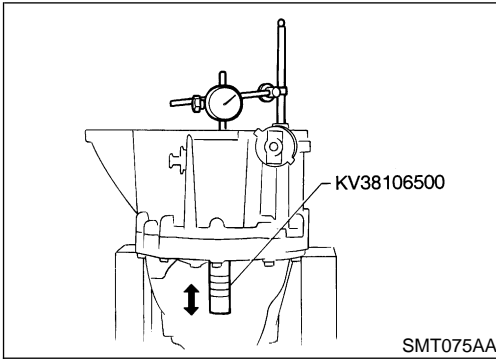
5. Using the following procedures, measure clearance between bearings and transmission case.

DIFFERENTIAL SIDE

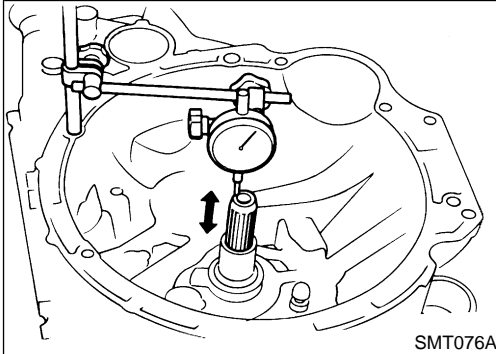
NLMT0022S0101

1. Attach dial indicator. If clamp diameter of dial indicator is too small or too large, attach dial indicator using a magnetic stand.

Input Shaft End Play and Differential Side Bearing Preload (Cont'd)



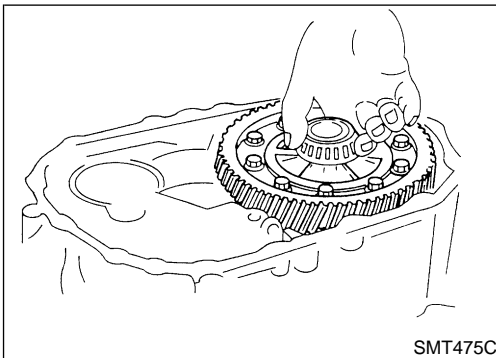
2. Insert Tool all the way into differential side gear. Move Tool up and down and measure dial indicator deflection.



INPUT SHAFT SIDE

NLMT0022S0102

1. Set dial indicator on end of input shaft.
2. Move input shaft up and down and measure dial indicator deflection.
3. Select shims with proper thickness with SDS table as a guide. Refer to SDS, MT-101.
4. Install selected differential side bearing adjusting shim and differential side bearing outer race.



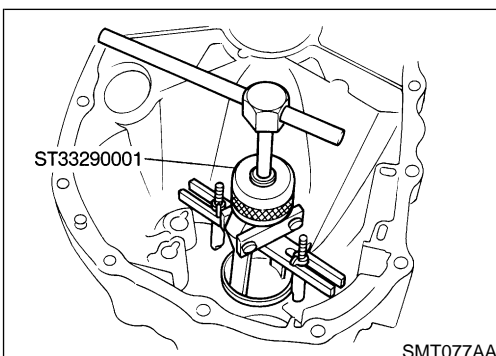
5. Check differential side bearing turning torque.
 - a. Install final drive assembly on clutch housing.
 - b. Install transmission case on clutch housing.
 - **Tighten transmission case fixing bolts to the specified torque. Refer to "Case Components", MT-62.**

Mainshaft Bearing Preload

NLMT0022S02

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

- Mainshaft
- Mainshaft bearings
- Clutch housing
- Transmission case

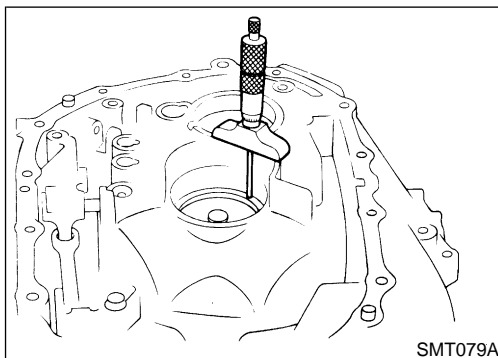
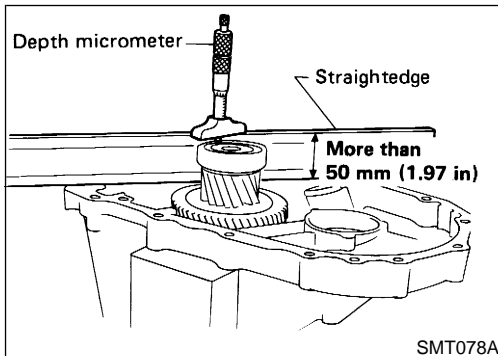
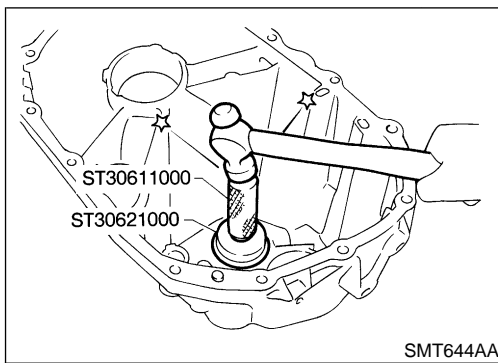


1. Remove mainshaft rear bearing outer race and shim(s).

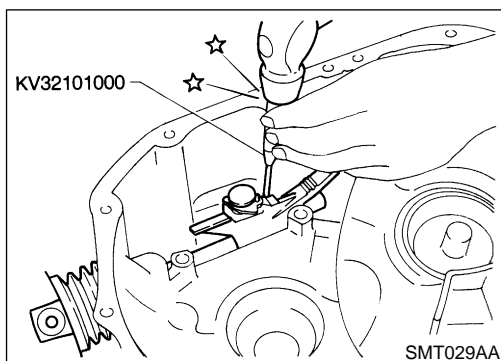
ADJUSTMENT

RS5F50A

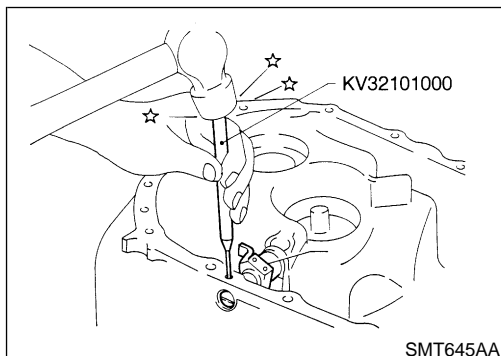
Mainshaft Bearing Preload (Cont'd)



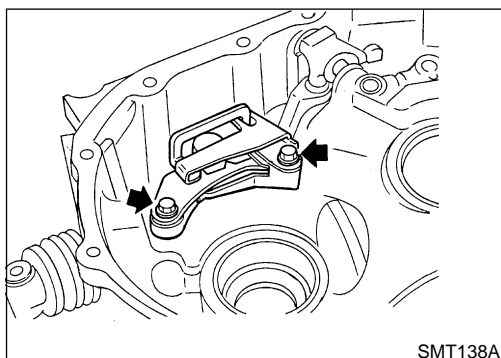
2. Reinstall mainshaft rear bearing outer race without shims.
3. Clean mating surfaces of clutch housing and transmission case with solvent.
4. Install mainshaft and mainshaft front bearing outer race into transmission case. Turn mainshaft while holding bearing outer race so that bearings are properly seated.
5. Put straightedge [width must be more than 50 mm (1.97 in)] on transmission case, and measure the distance from upper surface of straightedge to surface of the bearing outer race using a depth micrometer.
 - **Measure at three places on bearing outer race, and take the average.**
6. Determine dimension A to be used by the following equation.
Dimension A = Width of straightedge – measured distance
7. Measure the distance from mating surface of clutch housing to portion with which mainshaft front bearing outer race is to be mated.
 - **Measure at three places on the portion, and take the average.**
Dimension B = Measured distance
8. Determine dimension C to be used by the following equation.
Dimension "C" = B – A
9. Determine total thickness of shims with SDS table as a guide.
Mainshaft bearing adjusting shim:
Refer to SDS, MT-99.
10. Install selected mainshaft bearing adjusting shim and mainshaft bearing outer race.
11. Check total turning torque after assembly — Refer to "ASSEMBLY", MT-84.



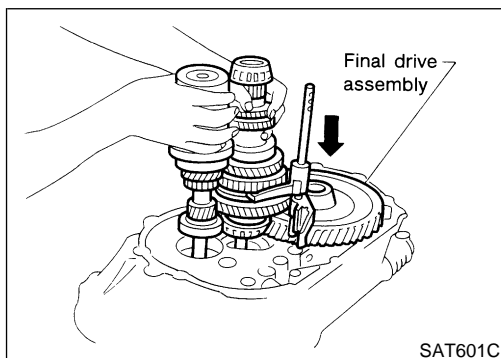
1. Install striking lever and striking rod.



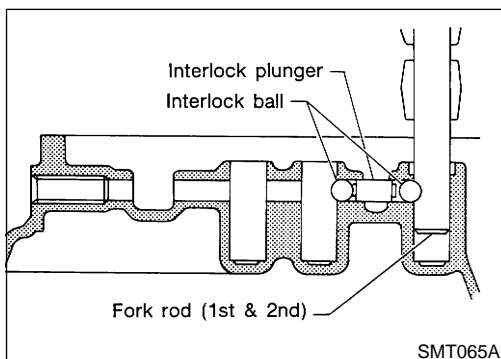
2. Install selector and retaining pin.



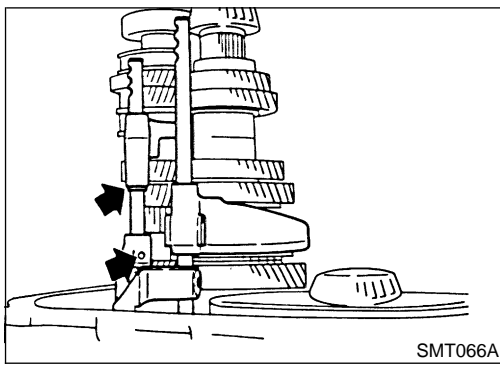
3. Install check ball and reverse check assembly.
 ● **Before installation, rotate striking rod as shown in the figure to avoid interference.**



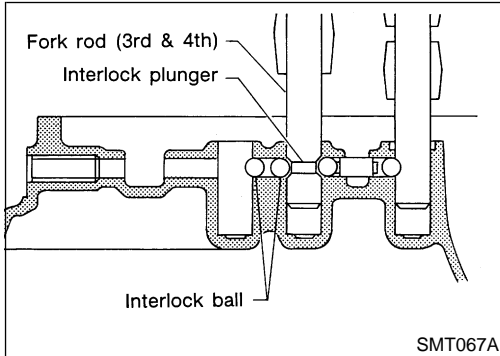
4. Install final drive assembly.
 5. Install input shaft and mainshaft with 1st & 2nd shift fork assembly.
 ● **Be careful not to damage input shaft oil seal.**



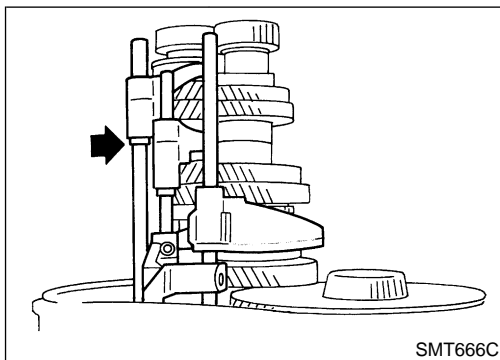
6. Install interlock balls and plunger.



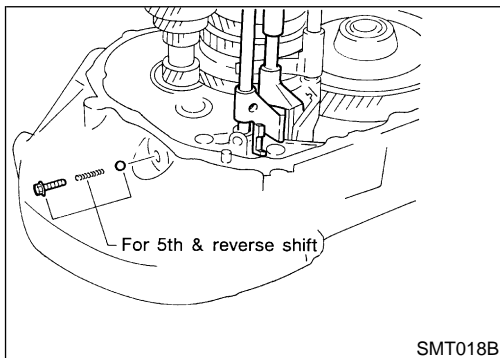
7. Install 3rd & 4th shift fork and bracket, then install 3rd & 4th fork rod, stopper ring and retaining pin.
When installing stopper rings, use snap ring remover and installer.



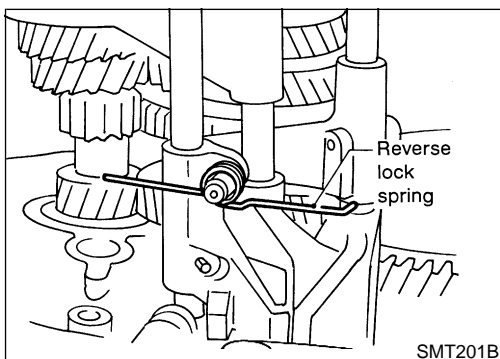
8. Install interlock balls.



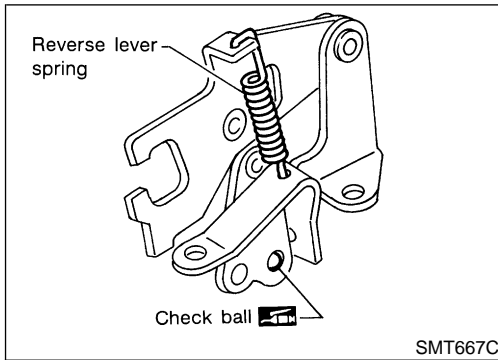
9. Install 5th shift fork, then install fork rod, stopper ring and retaining pin.
When installing stopper rings, use snap ring remover and installer.



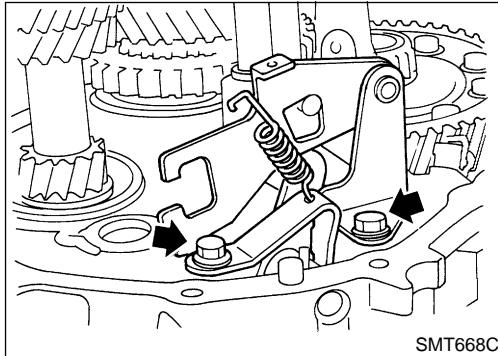
10. Install 5th & reverse check plug, spring and ball.
 - Apply sealant to bolt threads. Refer to "Shift Control Components", MT-64.



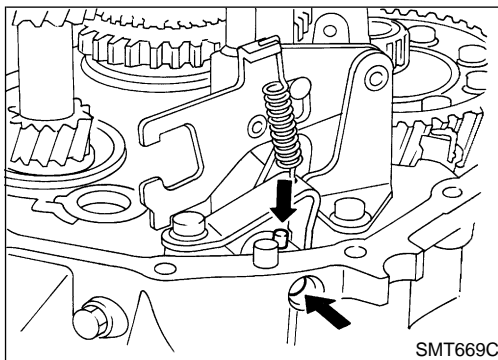
11. Install reverse lock spring on 5th & reverse bracket.
 - **Pay attention to its direction.**



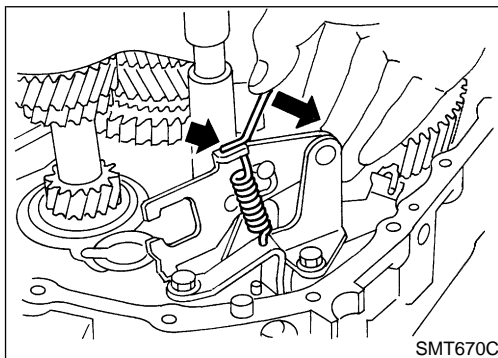
12. Install check ball and reverse lever spring on reverse lever assembly.
 - Apply multi-purpose grease to check ball.
 - Pay attention to direction of reverse lever spring.



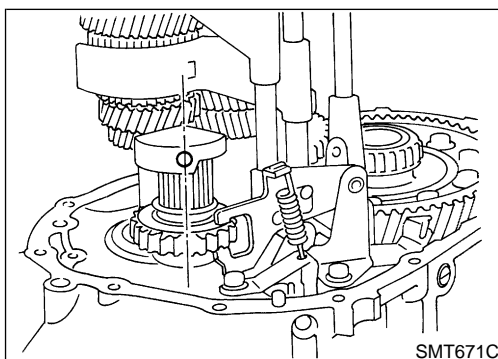
13. Install reverse lever assembly on clutch housing.



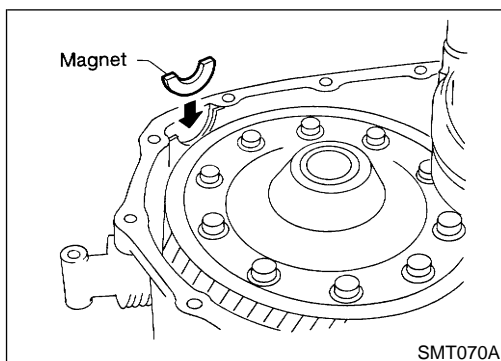
14. Install reverse arm shaft and retaining pin.



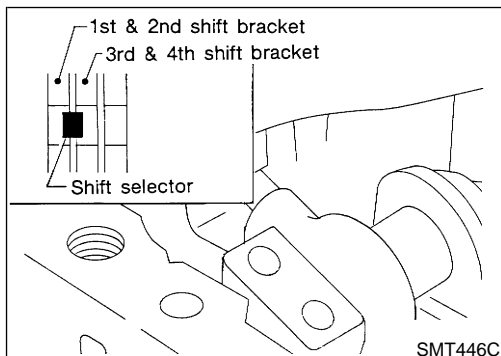
15. Hook reverse lock spring and reverse lever spring on reverse lever assembly.



16. Mesh 4th gear, then install reverse idler gear and shaft.
 - Pay attention to direction of tapped hole.



17. Place magnet on clutch housing.

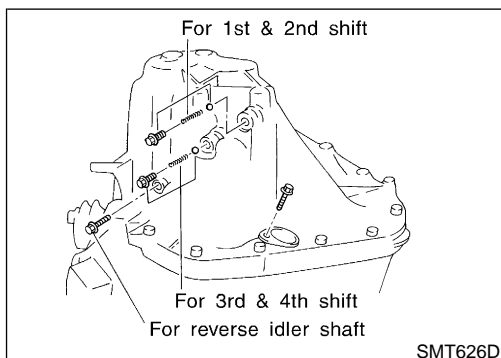


18. If bearing preload of mainshaft was adjusted, install selected shim(s) into transmission case.

- **To aid in installation of transmission case, place shift selector in the 1st and 2nd shift bracket or between 1st and 2nd bracket and 3rd and 4th bracket.**

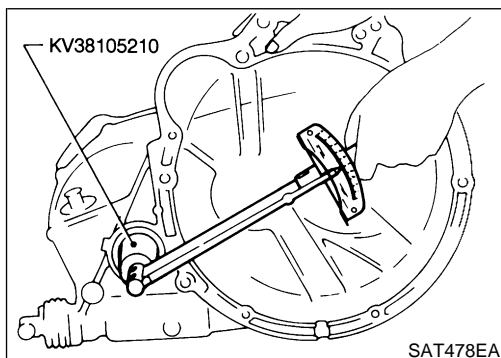
19. Apply sealant to mating surface of transmission case and install it. Refer to "Case Components", MT-62.

20. Install PNP switch.



21. Apply sealant to threads of check plugs. Install balls, springs and plugs. Refer to "Shift Control Components", MT-64.

22. After assembly, check that you can shift into each gear smoothly.



23. Measure total turning torque.

Total turning torque (New bearing):

8.8 - 21.6 N·m (90 - 220 kg·cm, 78 - 191 in·lb)


- **When old bearing is used again, preload will be slightly less than the above. Make sure torque is close to the specified range.**

General Specifications

NLMT0076

TRANSAXLE

NLMT0076S01

Applied model		QG18DE		
Model code number		8E009	8E069	
Transaxle model		RS5F70A		
Number of speeds		5		
Synchromesh type		Warner		
Shift pattern				
Gear ratio	1st	3.333		
	2nd	1.955		
	3rd	1.286		
	4th	0.926		
	5th	0.733		
	Reverse	3.214		
Number of teeth	Input gear	1st	15	
		2nd	22	
		3rd	28	
		4th	41	
		5th	45	
		Rev.	14	
	Main gear	1st	50	
		2nd	43	
		3rd	36	
		4th	38	
		5th	33	
		Rev.	45	
	Reverse idler gear		37	
	Oil capacity ℓ (Imp pt)		3.0 (5-1/4)	
Oil level (Reference data) mm (in)		56.5 - 61.0 (2.224 - 2.402)		
Remarks		1st & 2nd double baulk ring type synchronizer		
		Reverse sub-gear		

FINAL GEAR

NLMT0076S02

Engine		QG18DE
Transaxle model		RS5F70A
Final gear ratio		4.437
Number of teeth	Final gear/Pinion	71/16
	Side gear/Pinion mate gear	14/10

Gear End Play

NLMT0077
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	0.17 - 0.44 (0.0067 - 0.0173)

Clearance Coupling Sleeve

NLMT0094

1ST, 2ND, 3RD, 4TH, 5TH & REVERSE COUPLING SLEEVE

NLMT0094S01

Coupling sleeve	Length "L"
1st & 2nd	0 - 0.68 mm (0 - 0.0268 in)
3rd & 4th	0 - 0.95 mm (0 - 0.0374 in)
5th & Reverse	0 - 0.89 mm (0 - 0.0350 in)

Clearance Between Baulk Ring and Gear

NLMT0078

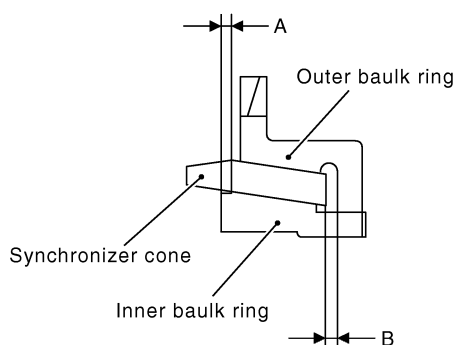
3RD, 4TH, 5TH, REVERSE BAULK RING

NLMT0078S01
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 DOUBLE BAULK RING

NLMT0078S02
Unit: mm (in)



SMT906D

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

NLMT0079

SNAP RING

NLMT0079S01

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

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

Available C-rings

NLMT0080

4TH INPUT GEAR C-RING

NLMT0080S01

End play	0 - 0.06 mm (0 - 0.0024 in)
Thickness mm (in)	Part number*
3.00 (0.1181)	32205-6J000
3.03 (0.1193)	32205-6J001
3.06 (0.1205)	32205-6J002
3.09 (0.1217)	32205-6J003
3.12 (0.1228)	32205-6J004

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

5TH INPUT GEAR REAR C-RING

NLMT0080S02

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

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

SERVICE DATA AND SPECIFICATIONS (SDS)

RS5F70A*Available C-rings (Cont'd)*

MAINSHAFT C-RING

NLMT0080S03

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

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

SERVICE DATA AND SPECIFICATIONS (SDS)

RS5F70A

Available Adjusting Shims

Available Adjusting Shims

INPUT SHAFT REAR BEARING ADJUSTING SHIM

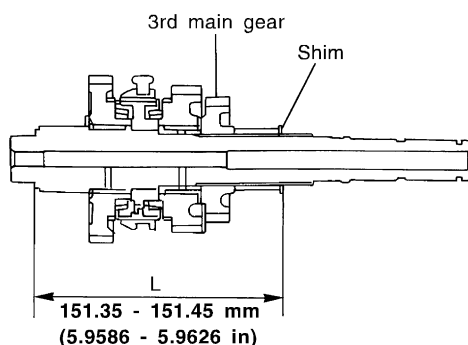
NLMT0081

NLMT0081S01

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

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

MAINSHAFT ADJUSTING SHIM

NLMT0081S02

SMT907D

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

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

MAINSHAFT REAR BEARING ADJUSTING SHIM

NLMT0081S03

End play	0 - 0.06 mm (0 - 0.0024 in)
Thickness mm (in)	Part number*
2.99 (0.1177)	32238-6J010
3.03 (0.1193)	32238-6J011
3.07 (0.1209)	32238-6J012
3.11 (0.1224)	32238-6J013
3.15 (0.1240)	32238-6J014
3.19 (0.1256)	32238-6J015
3.23 (0.1272)	32238-6J016
3.27 (0.1287)	32238-6J017
3.31 (0.1303)	32238-6J018
3.35 (0.1319)	32238-6J019
3.39 (0.1335)	32238-6J020
3.43 (0.1350)	32238-6J021
3.47 (0.1366)	32238-6J022
3.51 (0.1382)	32238-6J023

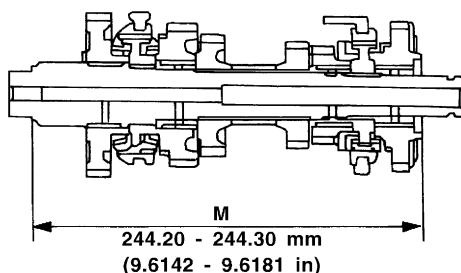
*: Always check with the parts department for the latest information.

Available Thrust Washer

NLMT0082

MAINSHAFT THRUST WASHER

NLMT0082S01



SMT843D

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

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

Available Washers

NLMT0083

DIFFERENTIAL SIDE GEAR THRUST WASHER

NLMT0083S01

Clearance between side gear and differential case	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

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

SERVICE DATA AND SPECIFICATIONS (SDS)

RS5F70A*Available Shims — Differential Side Bearing Preload and Adjusting Shim*

Available Shims — Differential Side Bearing Preload and Adjusting Shim

=NLMT0084

BEARING PRELOAD

NLMT0084S01
Unit: mm (in)

Differential side bearing preload: T*	0.15 - 0.21 (0.0059 - 0.0083)
---------------------------------------	-------------------------------

*: Install shims which are “deflection of differential case” + “T” in thickness.

DIFFERENTIAL SIDE BEARING ADJUSTING SHIMS

NLMT0084S02

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.

SERVICE DATA AND SPECIFICATIONS (SDS)

RS5F50A

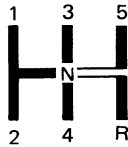
General Specifications

General Specifications

NLMT0024

TRANSAXLE

NLMT0024S01

Applied model		YD22DDTi		
Model code number		4U107		
Transaxle model		RS5F50A		
Number of speeds		5		
Synchromesh type		Warner		
Shift pattern				
Gear ratio	1st	3.400		
	2nd	1.955		
	3rd	1.206		
	4th	0.829		
	5th	0.641		
	Reverse	3.428		
Number of teeth	Input gear	1st	15	
		2nd	22	
		3rd	29	
		4th	47	
		5th	53	
		Rev.	14	
	Main gear	1st	51	
		2nd	32	
		3rd	35	
		4th	39	
		5th	34	
		Rev.	48	
	Reverse idler gear		29	
	Oil capacity ℓ (US pt, Imp pt)		4.5 - 4.8 (9-1/2 - 10-1/8, 7-7/8 - 8-1/2)	
Remarks		1st & 2nd double baulk ring type synchronizer		

FINAL GEAR

NLMT0024S02

Engine		YD22DDTi	
Transaxle model		RS5F50A	
Final gear ratio		3.823	
Number of teeth	Final gear/Pinion	65/17	
	Side gear/Pinion	14/10	

Gear End Play

NLMT0025
Unit: mm (in)

Gear	End play
1st main gear	0.23 - 0.43 (0.0091 - 0.0169)
2nd main gear	0.23 - 0.58 (0.0091 - 0.0228)
3rd input gear	0.23 - 0.43 (0.0091 - 0.0169)
4th input gear	0.25 - 0.55 (0.0098 - 0.0217)
5th input gear	0.23 - 0.48 (0.0091 - 0.0189)

Clearance Between Baulk Ring and Gear

NLMT0026

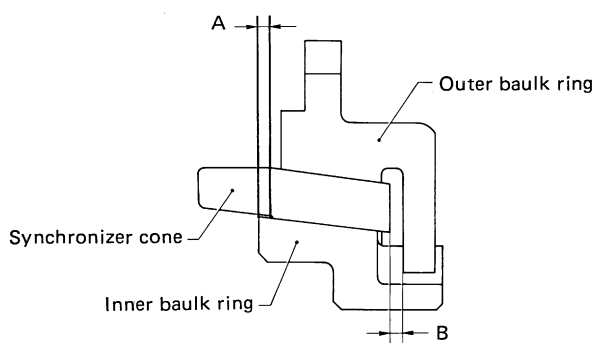
3RD, 4TH & 5TH BAULK RING

NLMT0026S01
Unit: mm (in)

Gear	Standard	Wear limit
3rd, 4th & 5th	1.0 - 1.35 (0.0394 - 0.0531)	0.7 (0.028)

1ST AND 2ND DOUBLE BAULK RING

NLMT0026S02
Unit: mm (in)

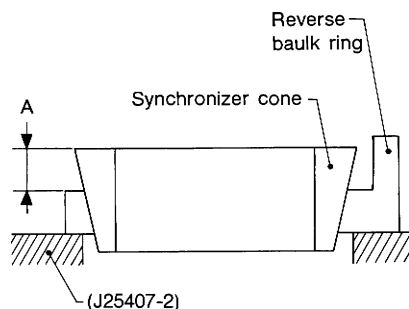


SMT806B

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)	

REVERSE BAULK RING

NLMT0026S03



SMT581B

Dimension	Wear limit
A	1.2 mm (0.047 in)

Available Snap Rings

Available Snap Rings

=NLMT0027

1ST & 2ND SYNCHRONIZER HUB (AT MAINSHAFT)

NLMT0027S01

Allowable clearance	0 - 0.1 mm (0 - 0.004 in)
Thickness mm (in)	Part number*
1.95 (0.0768)	32269-03E03
2.00 (0.0787)	32269-03E00
2.05 (0.0807)	32269-03E01
2.10 (0.0827)	32269-03E02

*: Always check with the Parts Department for the latest parts information.

3RD & 4TH SYNCHRONIZER HUB (AT INPUT SHAFT)

NLMT0027S02

Allowable clearance	0 - 0.1 mm (0 - 0.004 in)
Thickness mm (in)	Part number*
1.95 (0.0768)	32269-03E03
2.00 (0.0787)	32269-03E00
2.05 (0.0807)	32269-03E01
2.10 (0.0827)	32269-03E02

*: Always check with the Parts Department for the latest parts information.

5TH MAIN GEAR (AT MAINSHAFT)

NLMT0027S03

Allowable clearance	0 - 0.15 mm (0 - 0.0059 in)
Thickness mm (in)	Part number*
1.95 (0.0768)	32348-05E00
2.05 (0.0807)	32348-05E01
2.15 (0.0846)	32348-05E02
2.25 (0.0886)	32348-05E03

*: Always check with the Parts Department for the latest parts information.

Available Thrust Washer

NLMT0028

4TH INPUT GEAR (AT INPUT SHAFT)

NLMT0028S01

Allowable clearance	0 - 0.06 mm (0 - 0.0024 in)
Thickness mm (in)	Part number*
4.500 (0.1772)	32278-03E01
4.525 (0.1781)	32278-03E02
4.550 (0.1791)	32278-03E03
4.575 (0.1801)	32278-03E04

*: Always check with the Parts Department for the latest parts information.

DIFFERENTIAL SIDE GEAR THRUST WASHER

NLMT0028S02

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-E3020
0.80 - 0.85 (0.0315 - 0.0335)	38424-E3021
0.85 - 0.90 (0.0335 - 0.0354)	38424-E3022
0.90 - 0.95 (0.0354 - 0.0374)	38424-E3023

*: Always check with the Parts Department for the latest parts information.

SERVICE DATA AND SPECIFICATIONS (SDS)

RS5F50A

Available Shims

Available Shims

— INPUT SHAFT END PLAY AND MAINSHAFT AND DIFFERENTIAL SIDE BEARING PRELOAD AND ADJUSTING SHIM =NLMT0029

BEARING PRELOAD AND END PLAY

NLMT0029S01
Unit: mm (in)

Mainshaft bearing preload	0.06 - 0.11 (0.0024 - 0.0043)
Input shaft end play	0 - 0.05 (0 - 0.0020)
Differential side bearing preload	0.40 - 0.45 (0.0157 - 0.0177)

TOTAL TURNING TORQUE (NEW BEARING)

NLMT0029S02
Unit: N·m (kg·cm, in·lb)

Total turning torque (new bearing)	8.8 - 21.6 (90 - 220, 78 - 191)
------------------------------------	---------------------------------

MAINSHAFT BEARING ADJUSTING SHIM

NLMT0029S03

Thickness mm (in)	Part number*
0.40 (0.0157)	32139-03E11
0.44 (0.0173)	32139-03E00
0.48 (0.0189)	32139-03E01
0.52 (0.0205)	32139-03E12
0.56 (0.0220)	32139-03E02
0.60 (0.0236)	32139-03E03
0.64 (0.0252)	32139-03E04
0.68 (0.0268)	32139-03E05
0.72 (0.0283)	32139-03E06
0.76 (0.0299)	32139-03E07
0.80 (0.0315)	32139-03E08
1.20 (0.0472)	32139-03E13

*: Always check with the Parts Department for the latest parts information.

TABLE FOR SELECTING MAINSHAFT BEARING ADJUSTING SHIM(S)

NLMT0029S04
Unit: mm (in)

Dimension "C"	Suitable shim(s)
0.30 - 0.34 (0.0118 - 0.0134)	0.40 (0.0157)
0.34 - 0.38 (0.0134 - 0.0150)	0.44 (0.0173)
0.38 - 0.42 (0.0150 - 0.0165)	0.48 (0.0189)
0.42 - 0.46 (0.0165 - 0.0181)	0.52 (0.0205)
0.46 - 0.50 (0.0181 - 0.0197)	0.56 (0.0220)
0.50 - 0.54 (0.0197 - 0.0213)	0.60 (0.0236)
0.54 - 0.58 (0.0213 - 0.0228)	0.64 (0.0252)
0.58 - 0.62 (0.0228 - 0.0244)	0.68 (0.0268)
0.62 - 0.66 (0.0244 - 0.0260)	0.72 (0.0283)
0.66 - 0.70 (0.0260 - 0.0276)	0.76 (0.0299)
0.70 - 0.74 (0.0276 - 0.0291)	0.80 (0.0315)
0.74 - 0.78 (0.0291 - 0.0307)	0.40 + 0.44 (0.0157 + 0.0173)
0.78 - 0.82 (0.0307 - 0.0323)	0.44 + 0.44 (0.0173 + 0.0173)
0.82 - 0.86 (0.0323 - 0.0339)	0.44 + 0.48 (0.0173 + 0.0189)
0.86 - 0.90 (0.0339 - 0.0354)	0.48 + 0.48 (0.0189 + 0.0189)
0.90 - 0.94 (0.0354 - 0.0370)	0.48 + 0.52 (0.0189 + 0.0205)
0.94 - 0.98 (0.0370 - 0.0386)	0.52 + 0.52 (0.0205 + 0.0205)
0.98 - 1.02 (0.0386 - 0.0402)	0.52 + 0.56 (0.0205 + 0.0220)
1.02 - 1.06 (0.0402 - 0.0417)	0.56 + 0.56 (0.0220 + 0.0220)
1.06 - 1.10 (0.0417 - 0.0433)	0.56 + 0.60 (0.0220 + 0.0236)
1.10 - 1.14 (0.0433 - 0.0449)	0.60 + 0.60 (0.0236 + 0.0236)
1.14 - 1.18 (0.0449 - 0.0465)	0.60 + 0.64 (0.0236 + 0.0252)
1.18 - 1.22 (0.0465 - 0.0480)	0.64 + 0.64 (0.0252 + 0.0252)
1.22 - 1.26 (0.0480 - 0.0496)	0.64 + 0.68 (0.0252 + 0.0268)
1.26 - 1.30 (0.0496 - 0.0512)	0.68 + 0.68 (0.0268 + 0.0268)
1.30 - 1.34 (0.0512 - 0.0528)	0.68 + 0.72 (0.0268 + 0.0283)
1.34 - 1.38 (0.0528 - 0.0543)	0.72 + 0.72 (0.0283 + 0.0283)
1.38 - 1.42 (0.0543 - 0.0559)	0.72 + 0.76 (0.0283 + 0.0299)
1.42 - 1.46 (0.0559 - 0.0575)	0.76 + 0.76 (0.0299 + 0.0299)
1.46 - 1.50 (0.0575 - 0.0591)	0.76 + 0.80 (0.0299 + 0.0315)

SERVICE DATA AND SPECIFICATIONS (SDS)

RS5F50A

Available Shims (Cont'd)

INPUT SHAFT BEARING ADJUSTING SHIM

NLMT0029S05

Thickness mm (in)	Part number*
0.40 (0.0157)	32225-08E00
0.44 (0.0173)	32225-08E01
0.48 (0.0189)	32225-08E02
0.52 (0.0205)	32225-08E03
0.56 (0.0220)	32225-08E04
0.60 (0.0236)	32225-08E05
0.64 (0.0252)	32225-08E06
0.68 (0.0268)	32225-08E07
0.72 (0.0283)	32225-08E08
0.76 (0.0299)	32225-08E09
0.80 (0.0315)	32225-08E10
1.20 (0.0472)	32225-08E11

*: Always check with the Parts Department for the latest parts information.

TABLE FOR SELECTING INPUT SHAFT BEARING ADJUSTING SHIM(S)

NLMT0029S06
Unit: mm (in)

Dial indicator indication	Suitable shim(s)
0.65 - 0.69 (0.0256 - 0.0272)	0.64 (0.0252)
0.69 - 0.73 (0.0272 - 0.0287)	0.68 (0.0268)
0.73 - 0.77 (0.0287 - 0.0303)	0.72 (0.0283)
0.77 - 0.81 (0.0303 - 0.0319)	0.76 (0.0299)
0.81 - 0.85 (0.0319 - 0.0335)	0.80 (0.0315)
0.85 - 0.89 (0.0335 - 0.0350)	0.40 + 0.44 (0.0157 + 0.0173)
0.89 - 0.93 (0.0350 - 0.0366)	0.44 + 0.44 (0.0173 + 0.0173)
0.93 - 0.97 (0.0366 - 0.0382)	0.44 + 0.48 (0.0173 + 0.0189)
0.97 - 1.01 (0.0382 - 0.0398)	0.48 + 0.48 (0.0189 + 0.0189)
1.01 - 1.05 (0.0398 - 0.0413)	0.48 + 0.52 (0.0189 + 0.0205)
1.05 - 1.09 (0.0413 - 0.0429)	0.52 + 0.52 (0.0205 + 0.0205)
1.09 - 1.13 (0.0429 - 0.0445)	0.52 + 0.56 (0.0205 + 0.0220)
1.13 - 1.17 (0.0445 - 0.0461)	0.56 + 0.56 (0.0220 + 0.0220)
1.17 - 1.21 (0.0461 - 0.0476)	0.56 + 0.60 (0.0220 + 0.0236)
1.21 - 1.25 (0.0476 - 0.0492)	0.60 + 0.60 (0.0236 + 0.0236)
1.25 - 1.29 (0.0492 - 0.0508)	0.60 + 0.64 (0.0236 + 0.0252)
1.29 - 1.33 (0.0508 - 0.0524)	0.64 + 0.64 (0.0252 + 0.0252)
1.33 - 1.37 (0.0524 - 0.0539)	0.64 + 0.68 (0.0252 + 0.0268)
1.37 - 1.41 (0.0539 - 0.0555)	0.68 + 0.68 (0.0268 + 0.0268)
1.41 - 1.45 (0.0555 - 0.0571)	0.68 + 0.72 (0.0268 + 0.0283)
1.45 - 1.49 (0.0571 - 0.0587)	0.72 + 0.72 (0.0283 + 0.0283)
1.49 - 1.53 (0.0587 - 0.0602)	0.72 + 0.76 (0.0283 + 0.0299)
1.53 - 1.57 (0.0602 - 0.0618)	0.76 + 0.76 (0.0299 + 0.0299)
1.57 - 1.61 (0.0618 - 0.0634)	0.76 + 0.80 (0.0299 + 0.0315)
1.61 - 1.65 (0.0634 - 0.0650)	0.80 + 0.80 (0.0315 + 0.0315)
1.65 - 1.69 (0.0650 - 0.0665)	0.44 + 1.20 (0.0173 + 0.0472)

DIFFERENTIAL SIDE BEARING ADJUSTING SHIM

NLMT0029S07

Thickness mm (in)	Part number*
0.40 (0.0157)	38453-96E00
0.44 (0.0173)	38453-96E01
0.48 (0.0189)	38453-96E02
0.52 (0.0205)	38453-96E03
0.56 (0.0220)	38453-96E04
0.60 (0.0236)	38453-96E05
0.64 (0.0252)	38453-96E06
0.68 (0.0268)	38453-96E07
0.72 (0.0283)	38453-96E08
0.76 (0.0299)	38453-96E09
0.80 (0.0315)	38453-96E10
0.84 (0.0331)	38453-96E11
0.88 (0.0346)	38453-96E12
1.20 (0.0472)	38453-96E13

*: Always check with the Parts Department for the latest parts information.

SERVICE DATA AND SPECIFICATIONS (SDS)

RS5F50A

Available Shims (Cont'd)

TABLE FOR SELECTING DIFFERENTIAL SIDE BEARING ADJUSTING SHIM(S)

=NLMT0029S08
Unit: mm (in)

Dial indicator deflection	Suitable shim(s)
0.47 - 0.51 (0.0185 - 0.0201)	0.44 + 0.48 (0.0173 + 0.0189)
0.51 - 0.55 (0.0201 - 0.0217)	0.48 + 0.48 (0.0189 + 0.0189)
0.55 - 0.59 (0.0217 - 0.0232)	0.48 + 0.52 (0.0189 + 0.0205)
0.59 - 0.63 (0.0232 - 0.0248)	0.52 + 0.52 (0.0205 + 0.0205)
0.63 - 0.67 (0.0248 - 0.0264)	0.52 + 0.56 (0.0205 + 0.0220)
0.67 - 0.71 (0.0264 - 0.0280)	0.56 + 0.56 (0.0220 + 0.0220)
0.71 - 0.75 (0.0280 - 0.0295)	0.56 + 0.60 (0.0220 + 0.0236)
0.75 - 0.79 (0.0295 - 0.0311)	0.60 + 0.60 (0.0236 + 0.0236)
0.79 - 0.83 (0.0311 - 0.0327)	0.60 + 0.64 (0.0236 + 0.0252)
0.83 - 0.87 (0.0327 - 0.0343)	0.64 + 0.64 (0.0252 + 0.0252)
0.87 - 0.91 (0.0343 - 0.0358)	0.64 + 0.68 (0.0252 + 0.0268)
0.91 - 0.95 (0.0358 - 0.0374)	0.68 + 0.68 (0.0268 + 0.0268)
0.95 - 0.99 (0.0374 - 0.0390)	0.68 + 0.72 (0.0268 + 0.0283)
0.99 - 1.03 (0.0390 - 0.0406)	0.72 + 0.72 (0.0283 + 0.0283)
1.03 - 1.07 (0.0406 - 0.0421)	0.72 + 0.76 (0.0283 + 0.0299)
1.07 - 1.11 (0.0421 - 0.0437)	0.76 + 0.76 (0.0299 + 0.0299)
1.11 - 1.15 (0.0437 - 0.0453)	0.76 + 0.80 (0.0299 + 0.0315)
1.15 - 1.19 (0.0453 - 0.0469)	0.80 + 0.80 (0.0315 + 0.0315)
1.19 - 1.23 (0.0469 - 0.0484)	0.44 + 1.20 (0.0173 + 0.0472)
1.23 - 1.27 (0.0484 - 0.0500)	0.48 + 1.20 (0.0189 + 0.0472)
1.27 - 1.31 (0.0500 - 0.0516)	0.52 + 1.20 (0.0205 + 0.0472)

SERVICE DATA AND SPECIFICATIONS (SDS)

Available Shims (Cont'd)
