

SECTION MT

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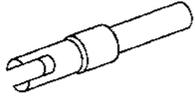
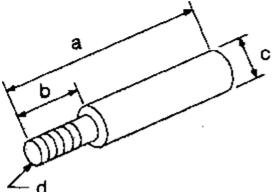
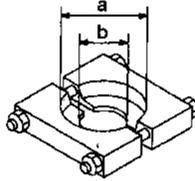
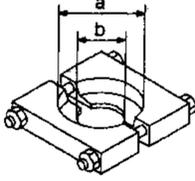
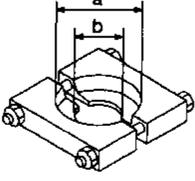
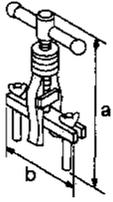
PREPARATION

Special Service Tools

Special Service Tools

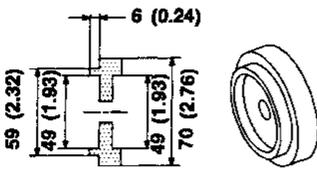
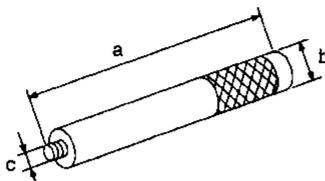
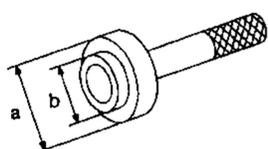
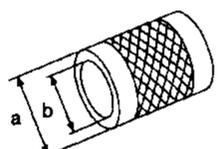
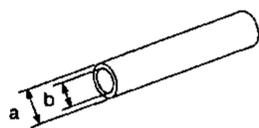
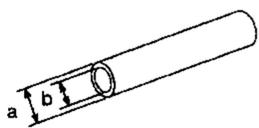
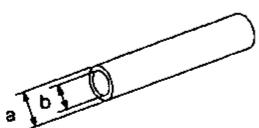
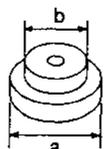
NCMT0001

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
KV38107700 (J39027) 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 (J34291-A) 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 (J25689-A) Pin punch	 <p>NT410</p> <p>Removing and installing retaining pin a: 4 mm (0.16 in) dia.</p>
ST22730000 (J25681) Puller	 <p>NT411</p> <p>Removing 5th main gear a: 82 mm (3.23 in) dia. b: 30 mm (1.18 in) dia.</p>
ST30031000 (J22912-01) Puller	 <p>NT411</p> <p>Removing differential side bearing inner race (F32A and clutch housing side of F32V) Removing 3rd and 4th synchronizer Measuring wear of 2nd & 3rd baulk ring a: 90 mm (3.54 in) dia. b: 50 mm (1.97 in) dia.</p>
ST30021000 (J22912-01) Puller	 <p>NT411</p> <p>Removing 5th synchronizer a: 110 mm (4.33 in) dia. b: 68 mm (2.68 in) dia.</p>
ST33290001 (J34286) Puller	 <p>NT414</p> <p>Removing differential oil seal Removing differential side bearing outer race Removing mainshaft front bearing a: 250 mm (9.84 in) b: 160 mm (6.30 in)</p>

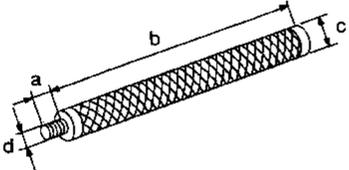
PREPARATION

Special Service Tools (Cont'd)

Tool number (Kent-Moore No.) Tool name	Description	
KV31103000 (—) Drift		Installing differential oil seal (F32A and clutch housing side of F32V) (Use with ST35325000.)
NT106		GI MA EM
ST35325000 (—) Drift handle		Installing differential oil seal (Use with KV31103000.) a: 215 mm (8.46 in) b: 25 mm (0.98 in) dia. c: M12 x 1.5P
NT417		LC EC FE
KV38102100 (J25803-01) Drift		Installing input shaft rear bearing a: 44 mm (1.73 in) dia. b: 24.5 mm (0.965 in) dia.
NT427		CL MT
ST33200000 (J26082) Drift		Installing mainshaft front bearing a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia.
NT091		AT AX SU
ST22350000 (J25678-01) Drift		Installing input shaft front bearing a: 34 mm (1.34 in) dia. b: 28 mm (1.10 in) dia.
NT065		BR ST
ST22452000 (J34335) Drift		Installing 1st & 2nd synchronizer Installing 3rd & 4th synchronizer Installing 5th main gear a: 45 mm (1.77 in) dia. b: 36 mm (1.42 in) dia.
NT065		RS BT
ST37750000 (J25863-01) Drift		Installing input shaft oil seal Installing 5th synchronizer Installing mainshaft rear bearing Installing 5th main gear a: 40 mm (1.57 in) dia. b: 31 mm (1.22 in) dia.
NT065		HA SC
ST30621000 (J25742-5) Drift		Installing differential side bearing outer race (F32A and D/F case side of F32V) (Use with ST30611000.) a: 79 mm (3.11 in) dia. b: 59 mm (2.32 in) dia.
NT073		EL IDX

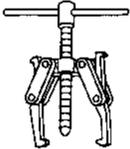
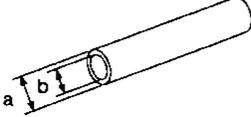
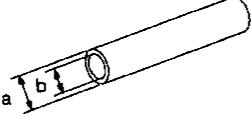
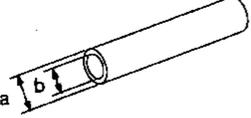
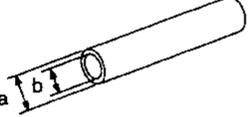
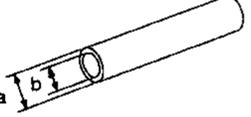
PREPARATION

Special Service Tools (Cont'd)

Tool number (Kent-Moore No.) Tool name	Description	
ST30611000 (J25742-1) Drift handle		Installing differential side bearing outer race (Use with ST30621000.) a: 15 mm (0.59 in) b: 335 mm (13.19 in) c: 25 mm (0.98 in) dia. d: M12 × 1.5P
	NT419	

Commercial Service Tools

NCMT0002

Tool name	Description	
Puller		Removing mainshaft rear bearing Removing input shaft front bearing
	NT077	
Drift		Installing differential side bearing inner race (F32A and clutch housing side of F32V) a: 56 mm (2.20 in) dia. b: 50.5 mm (1.988 in) dia.
	NT065	
Drift		Installing striking rod oil seal a: 38 mm (1.50 in) dia. b: 32 mm (1.26 in) dia.
	NT065	
Drift		Installing differential oil seal (F32V T/M case side) a: 88 mm (3.46 in) dia. b: 72 mm (2.83 in) dia.
	NT065	
Drift		Installing differential side bearing outer race (F32V viscous coupling side) a: 104 mm (4.09 in) dia. b: 98 mm (3.86 in) dia.
	NT065	
Drift		Installing differential side bearing inner race (F32V viscous coupling side) a: 91 mm (3.58 in) dia. b: 81 mm (3.19 in) dia.
	NT065	

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

NVH Troubleshooting Chart

NCMT0003S01

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

Symptom	Reference page	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)	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)
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			

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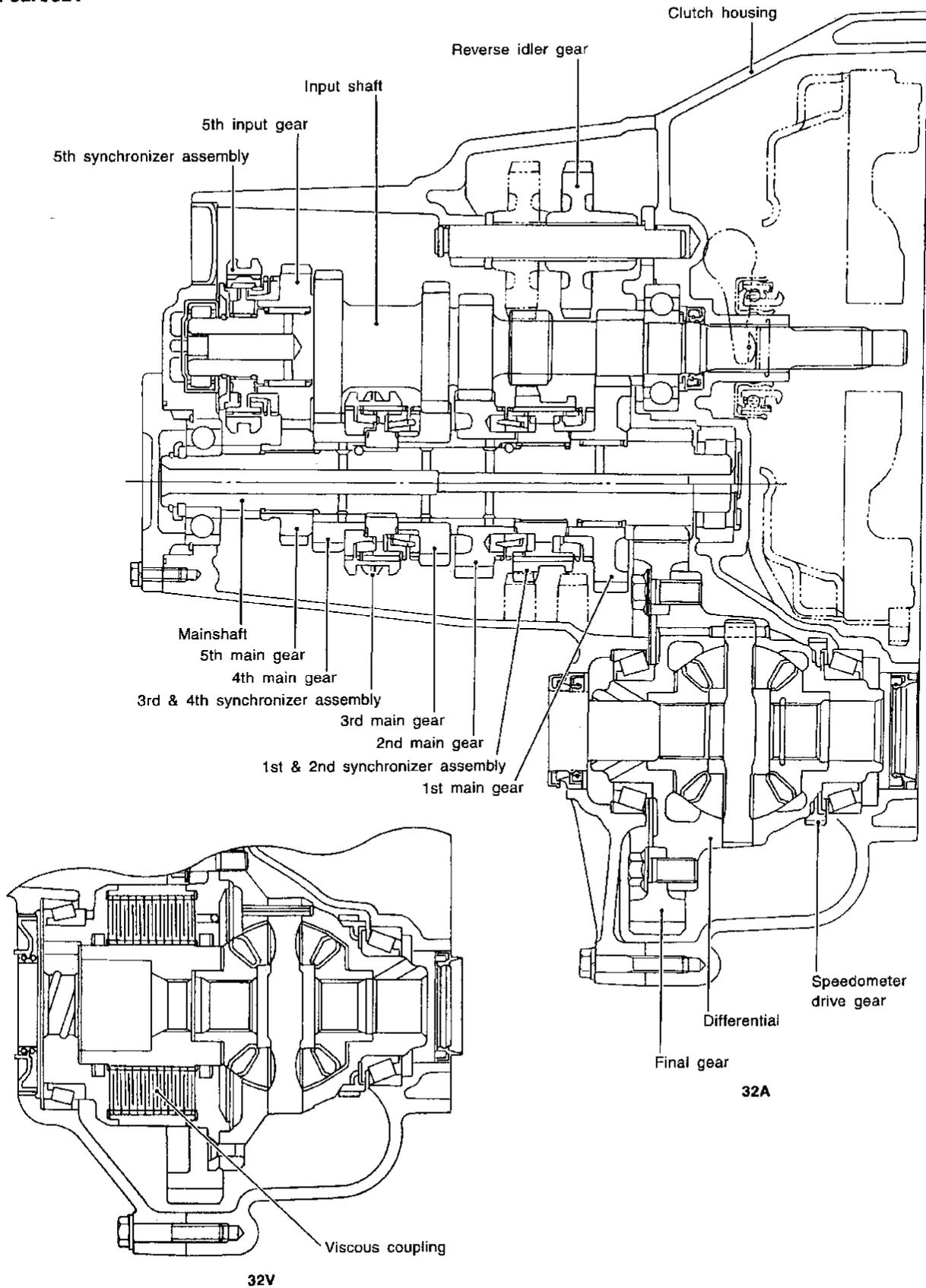
DESCRIPTION

Cross-sectional View

Cross-sectional View

NCMT0004S01

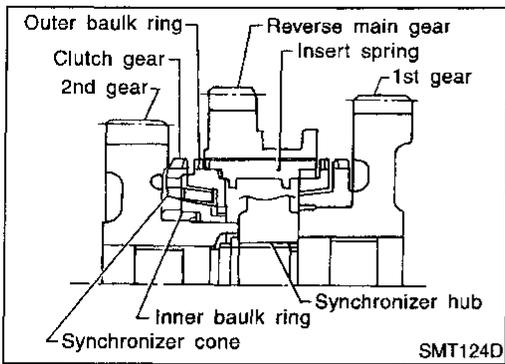
RS5F32A/32V



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DESCRIPTION

Cross-sectional View (Cont'd)



DOUBLE-CONE SYNCHRONIZER

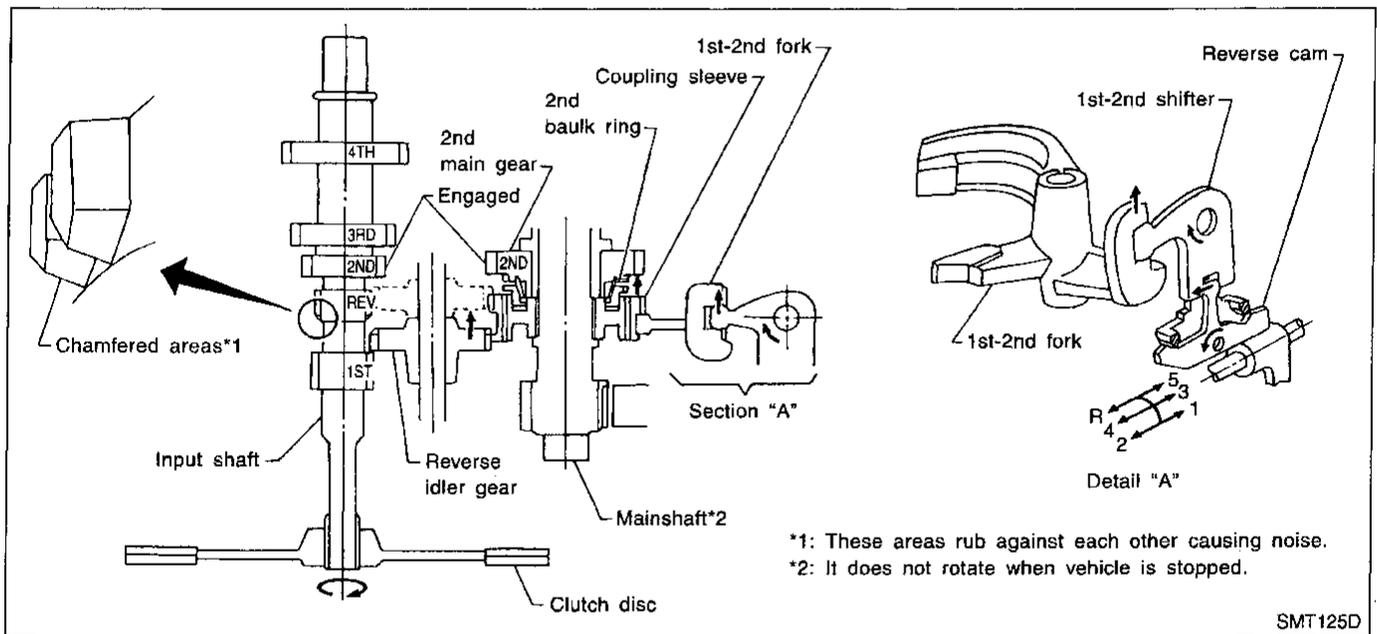
NCMT0004S0101

Double-cone synchronizer is adopted for 2nd and 3rd gears to reduce operating force of the shift lever.

REVERSE BRAKE MECHANISM

NCMT0004S0102

When shifting into reverse gear, the input shaft which is rotating by inertia is stopped to prevent the interference (gear noise) between the reverse idler gear and the chamfered area of the input shaft, thus improving gear shift performance.



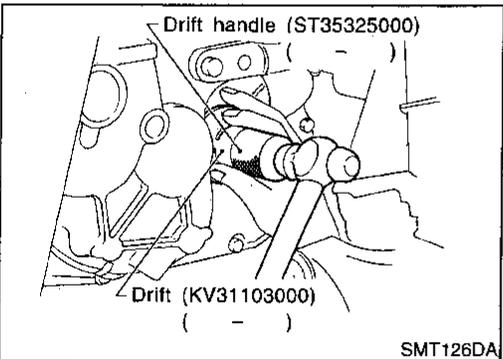
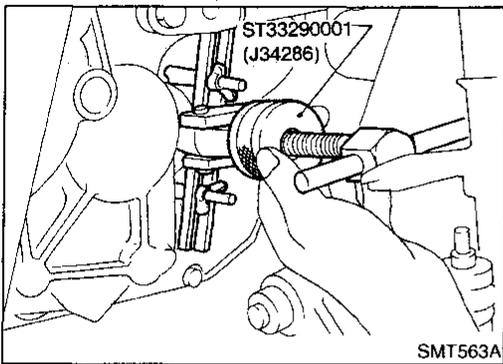
*1: These areas rub against each other causing noise.
*2: It does not rotate when vehicle is stopped.

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ON-VEHICLE SERVICE

Replacing Oil Seal



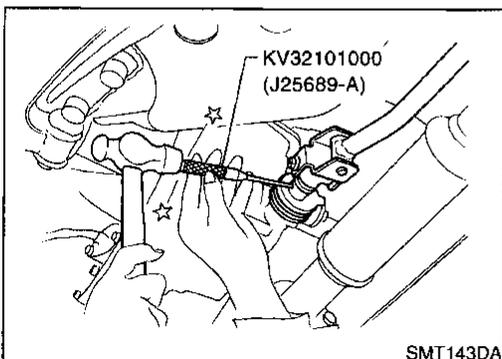
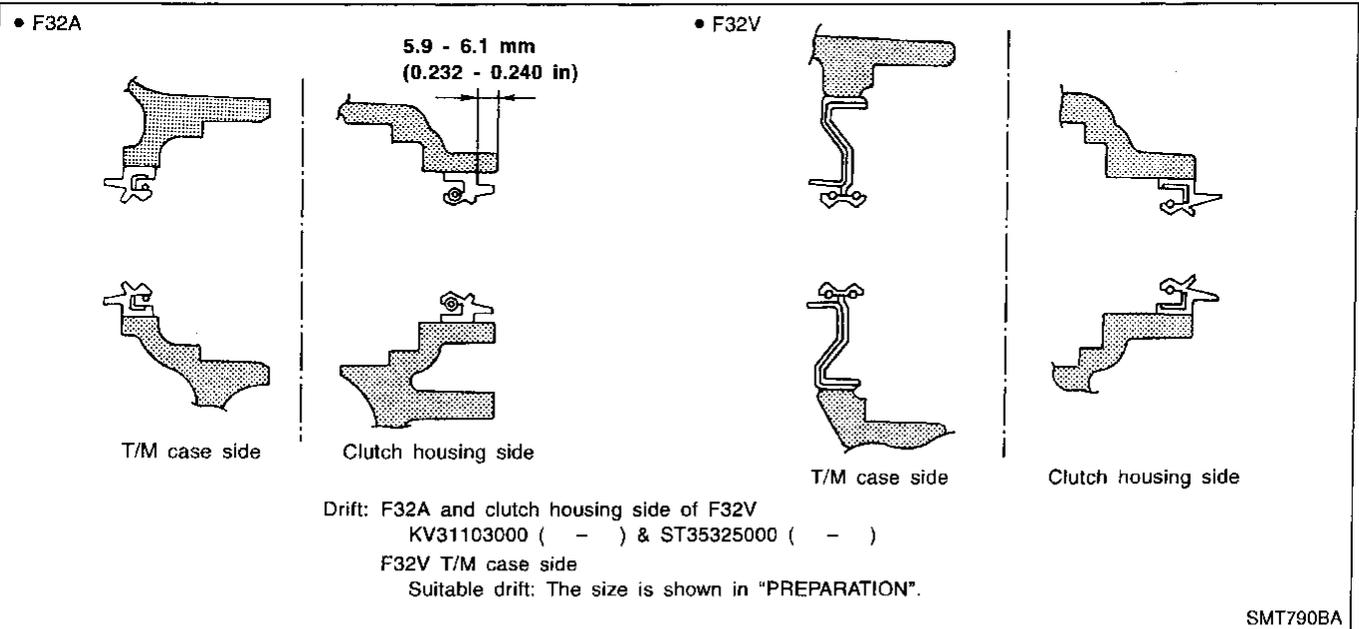
Replacing Oil Seal

DIFFERENTIAL OIL SEAL

NCMT0005

NCMT0005S01

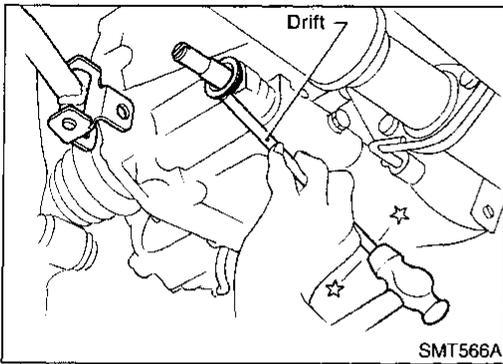
1. Drain gear oil from transaxle.
2. Remove drive shafts. Refer to AX section ("REMOVAL", "FRONT AXLE — Drive Shaft").
3. Remove differential oil seal.
4. Install differential oil seal.
 - **Apply multi-purpose grease to seal lip of oil seal before installing.**
5. Install drive shafts. Refer to AX section ("INSTALLATION", "FRONT AXLE — Drive Shaft").



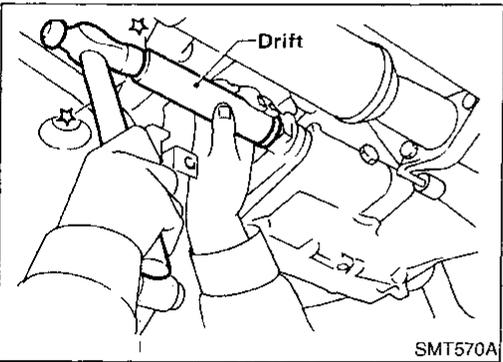
STRIKING ROD OIL SEAL

NCMT0005S02

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

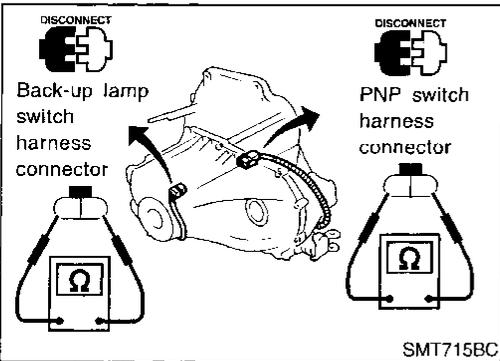


3. Remove striking rod oil seal.



4. Install striking rod oil seal.

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



Position Switch Check BACK-UP LAMP SWITCH

NCMT0006

NCMT0006S01

- Check continuity.

Gear position	Continuity
Reverse	Yes
Except reverse	No

PARK/NEUTRAL POSITION SWITCH

NCMT0006S02

- Check continuity.

Gear position	Continuity
Neutral	Yes
Except Neutral	No

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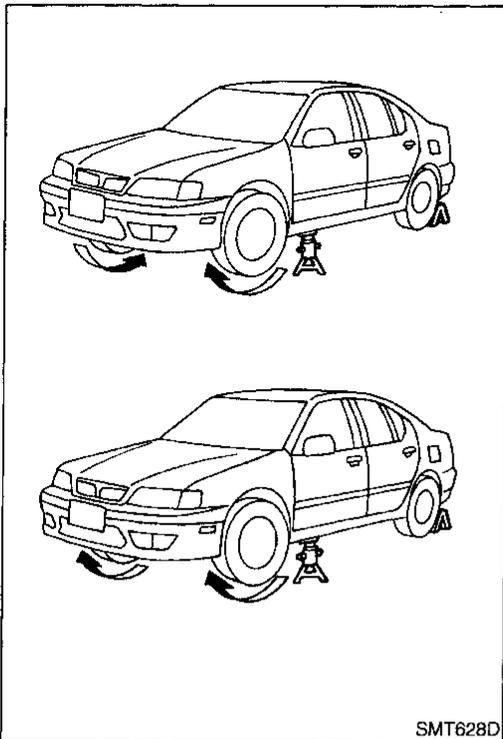
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ON-VEHICLE SERVICE

Viscous Coupling Check



Viscous Coupling Check

NCMT0035

1. Apply parking brake firmly and place shift lever in the neutral position.
2. Jack up front wheels.
3. Rotate one front wheel and check turning direction of the other front wheel.

Turning direction of the two wheels is opposite:

The viscous coupling is not functioning normally.

Turning direction of the two wheels is the same:

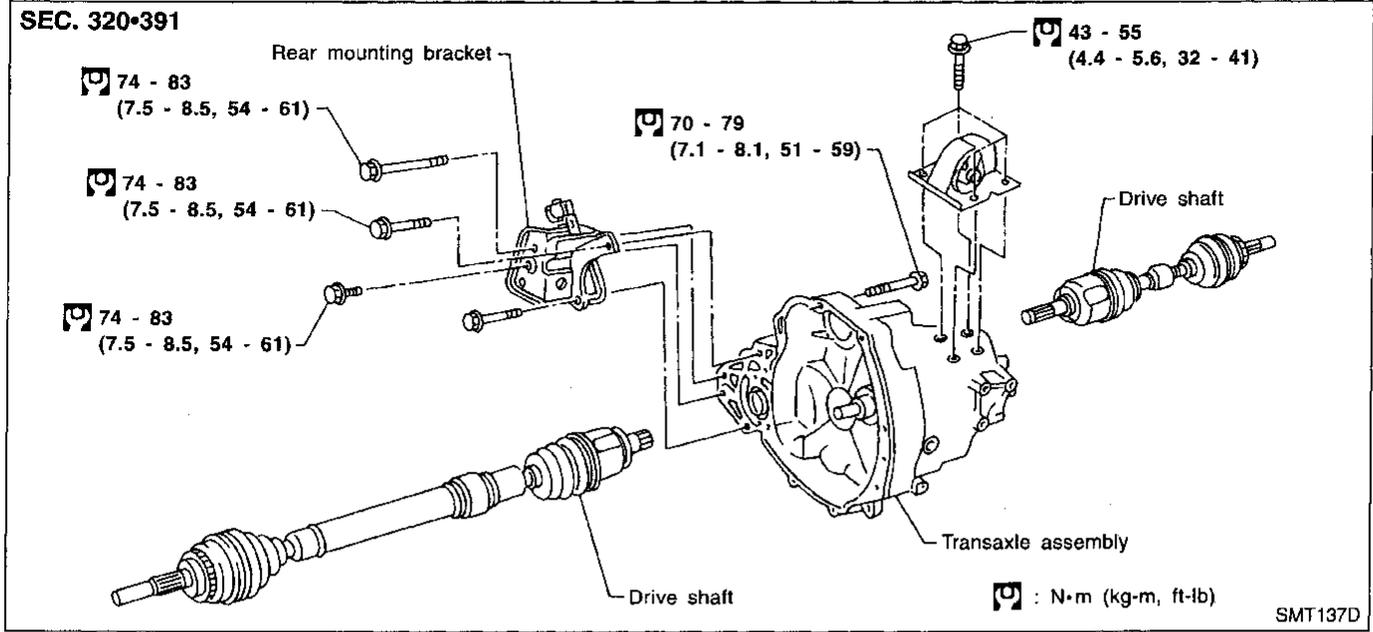
If differential side gear and pinion mate gear thrust washers are OK, viscous coupling is functioning normally.

REMOVAL AND INSTALLATION

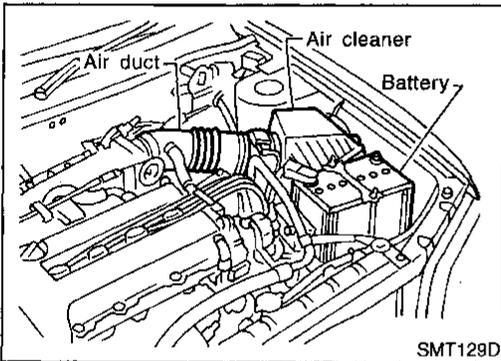
Removal

Removal

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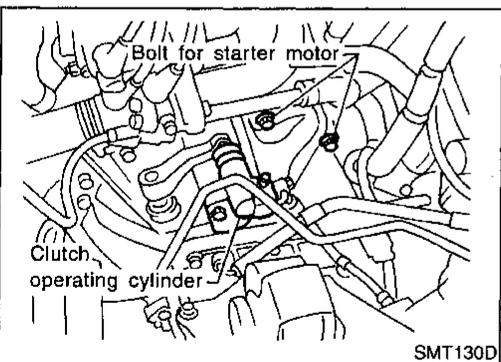


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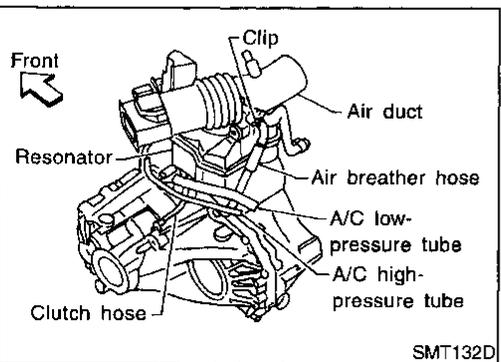
1. Remove battery negative terminal.
2. Remove air cleaner and air duct.
3. Remove clutch operating cylinder from transaxle. Refer to CL section ("Removal", "OPERATING CYLINDER").
4. Disconnect back-up lamp switch, speedometer sensor, PNP switch and ground harness connectors.

AT
AX



5. Remove starter motor from transaxle.

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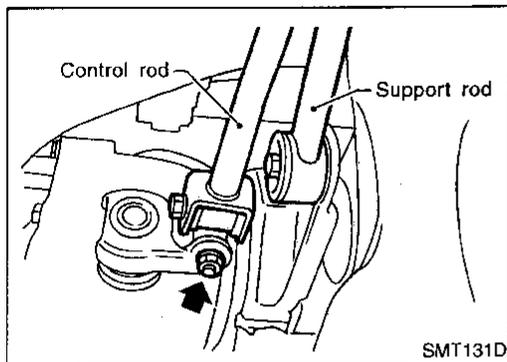


6. Remove air bleeder hose.

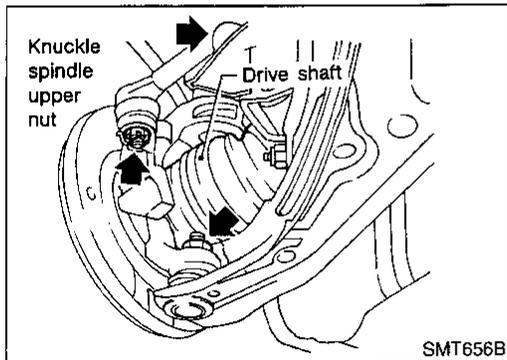
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REMOVAL AND INSTALLATION

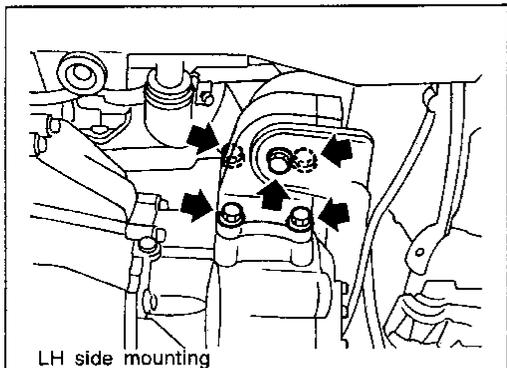
Removal (Cont'd)



7. Remove shift control rod from transaxle.
8. Drain gear oil from transaxle.
9. Remove exhaust front tube.



10. Draw out drive shafts from transaxle. Refer to AX section ("REMOVAL", "FRONT AXLE — Drive Shaft").

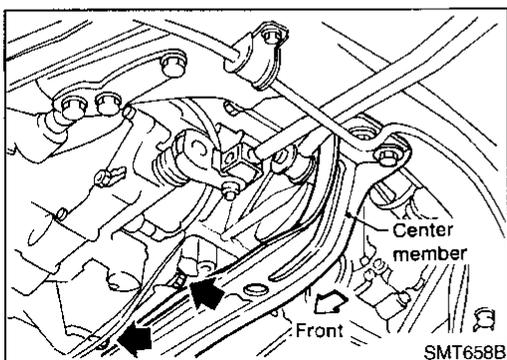
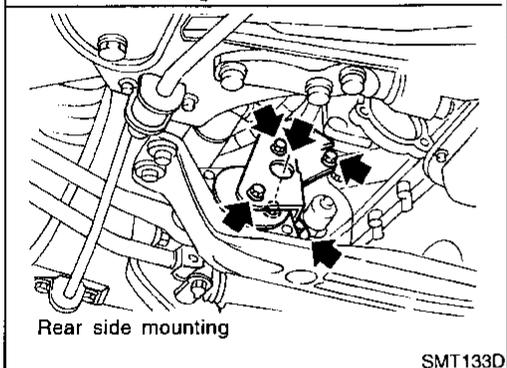


11. Support engine by placing a jack under oil pan.

CAUTION:

Do not place jack under oil pan drain plug.

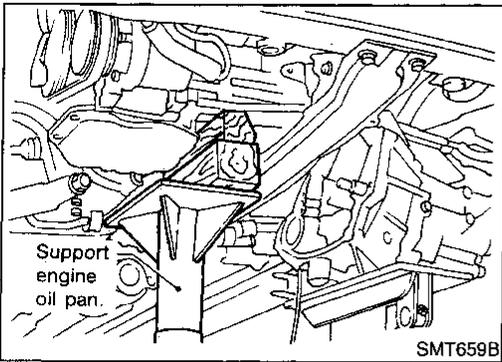
12. Remove LH side and rear side mounting bolts.



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

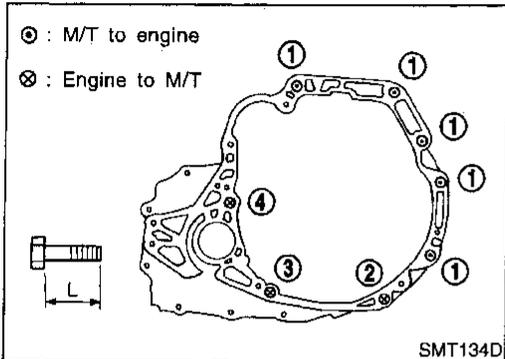
REMOVAL AND INSTALLATION

Removal (Cont'd)



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

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Installation

- Tighten bolts securing transaxle and install any part removed.
- Tighten starter motor bolts.

NCMT0007S02

: 41 - 52 N·m (4.2 - 5.3 kg·m, 30 - 38 ft·lb)

Bolt No.	1	2	3	4
Q'ty	5	1		
L in mm (in)	55 (2.17)	35 (1.38)	45 (1.77)	65 (2.56)
Tightening torque N·m (kg·m, ft·lb)	70 - 79 (7.1 - 8.1, 51 - 59)	30 - 40 (3.1 - 4.1, 22 - 30)		70 - 79 (7.1 - 8.1, 51 - 59)

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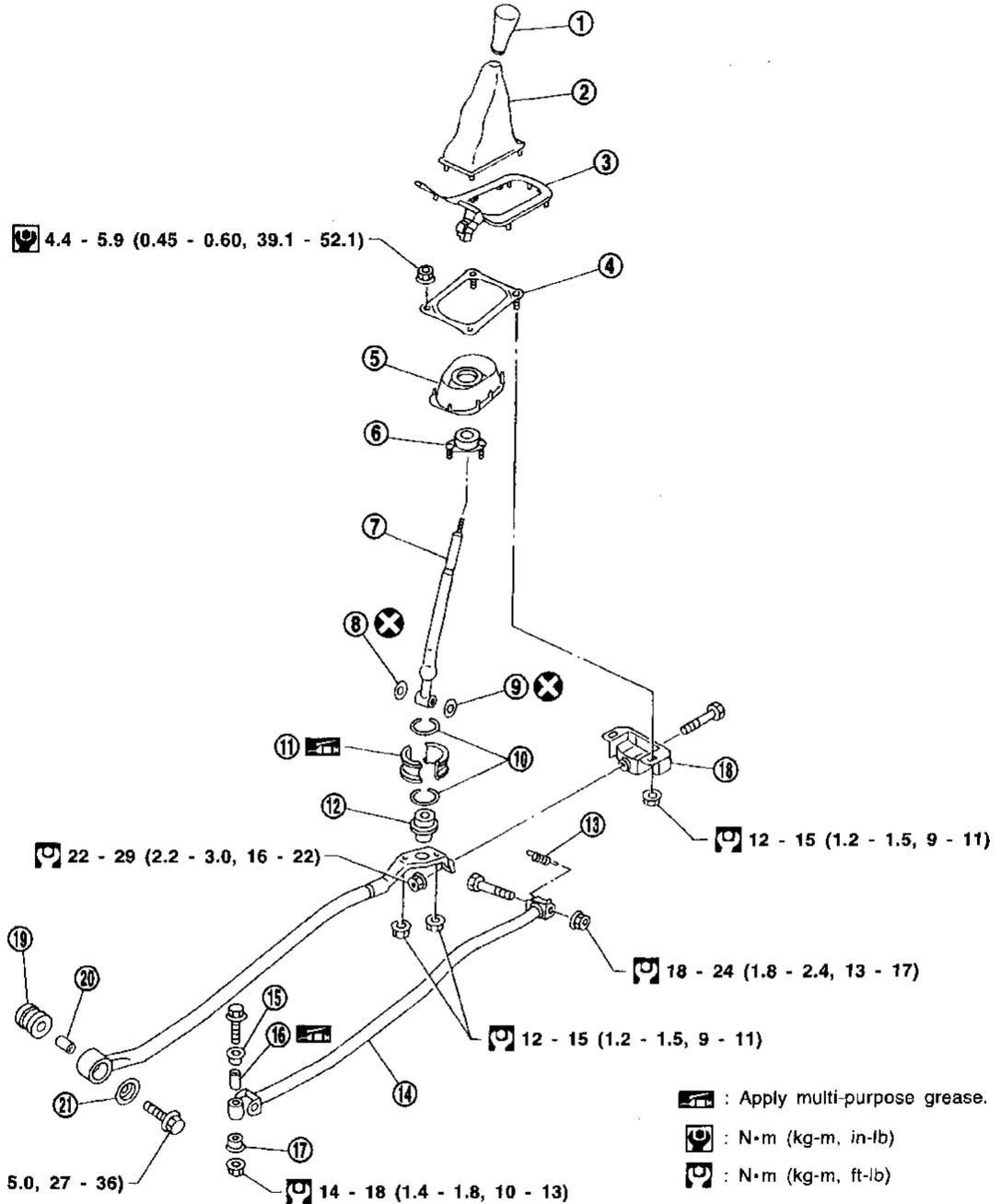
OVERHAUL

Transaxle Gear Control

Transaxle Gear Control

NCMT0008S01

SEC. 341



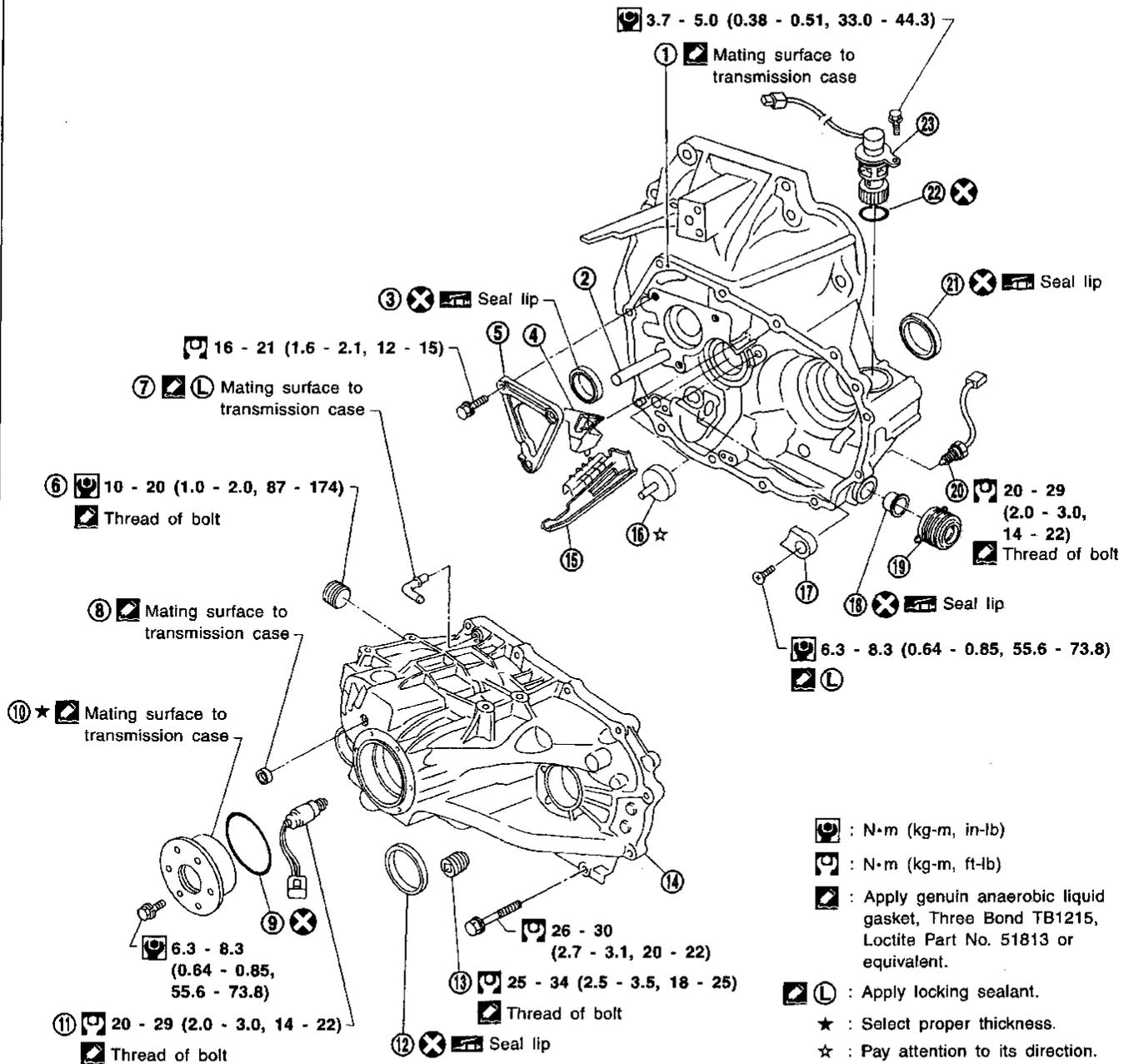
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|--------------------------|-------------------|-------------|
| 1. Control lever knob | 8. O-ring | 15. Bush |
| 2. Boot | 9. O-ring | 16. Collar |
| 3. Finisher | 10. Ring spring | 17. Bush |
| 4. Control lever bracket | 11. Bearing seat | 18. Bracket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

Case Components

NCMT0008502

SEC. 320



SMT151DA

1. Clutch housing
2. Reverse idler shaft
3. Input shaft oil seal
4. Oil pocket
5. Bearing retainer
6. Filler plug
7. Air breather tube
8. Welch plug

9. O-ring
10. Case cover
11. Back-up lamp switch
12. Differential oil seal
13. Drain plug
14. Transmission case
15. Oil gutter
16. Oil channel

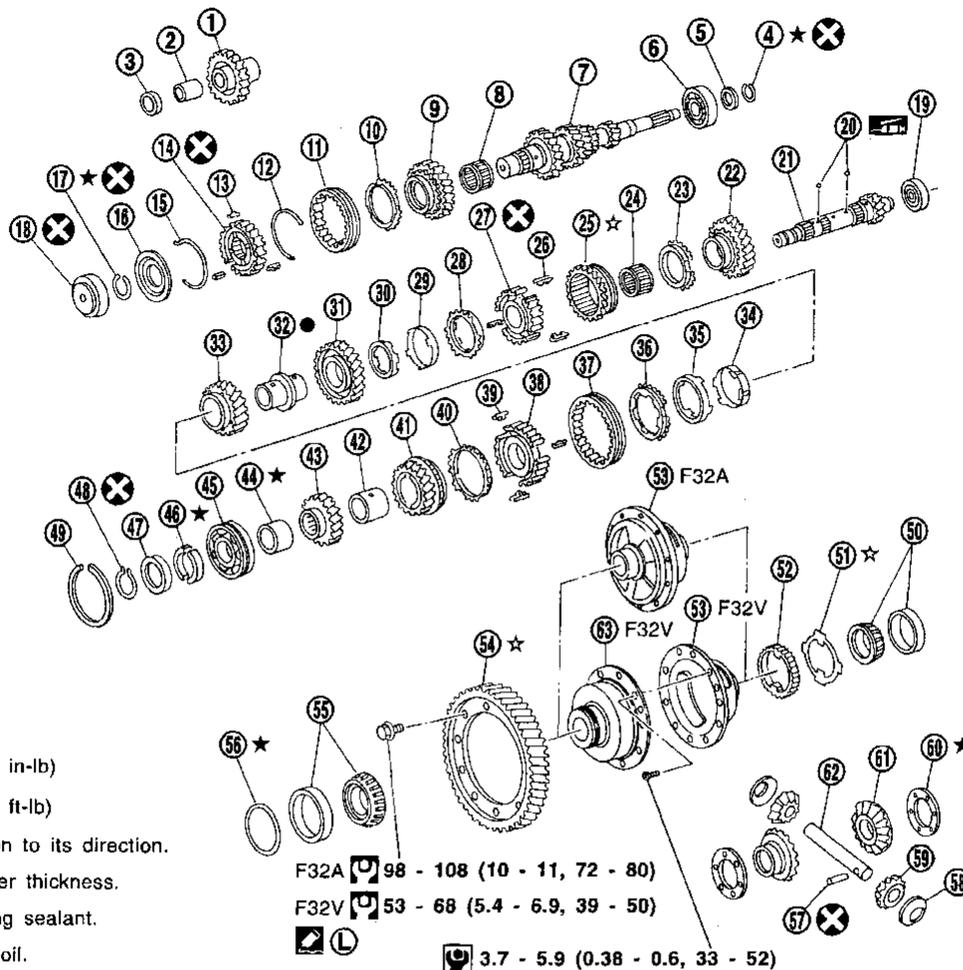
17. Bearing retainer
18. Striking rod oil seal
19. Boot
20. PNP switch
21. Differential oil seal
22. O-ring
23. Speedometer pinion assembly

OVERHAUL

Gear Components

NCMT0008S03

SEC. 322



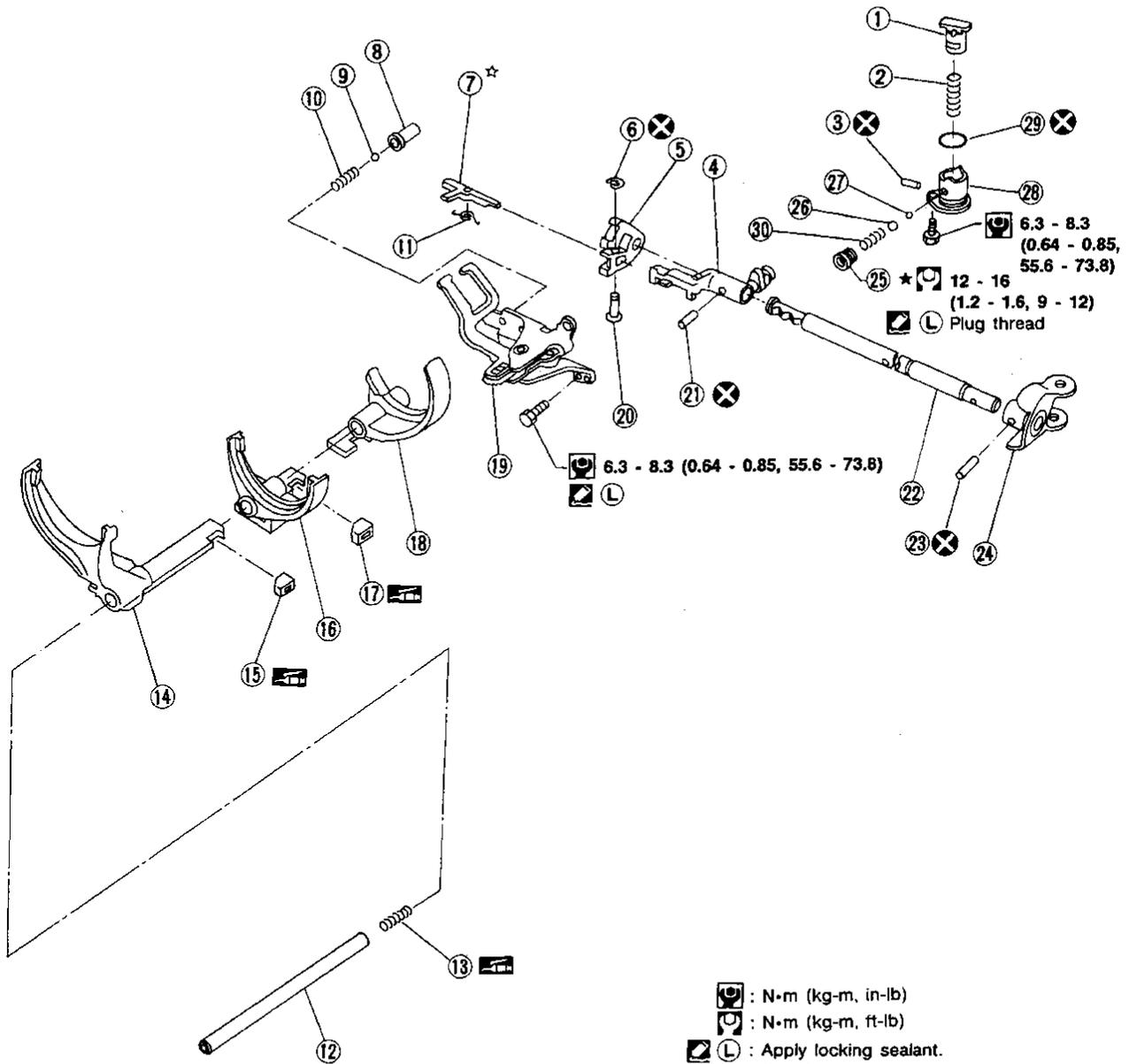
SMT632D

- | | | |
|---|---|--|
| <ol style="list-style-type: none"> 1. Reverse idler gear 2. Reverse idler bushing 3. Reverse idler spacer 4. Snap ring 5. Spacer 6. Input shaft front bearing 7. Input shaft 8. 5th gear needle bearing 9. 5th input gear 10. Baulk ring 11. Coupling sleeve 12. Spread spring 13. Shifting insert 14. 5th synchronizer hub 15. Spread ring 16. 5th stopper 17. Snap ring 18. Input shaft rear bearing 19. Mainshaft front bearing 20. Steel ball 21. Mainshaft 22. 1st main gear | <ol style="list-style-type: none"> 23. Baulk ring 24. 1st gear needle bearing 25. Reverse main gear (Coupling sleeve) 26. Insert spring 27. 1st & 2nd synchronizer hub 28. 2nd outer baulk ring 29. 2nd synchronizer cone 30. 2nd inner baulk ring 31. 2nd main gear 32. 2nd & 3rd bushing 33. 3rd main gear 34. 3rd inner baulk ring 35. 3rd synchronizer cone 36. 3rd outer baulk ring 37. Coupling sleeve 38. 3rd & 4th synchronizer hub 39. Insert spring 40. Baulk ring 41. 4th main gear 42. 4th bushing 43. 5th main gear | <ol style="list-style-type: none"> 44. Spacer 45. Mainshaft rear bearing 46. Mainshaft C-ring 47. C-ring holder 48. Snap ring 49. Snap ring 50. Differential side bearing 51. Speedometer stopper gear 52. Speedometer drive gear 53. Differential case 54. Final gear 55. Differential side bearing 56. Differential side bearing adjusting shim 57. Lock pin 58. Pinion mate thrust washer 59. Pinion mate gear 60. Side gear thrust washer 61. Side gear 62. Pinion mate shaft 63. Viscous coupling |
|---|---|--|

Shift Control Components

NCMT0008S04

SEC. 328



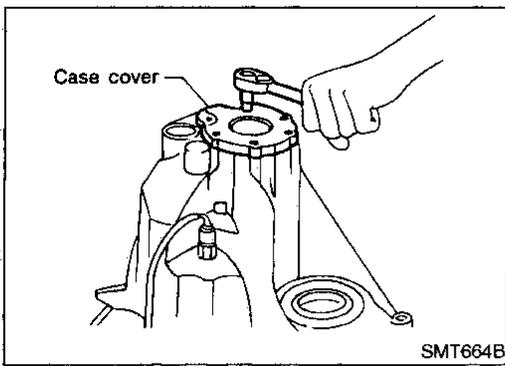
- : N·m (kg-m, in-lb)
- : N·m (kg-m, ft-lb)
- L : Apply locking sealant.
- : Select proper length.
- : Select proper part. Adjustment is required.

SMT695CB

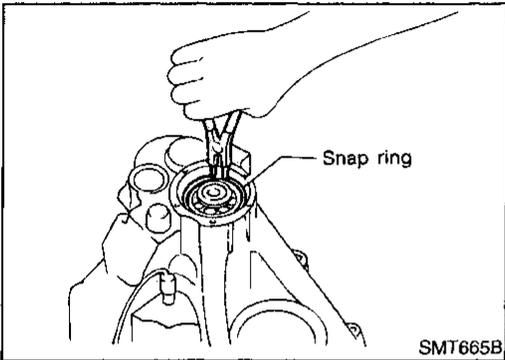
- | | | |
|-------------------------|-------------------------------|--------------------------|
| 1. Check plunger | 11. Reverse brake cam spring | 21. Retaining pin |
| 2. Select return spring | 12. Fork shaft | 22. Striking rod |
| 3. Stopper pin | 13. Fork shaft support spring | 23. Retaining pin |
| 4. Striking lever | 14. 5th shift fork | 24. Yoke |
| 5. Striking interlock | 15. Shifter cap | 25. Reverse check plug |
| 6. E-ring | 16. 3rd & 4th shift fork | 26. Check ball (Large) |
| 7. Reverse brake cam | 17. Shifter cap | 27. Check ball (Small) |
| 8. Check ball plug | 18. 1st & 2nd shift fork | 28. Check sleeve |
| 9. Shift check ball | 19. Control bracket | 29. O-ring |
| 10. Shift check spring | 20. Interlock pin | 30. Reverse check spring |

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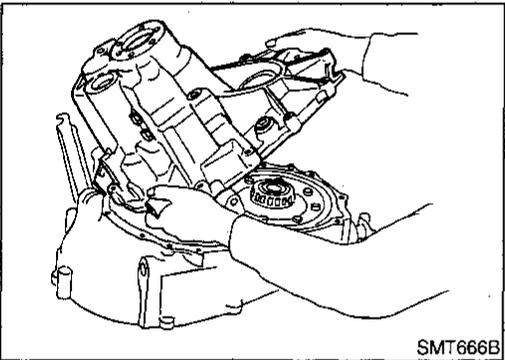
DISASSEMBLY



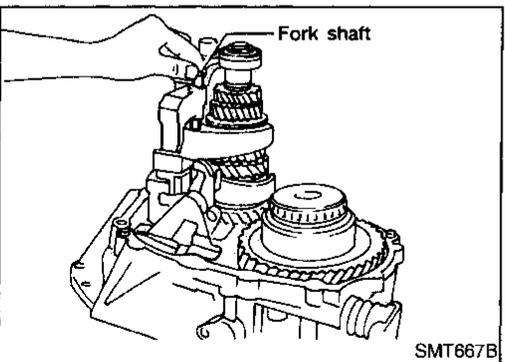
1. Remove case cover.



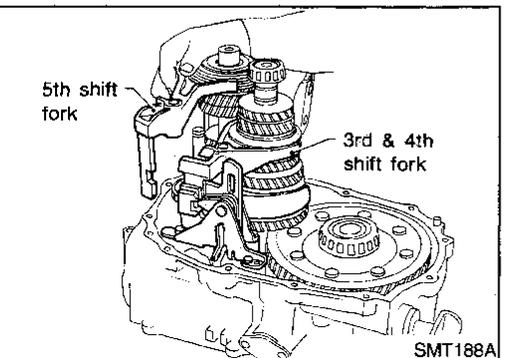
2. Remove mainshaft bearing snap ring.



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

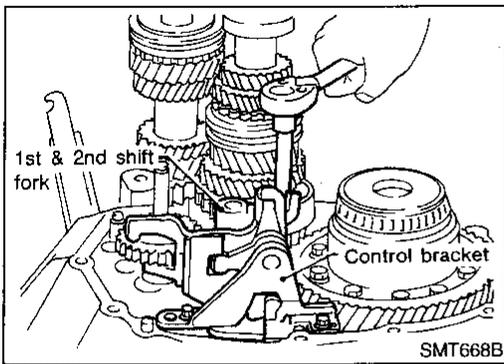


4. Draw out reverse idler spacer and fork shaft.

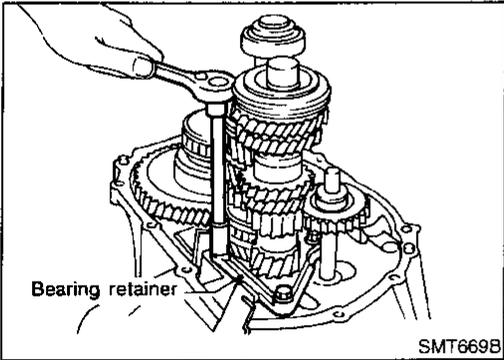


5. Remove 5th and 3rd & 4th shift forks.
 - Be careful not to lose shifter cap.

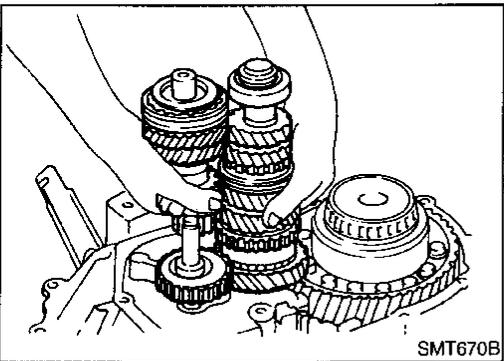
DISASSEMBLY



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

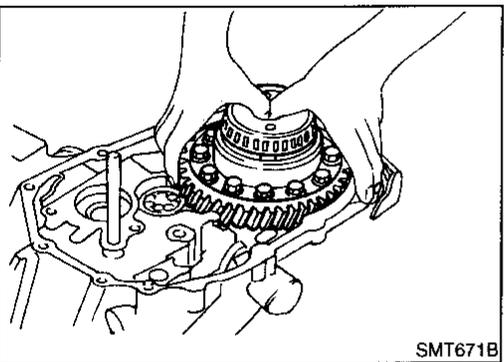


7. Remove gear components from clutch housing.
a. Remove input shaft front bearing retainer securing bolts.

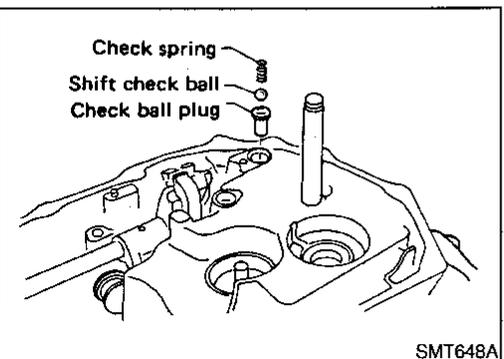


b. Remove input shaft with bearing retainer, mainshaft assembly and reverse idler gear.

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



c. Remove final drive assembly.

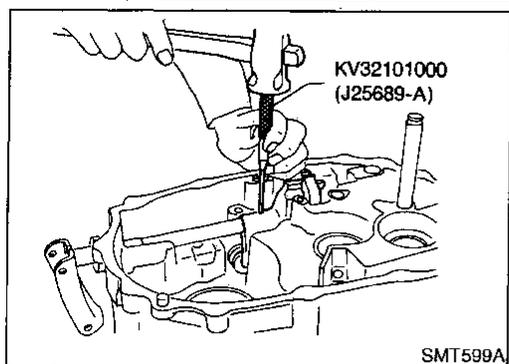


8. Remove oil pocket, shift check ball, check spring and check ball plug.

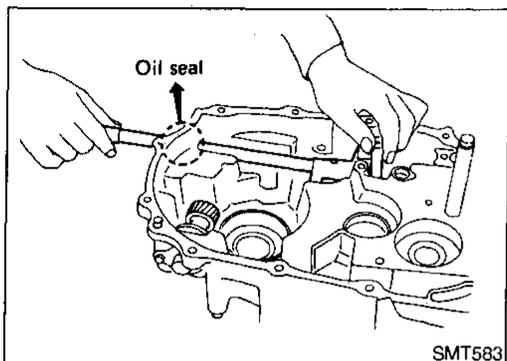
- **Be careful not to lose check ball.**

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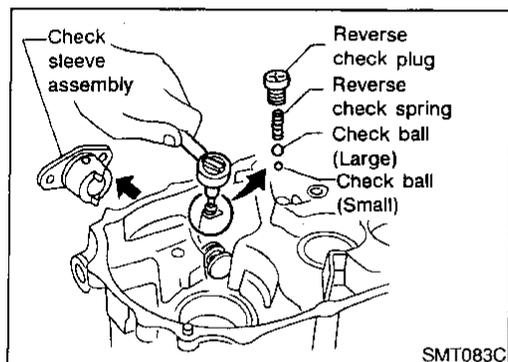
DISASSEMBLY



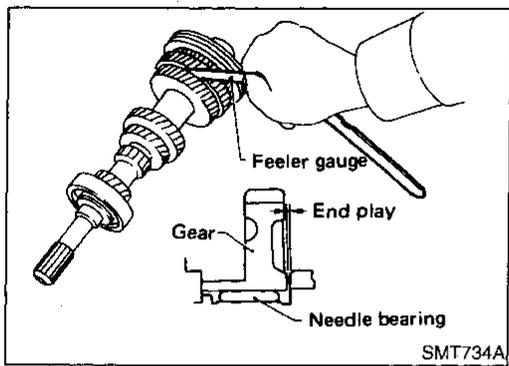
9. Drive retaining pin out of striking lever, then remove striking rod, striking lever and striking interlock.
- **Select a position where retaining pin does not interfere with clutch housing when removing retaining pin.**



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



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



Input Shaft and Gears

DISASSEMBLY

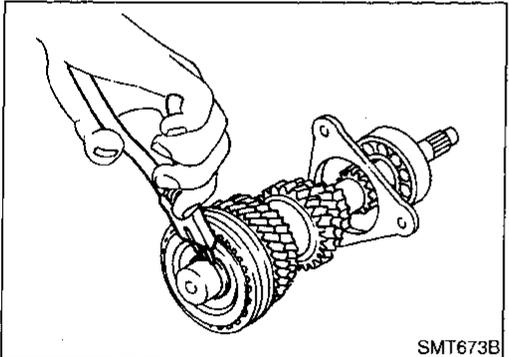
NCMT0010

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

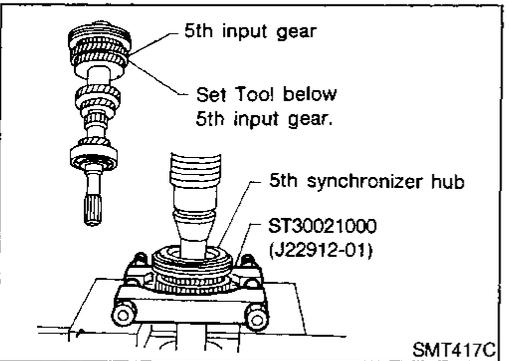
Gear end play:

Refer to SDS, MT-45.

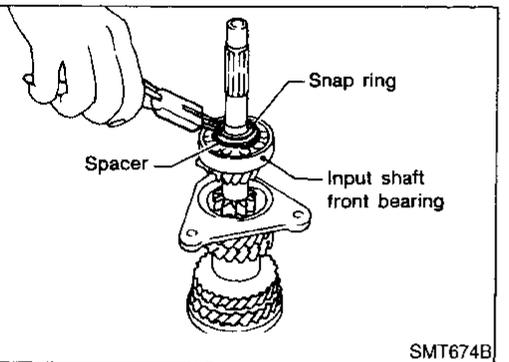
- If not within specification, disassemble and check contact surface of gear, shaft and hub. Then check clearance of snap ring groove. Refer to "ASSEMBLY", MT-22.



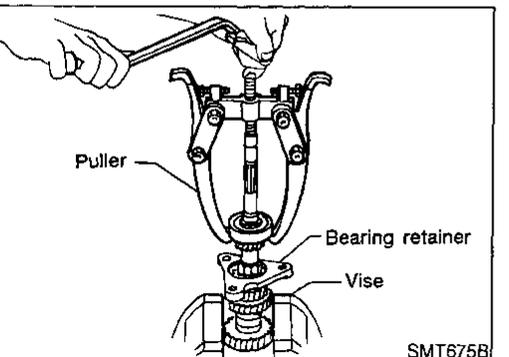
2. Remove snap ring and 5th stopper.



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



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



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

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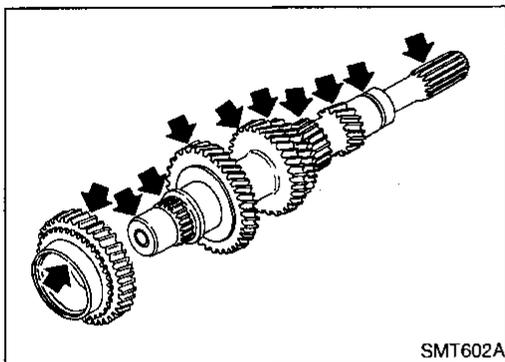
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REPAIR FOR COMPONENT PARTS

Input Shaft and Gears (Cont'd)



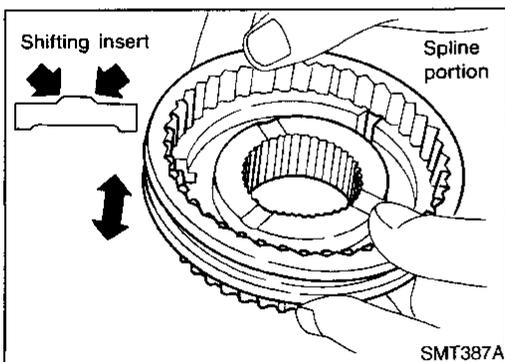
INSPECTION

Gear and Shaft

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

NCMT0011

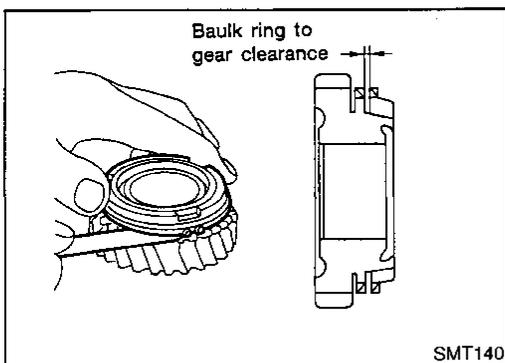
NCMT0011S01



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.

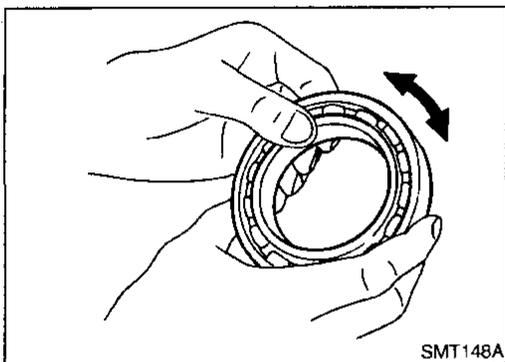
NCMT0011S02



- Measure clearance between baulk ring and gear.

Clearance between baulk ring and gear:

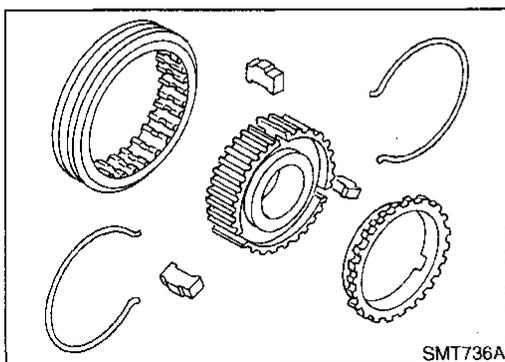
Refer to SDS, MT-45.



Bearing

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

NCMT0011S03



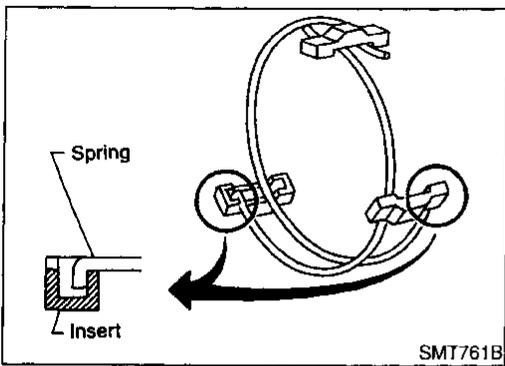
ASSEMBLY

1. Assemble 5th synchronizer.

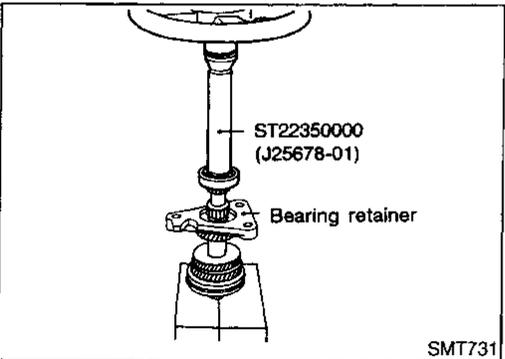
NCMT0012

REPAIR FOR COMPONENT PARTS

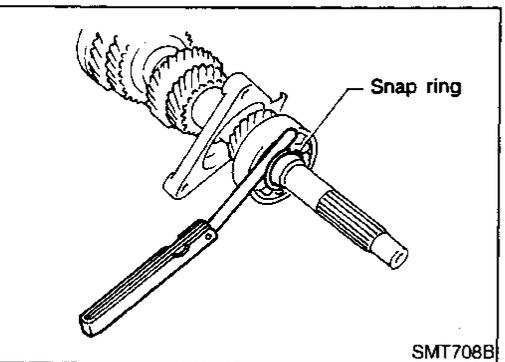
Input Shaft and Gears (Cont'd)



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



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



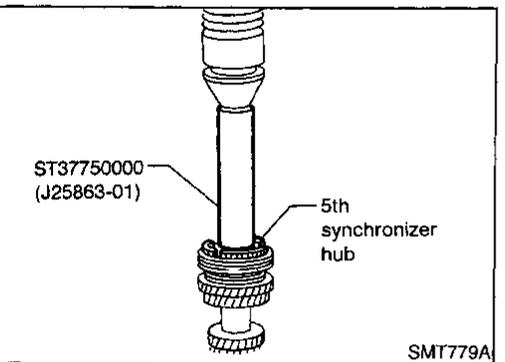
5. Select correct snap ring of input shaft front bearing to minimize clearance of groove in input shaft and then install it.

Allowable clearance of groove:

0 - 0.1 mm (0 - 0.004 in)

Snap rings of input shaft front bearing:

Refer to SDS, MT-46.

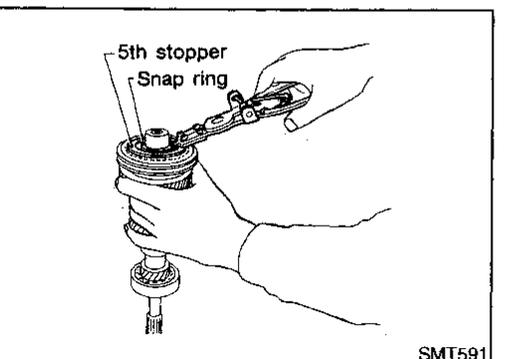


- Be sure to replace 5th synchronizer hub with new one when it is removed.

6. Install 5th gear needle bearing, 5th input gear, 5th synchronizer and 5th stopper.

- Input shaft must be vertical to press on synchronizer hub.

7. Measure gear end play as a final check. Refer to "DISASSEMBLY", MT-21.



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

Allowable clearance of groove:

0 - 0.1 mm (0 - 0.004 in)

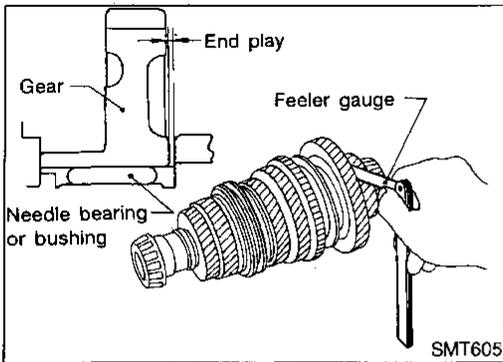
Snap rings of input shaft 5th synchronizer hub:

Refer to SDS, MT-46.

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REPAIR FOR COMPONENT PARTS

Mainshaft and Gears



Mainshaft and Gears DISASSEMBLY

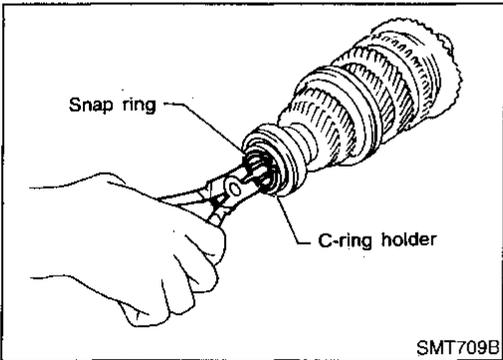
NCMT0013

1. Before disassembly, measure gear end play.

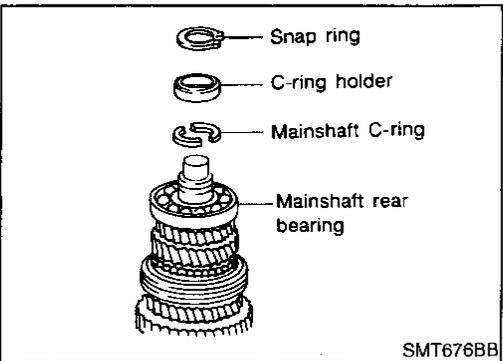
Gear end play:

Refer to SDS, MT-45.

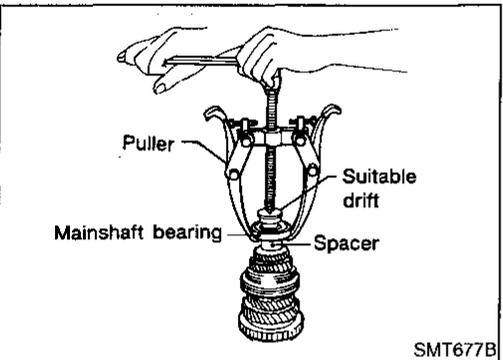
- If end play is not within the specified limit, disassemble and check the parts.



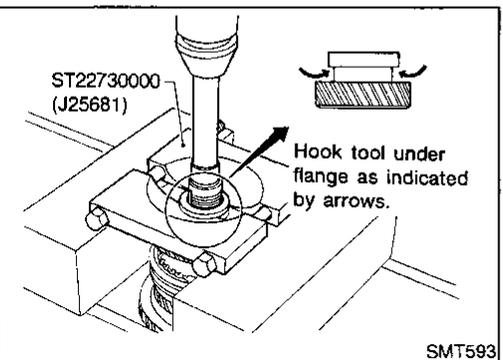
2. Remove mainshaft rear bearing snap ring, C-ring holder and C-rings.



3. Remove mainshaft rear bearing and spacer.

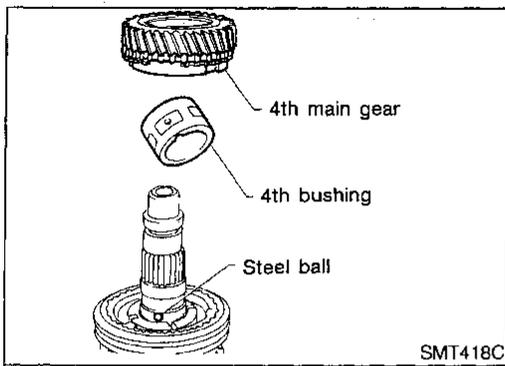


4. Remove 5th main gear.

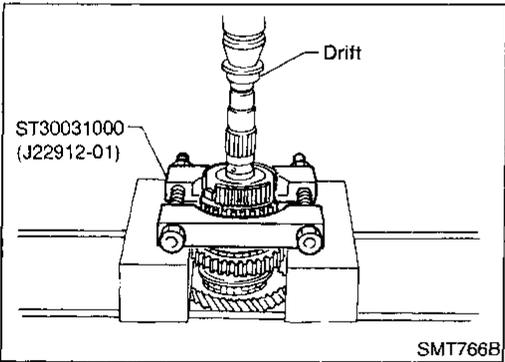


REPAIR FOR COMPONENT PARTS

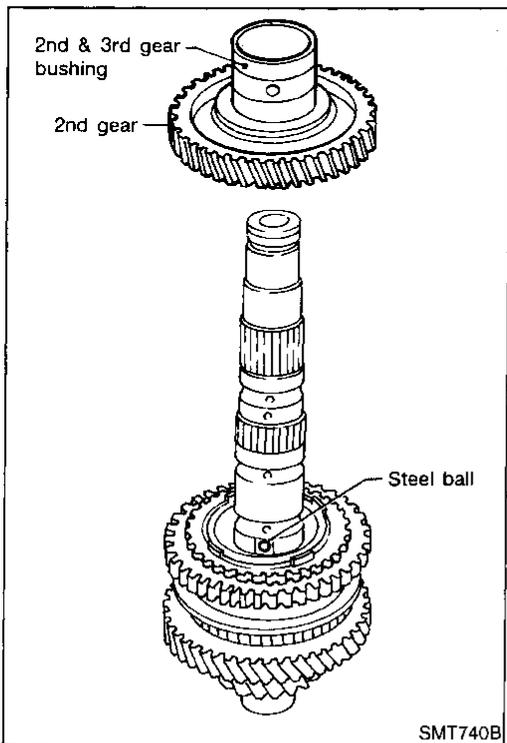
Mainshaft and Gears (Cont'd)



5. Remove 4th main gear, 4th gear bushing and steel ball.
 - Be careful not to lose steel ball.



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



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

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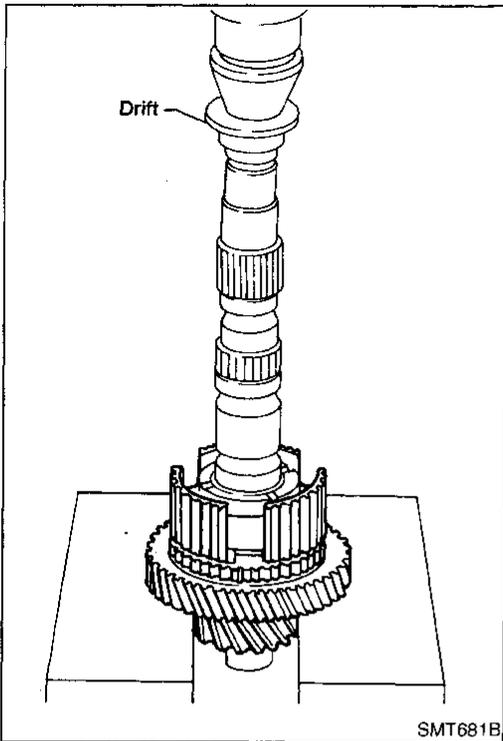
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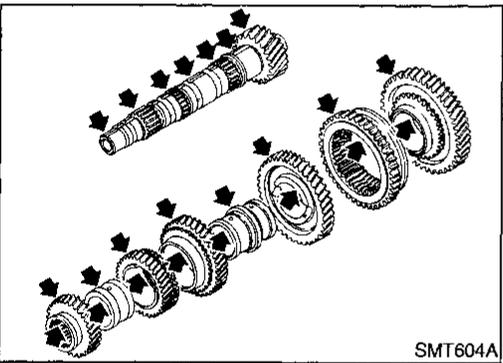
IDX

REPAIR FOR COMPONENT PARTS

Mainshaft and Gears (Cont'd)



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

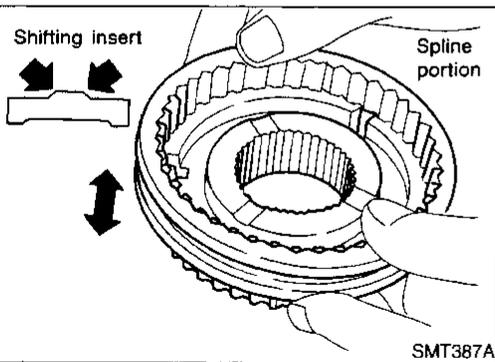


INSPECTION Gear and Shaft

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

NCMT0014

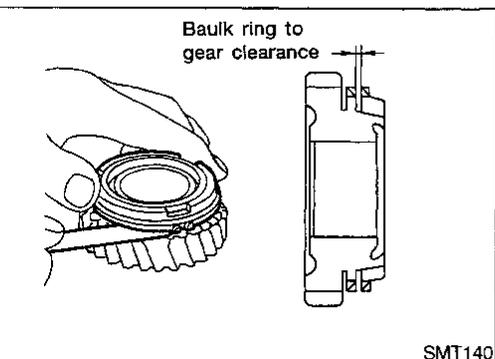
NCMT0014S01



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 deformation.

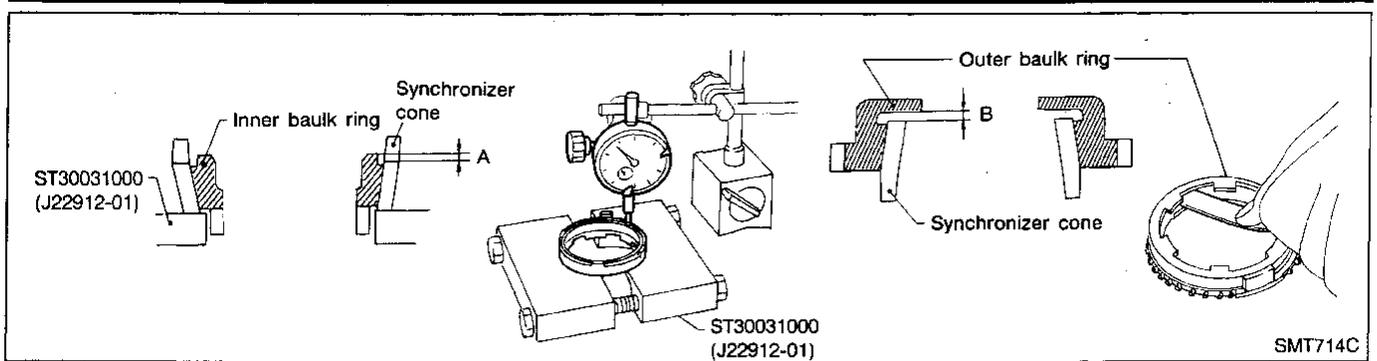
NCMT0014S02



- Measure clearance between baulk ring and gear.
Clearance between baulk rings and gears, for 1st and 4th gears:
Refer to SDS, MT-45.
- 2nd and 3rd gears have inner and outer baulk rings and so have different measurements.

REPAIR FOR COMPONENT PARTS

Mainshaft and Gears (Cont'd)



- Measure wear of 2nd and 3rd baulk ring.
 - a) Place baulk rings in position on synchronizer cone.
 - b) While holding baulk ring against synchronizer cone as far as it will go, measure dimensions "A" and "B".

Standard:

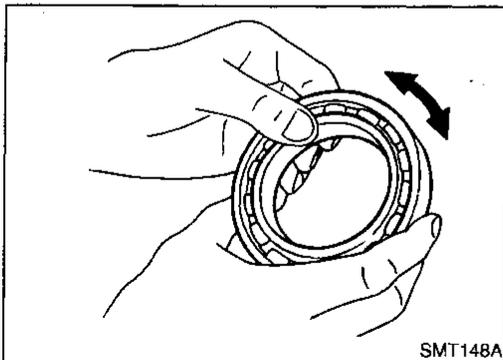
A 0.7 - 0.9 mm (0.028 - 0.035 in)

B 0.6 - 1.1 mm (0.024 - 0.043 in)

Wear limit:

0.2 mm (0.008 in)

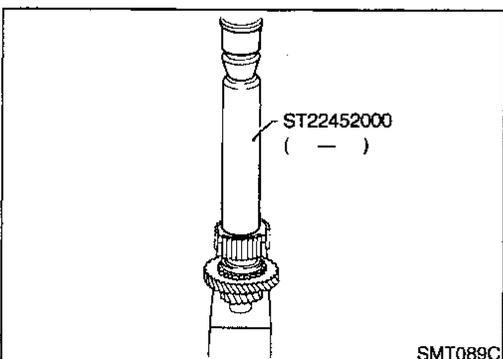
- If dimension "A" or "B" is smaller than the wear limit, replace outer baulk ring, inner baulk ring and synchronizer cone as a set.



SMT148A

Bearing

- Make sure bearings roll freely and are free from noise, cracks, pitting or wear. NCMT0014S03



SMT089C

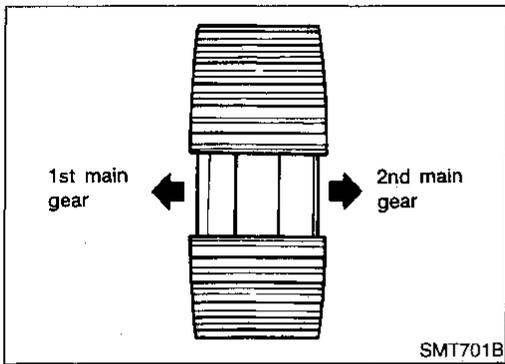
ASSEMBLY

1. Install 1st gear needle bearing, 1st main gear and baulk ring. NCMT0015
2. Press on 1st & 2nd synchronizer hub.

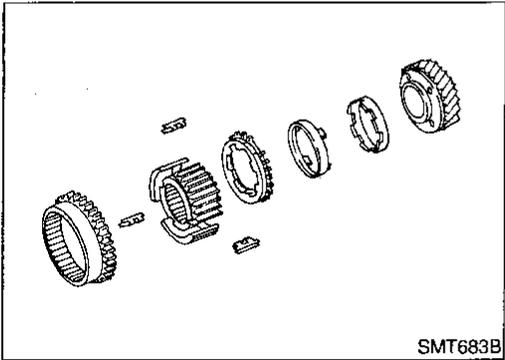
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REPAIR FOR COMPONENT PARTS

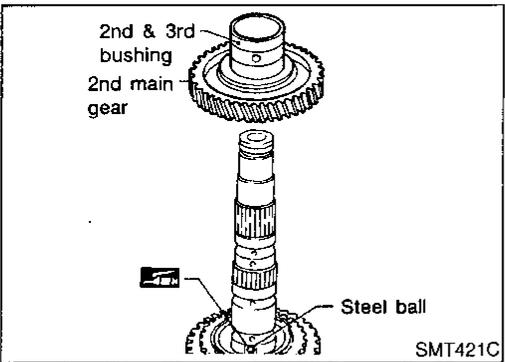
Mainshaft and Gears (Cont'd)



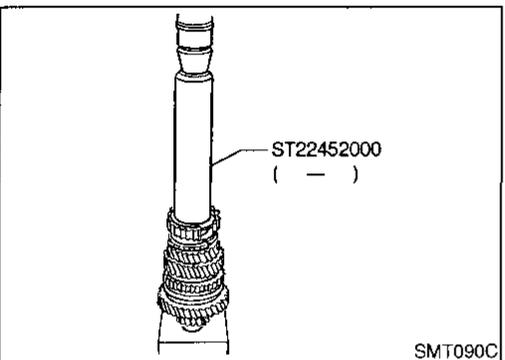
- Ensure correct fitting of 1st & 2nd synchronizer hub.



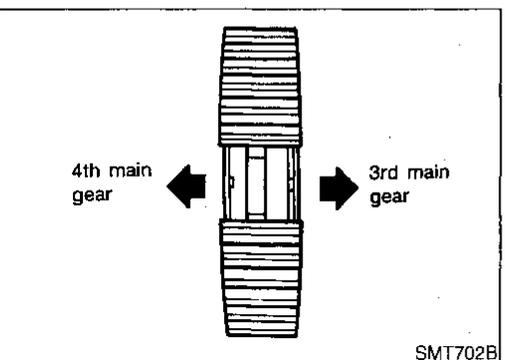
3. Install 2nd synchronizer cone, outer & inner baulk ring and 1st & 2nd coupling sleeve.



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



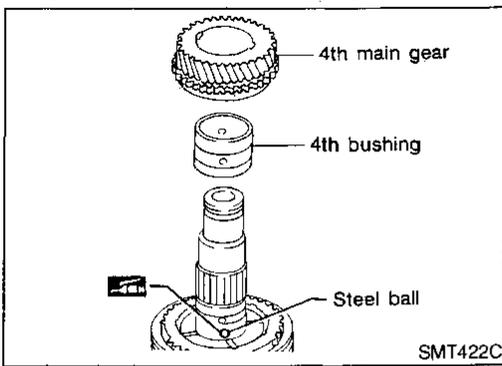
5. Install 3rd main gear, synchronizer cone, and outer & inner baulk ring.
6. Press on 3rd & 4th synchronizer hub.



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

REPAIR FOR COMPONENT PARTS

Mainshaft and Gears (Cont'd)



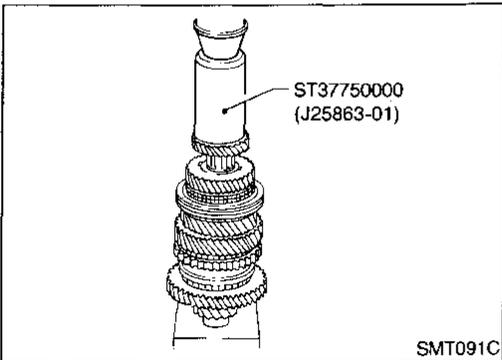
8. Install steel ball, 4th bushing and 4th main gear.
 - Apply multi-purpose grease to steel ball before installing it.
 - 4th bushing has a groove in which steel ball fits.

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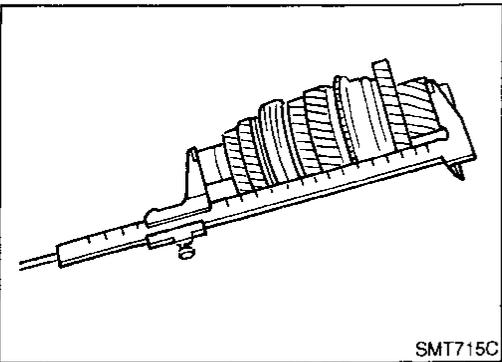
9. Press on 5th main gear.

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10. Install spacer and measure distance "C".
11. Select proper mainshaft bearing spacer to give correct standard length.

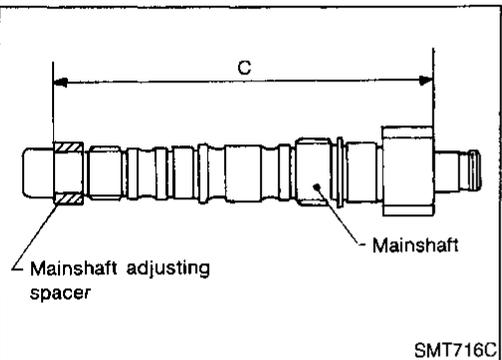
AT

Standard length "C":
230.15 - 230.25 mm (9.0610 - 9.0649 in)
Available spacers:
Refer to SDS, MT-47.

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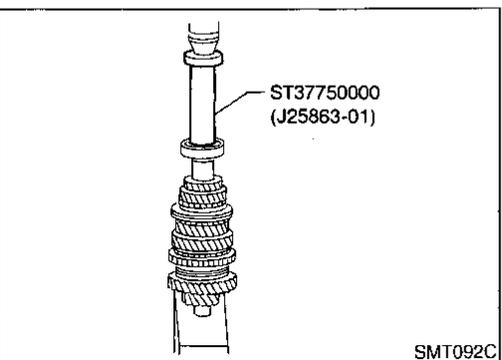


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12. Press on mainshaft rear bearing.

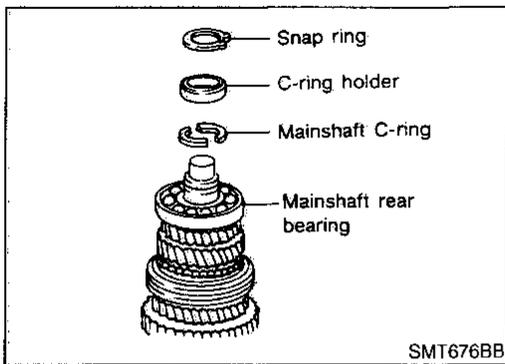
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REPAIR FOR COMPONENT PARTS

Mainshaft and Gears (Cont'd)



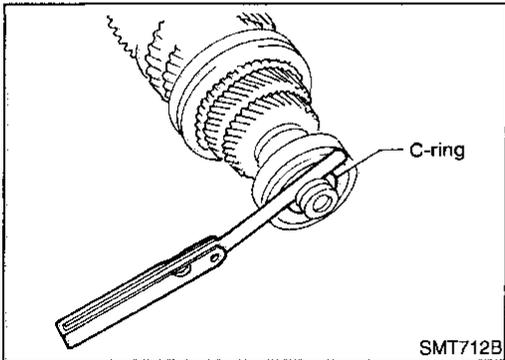
13. Select proper mainshaft C-ring to minimize clearance of groove in mainshaft and install it.

Allowable clearance of groove:

0 - 0.1 mm (0 - 0.004 in)

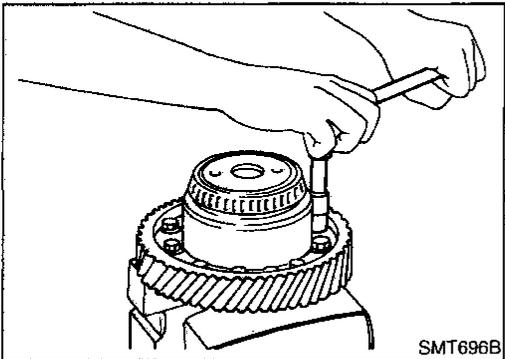
Mainshaft C-rings:

Refer to SDS, MT-47.



14. Install C-ring holder and snap ring.

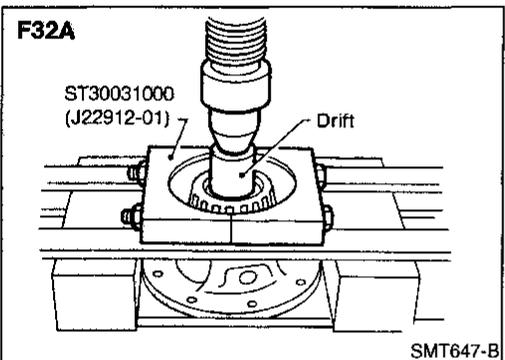
15. Measure gear end play as a final check. Refer to "DISASSEMBLY", MT-24.



Final Drive DISASSEMBLY

1. Remove final gear.

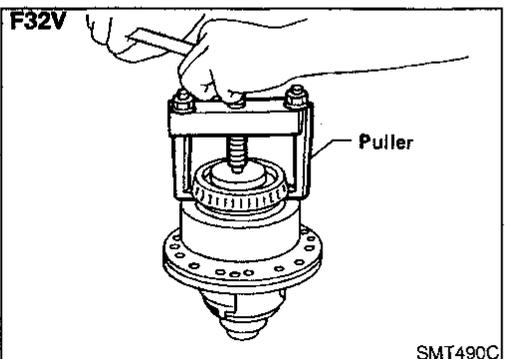
NCMT0016

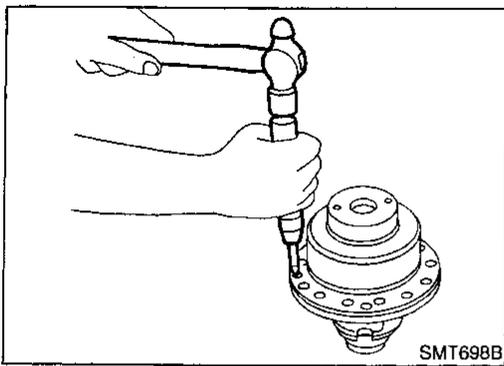


2. Remove speedometer drive gear by cutting it.

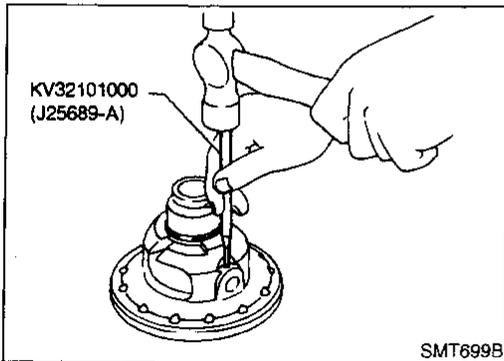
3. Press out differential side bearings.

- Be careful not to mix up the right and left bearings — RS5F32A.

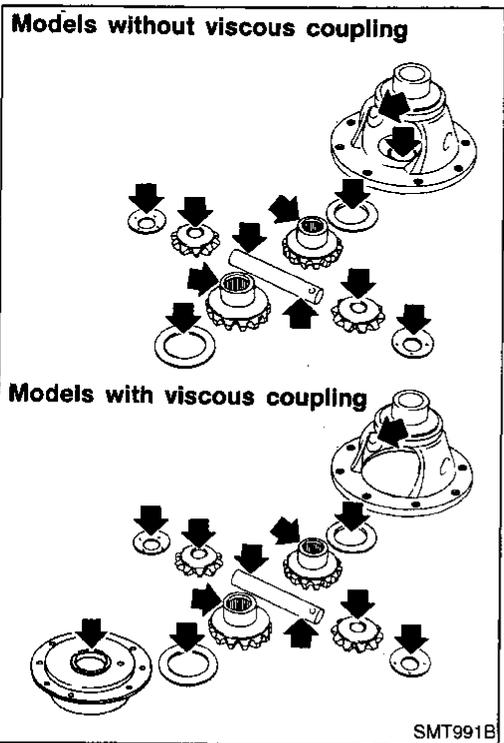




4. Remove viscous coupling — RS5F32V.



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



INSPECTION

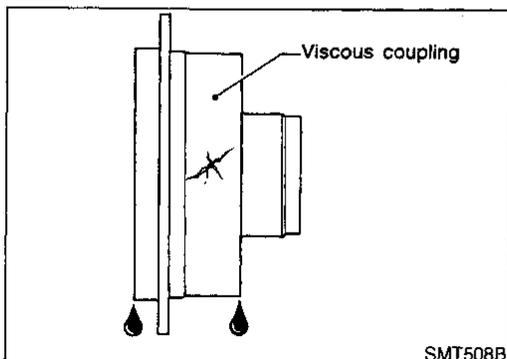
Gear, Washer, Shaft and Case

- Check mating surfaces of differential case, side gears and pinion mate gears — RS5F32A and 32V.
- Check viscous coupling — RS5F32V.
- Check washers for wear.

NCMT0017

NCMT0017S01

NCMT0017S04



Viscous Coupling — RS5F32V

- Check case for cracks.
- Check silicone oil for leakage.

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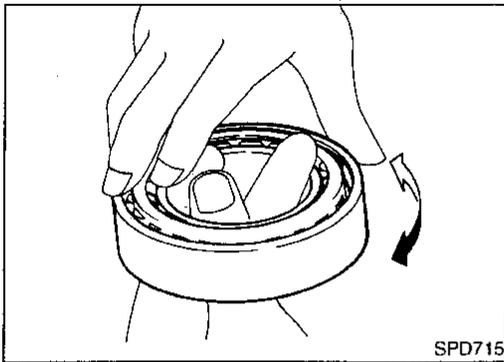
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REPAIR FOR COMPONENT PARTS

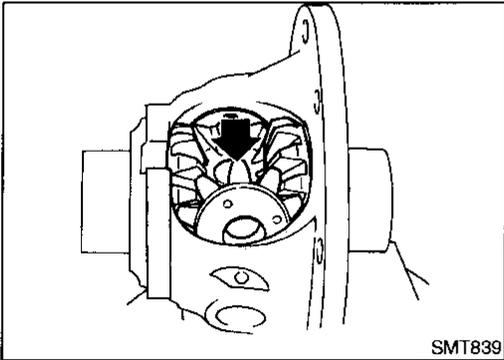
Final Drive (Cont'd)



Bearing

NCMT0017S02

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

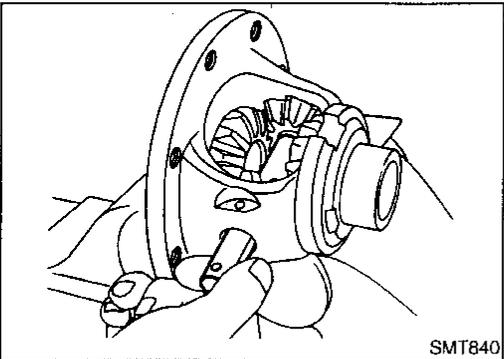


ASSEMBLY

NCMT0018

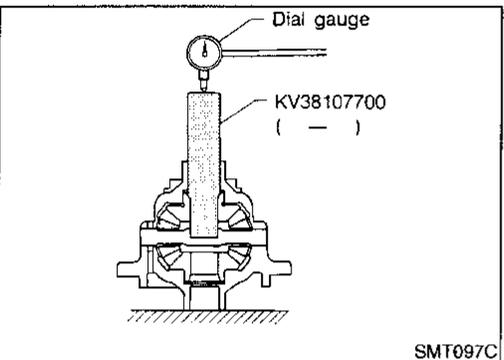
— RS5F32A & RS5F32V —

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.**



— RS5F32A & RS5F32V (Differential case side) —

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

- a. Set Tool and dial indicator on side gear.

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

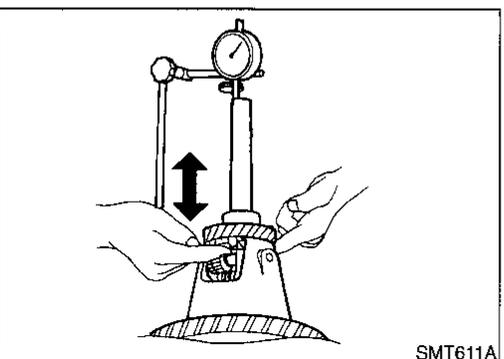
Clearance between side gear and differential case with washers:

0.1 - 0.2 mm (0.004 - 0.008 in)

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

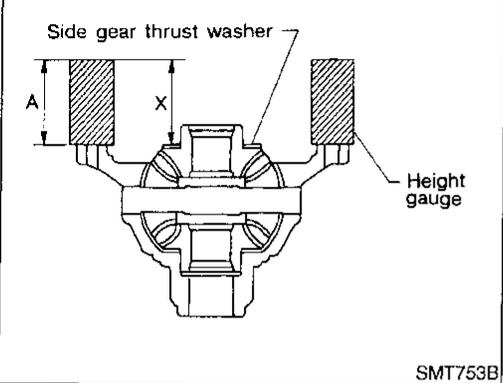
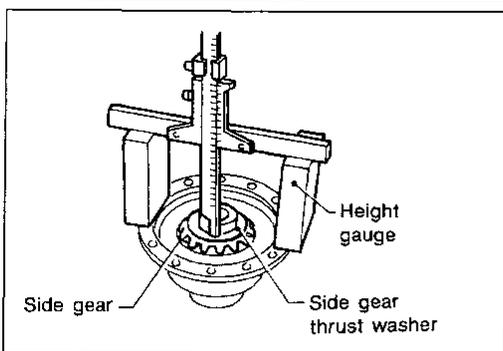
Side gear thrust washers:

Refer to SDS, MT-48.

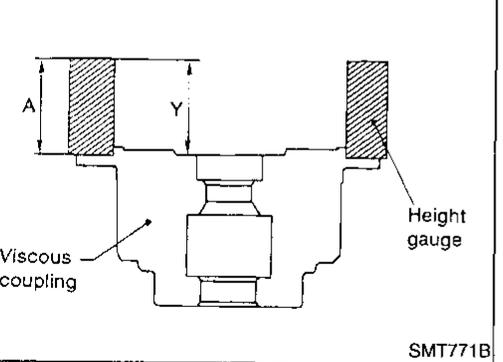
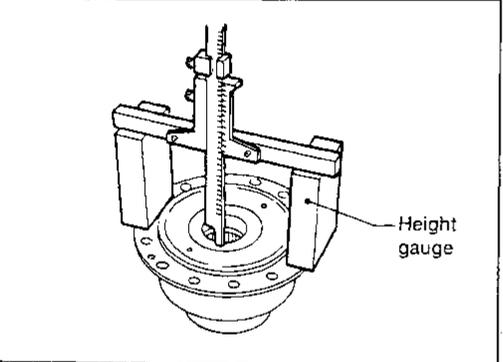


REPAIR FOR COMPONENT PARTS

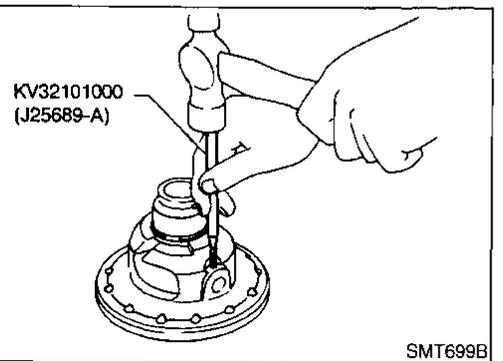
Final Drive (Cont'd)



SMT753B



SMT771B



SMT699B

— RS5F32V (Viscous coupling side) —

4. Measure clearance between side gear and viscous coupling with washers following the procedure belows.
 - a. Set remaining side gear with washer on pinion mate gears.
 - b. Measure distance "X".
 - **Measure in at least 4 places around the edge of the side gear and take an average. At least 4 measurements are needed because the side gear may be uneven.**
 - c. Measure dimension "Y".
Clearance between side gear and viscous coupling with washers can be obtained by " $X + Y - 2A$ ".

Specification:

0.1 - 0.2 mm (0.004 - 0.008 in)

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

**Side gear thrust washers for viscous coupling side:
Refer to SDS, MT-48.**

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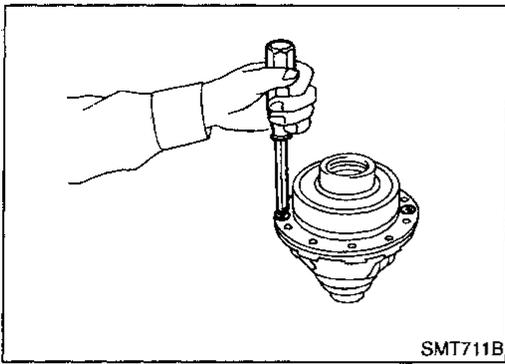
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— RS5F32A & RS5F32V —

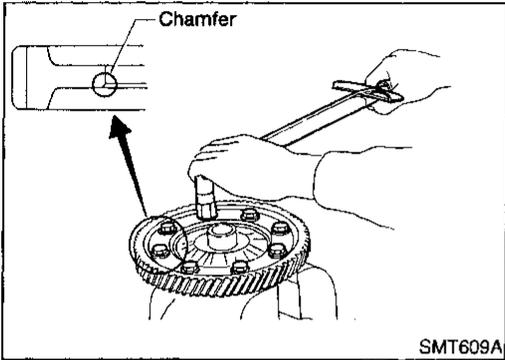
5. Install retaining pin.
 - **Make sure that retaining pin is flush with case.**

REPAIR FOR COMPONENT PARTS

Final Drive (Cont'd)



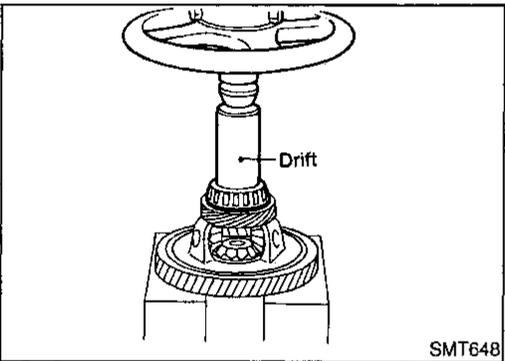
6. Install viscous coupling — RS5F32V.



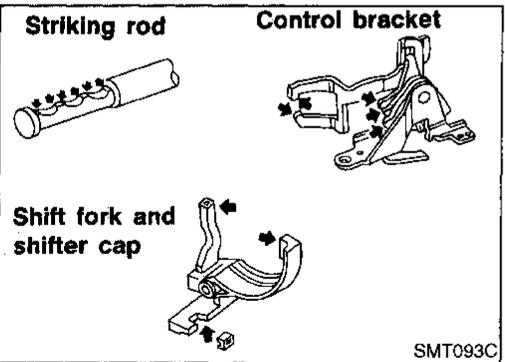
7. Install final gear.

- Apply locking sealant to final gear fixing bolts before installing them.

8. Install speedometer drive gear.



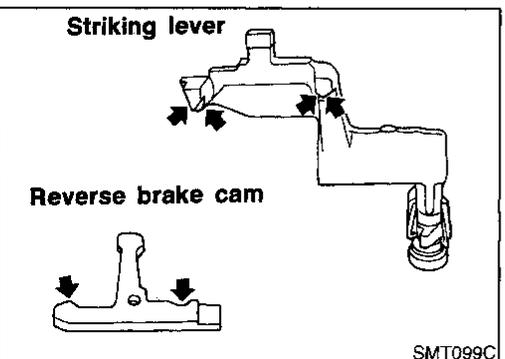
9. Press on differential side bearings.



Shift Control Components INSPECTION

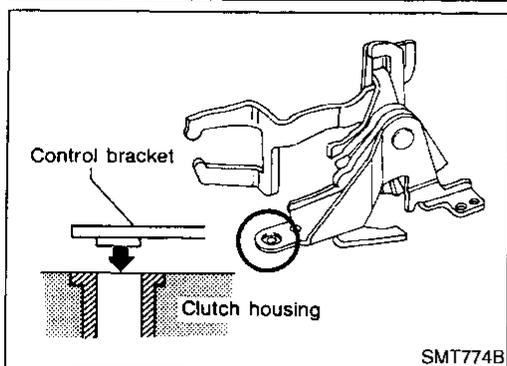
NCMT0019

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



REPAIR FOR COMPONENT PARTS

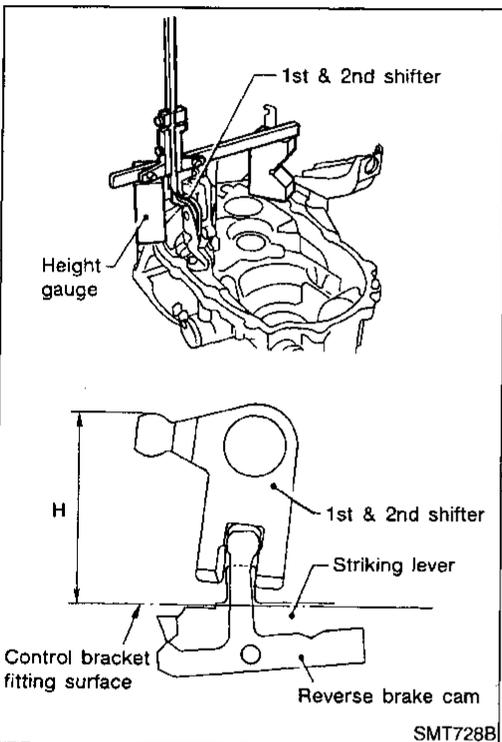
Shift Control Components (Cont'd)



ADJUSTMENT OF INPUT SHAFT BRAKING MECHANISM

NCMT0020

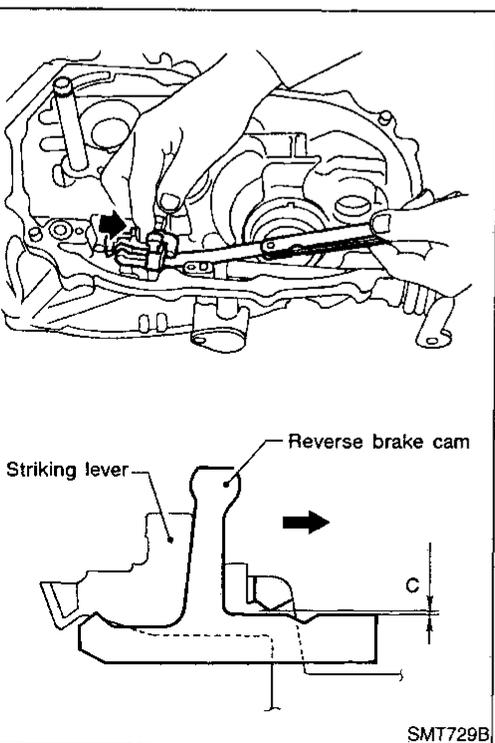
1. Install striking lever & rod, striking interlock assembly and control bracket on clutch housing exactly.



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

Maximum height "H":

67.16 - 67.64 mm (2.6441 - 2.6630 in)



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

Clearance "C":

0.05 - 0.125 mm (0.0020 - 0.0049 in)

5. If "H" and "C" are not within specifications, replace the following as a set.
 - Striking lever assembly
 - Striking interlock assembly (This includes reverse brake cam.)
 - Control bracket assembly

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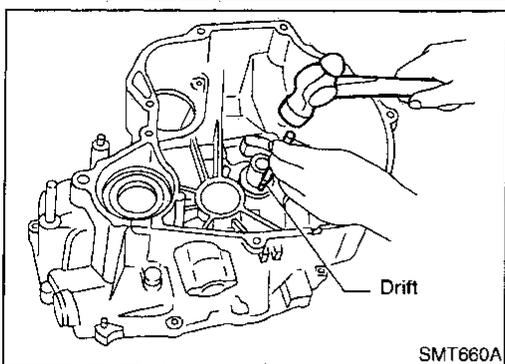
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REPAIR FOR COMPONENT PARTS

Case Components

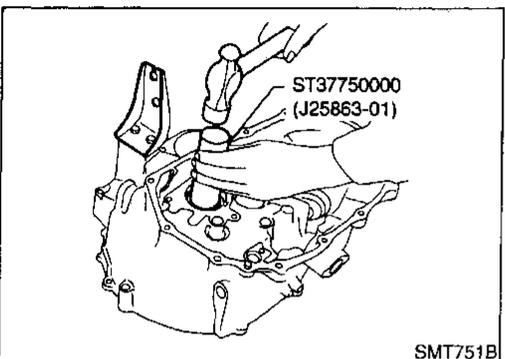


Case Components REMOVAL AND INSTALLATION Input Shaft Oil Seal

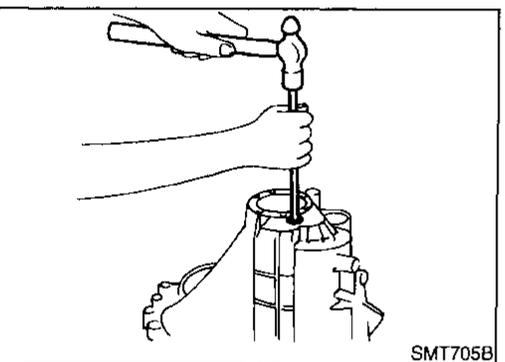
NCMT0021

NCMT0021S01

1. Drive out input shaft oil seal.



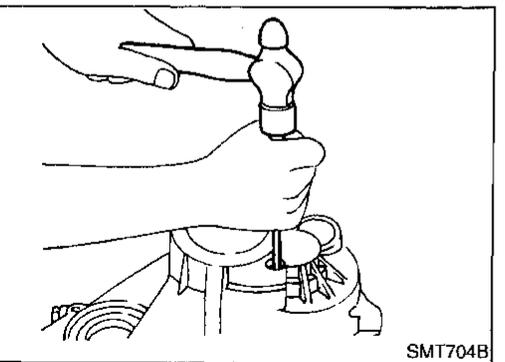
2. Install input shaft oil seal.
- Apply multi-purpose grease to seal lip of oil seal before installing.



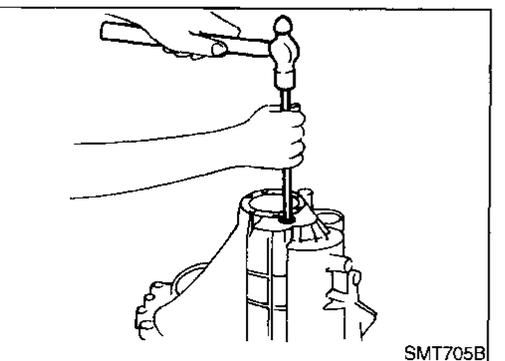
Input Shaft Rear Bearing

NCMT0021S02

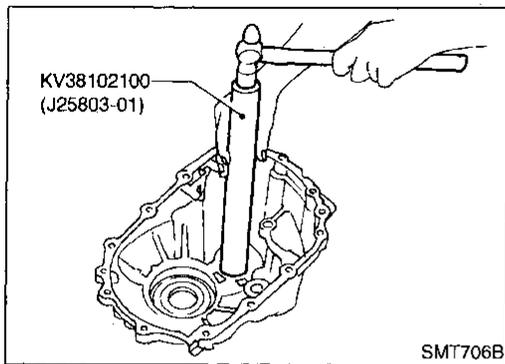
1. Remove welch plug from transmission case.



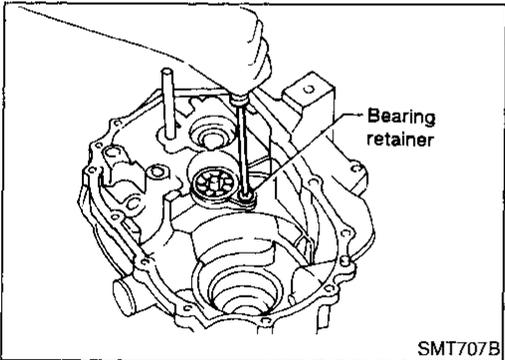
2. Remove input shaft rear bearing by tapping it from welch plug hole.



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



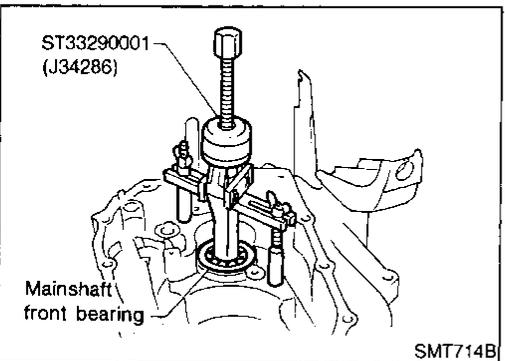
4. Install input shaft rear bearing.



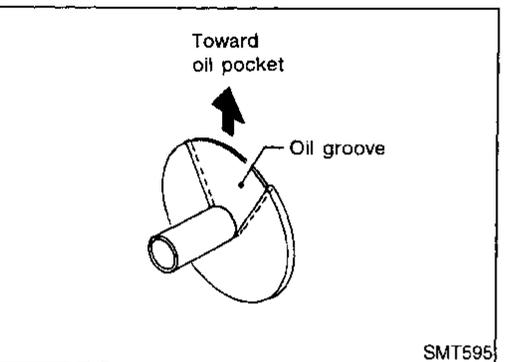
Mainshaft Front Bearing and Oil Channel

NCMT0021503

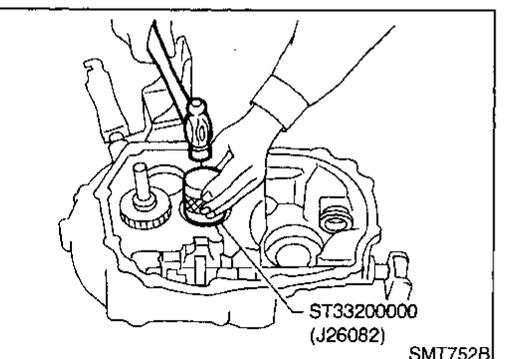
1. Remove mainshaft front bearing retainer.



2. Remove mainshaft front bearing.
3. Remove oil channel.



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



5. Install mainshaft front bearing.
6. Install mainshaft front bearing retainer.
 - Apply locking sealant to thread of screw before installation.

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ADJUSTMENT

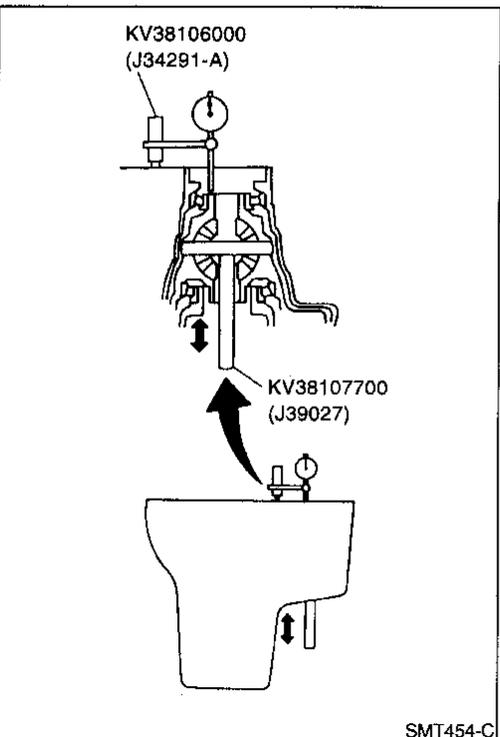
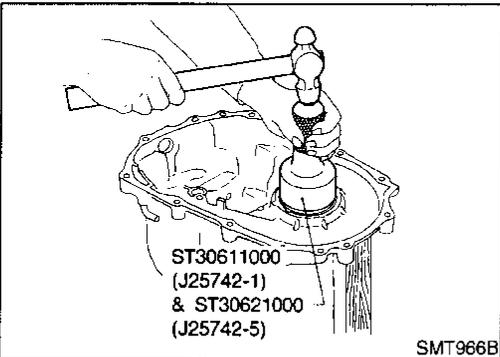
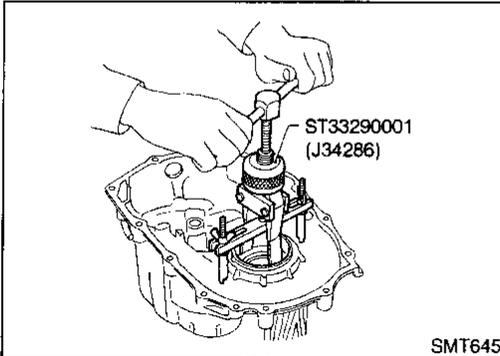
Differential Side Bearing Preload

Differential Side Bearing Preload

NCMT0022S01

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

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



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

2. Reinstall differential side bearing outer race without shim.
3. Install final drive assembly on clutch housing.
4. Install transmission case on clutch housing.
- **Tighten transmission case fixing bolts to the specified torque. Refer to MT-15.**

5. Set dial indicator on front end of differential case.
6. Insert Tool all the way into differential side gear.
7. Move Tool up and down and measure dial indicator deflection.
8. Select shim considering bearing preload.

- **Suitable shim thickness = Dial indicator deflection + Specified bearing preload**

Differential side bearing adjusting shims:

Refer to SDS, MT-49.

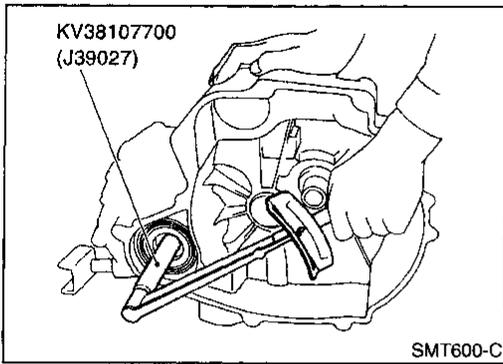
Bearing preload:

0.25 - 0.30 mm (0.0098 - 0.0118 in)

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

ADJUSTMENT

Differential Side Bearing Preload (Cont'd)



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

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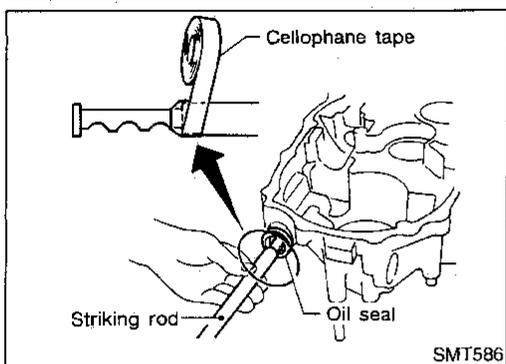
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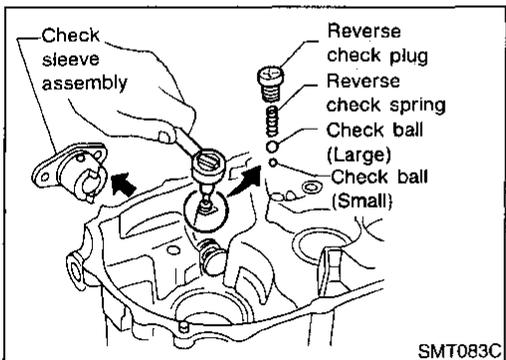
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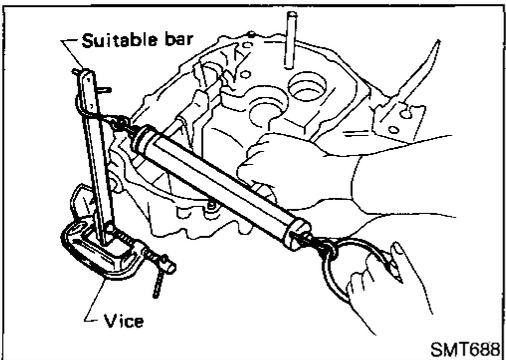
ASSEMBLY



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



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



4. Check reverse check force.

Reverse check force:

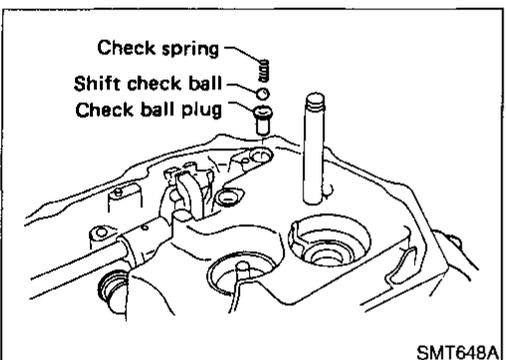
4.9 - 7.4 N·m (50 - 75 kg·cm, 43 - 65 in·lb)

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

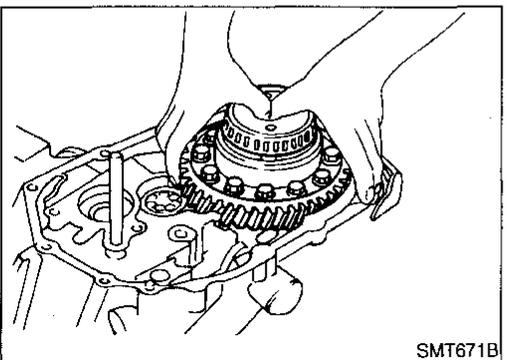
Available reverse check plugs:

Refer to SDS, MT-45.

5. Install selected reverse check plug.
 - **Apply locking sealant to thread of plug before installing it.**

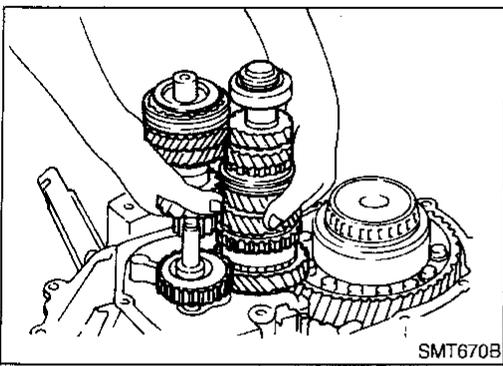


6. Install check ball plug, shift check ball and check spring.
7. Install oil pocket.



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

ASSEMBLY



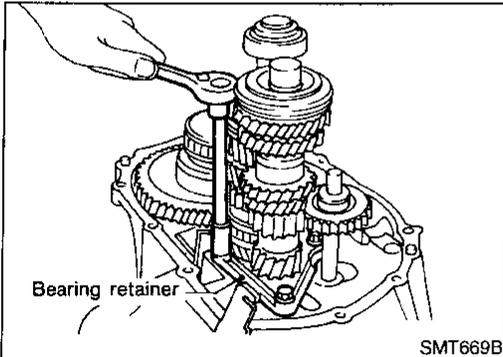
- b. Install input shaft assembly with bearing retainer, mainshaft assembly and reverse idler gear.
- Be careful not to damage oil seal lip with splines of input shaft while shaft is being inserted into clutch housing.
 - Be careful not to damage oil channel when inserting mainshaft into clutch housing.

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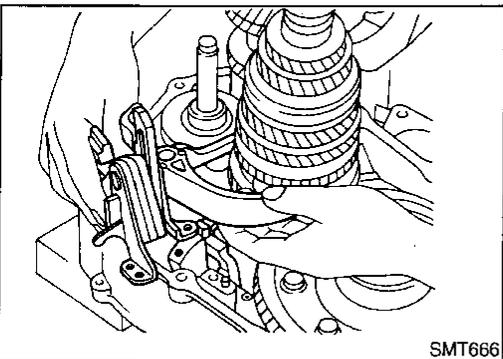
- c. Install input shaft front bearing retainer.

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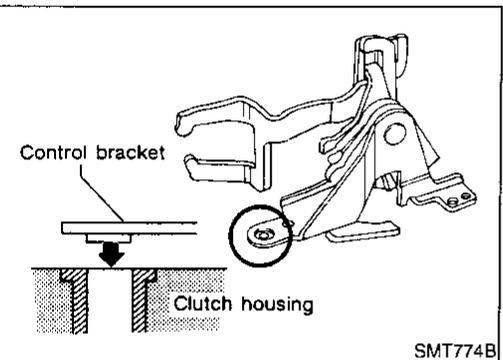
9. Apply grease to shifter caps, then install it to control bracket. Install control bracket with 1st & 2nd shift fork.

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- Ensure control bracket is seated correctly on clutch housing.

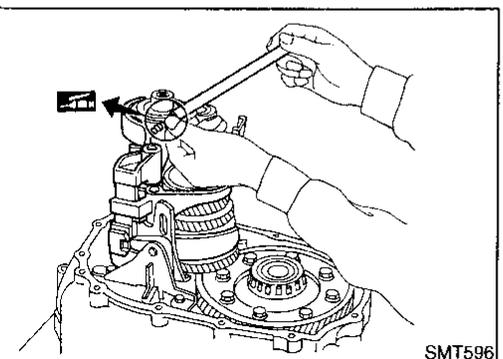
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10. Install 3rd & 4th and 5th shift forks.

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11. Insert fork shaft.

- Apply multi-purpose grease to support spring before installing.

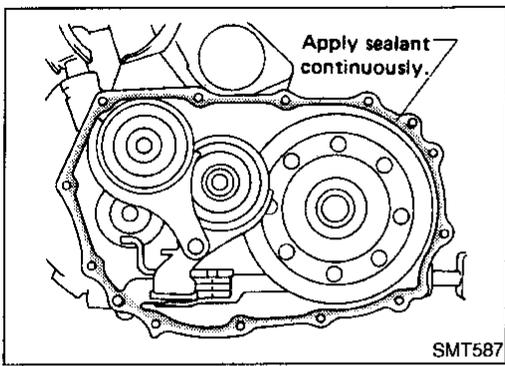
SC

12. Install reverse idler spacer.

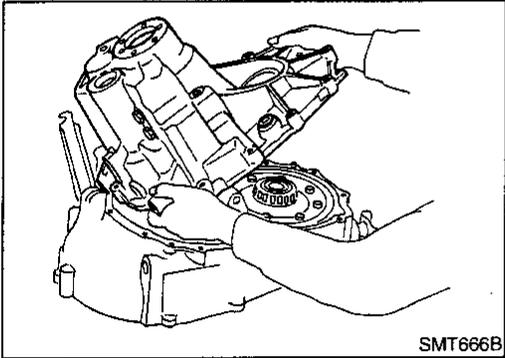
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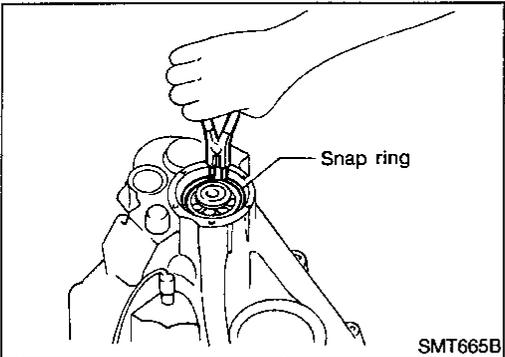
ASSEMBLY



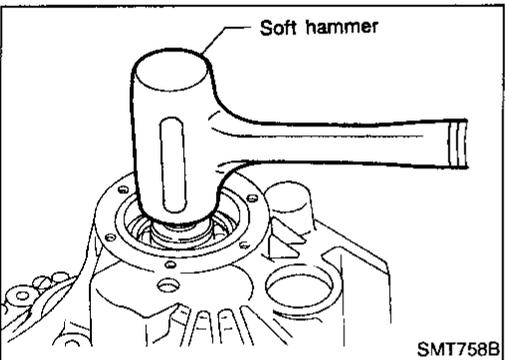
13. Apply recommended sealant to mating surface of clutch housing. Refer to MT-15.



14. Install transmission case on clutch housing.

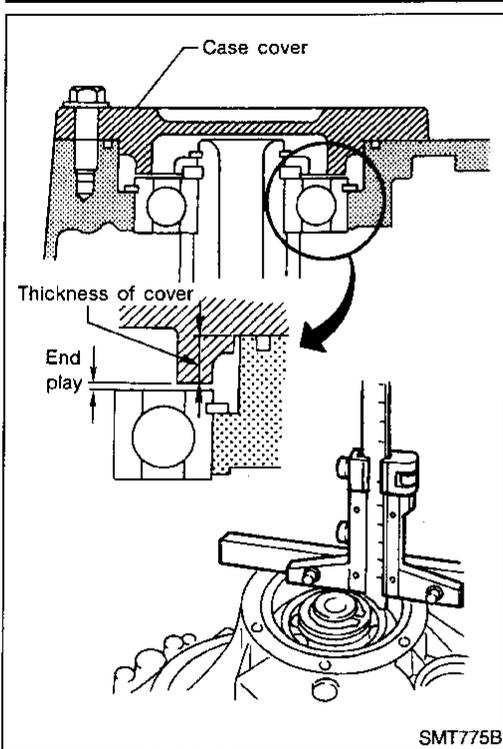


15. Install mainshaft front bearing snap ring.



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

ASSEMBLY



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

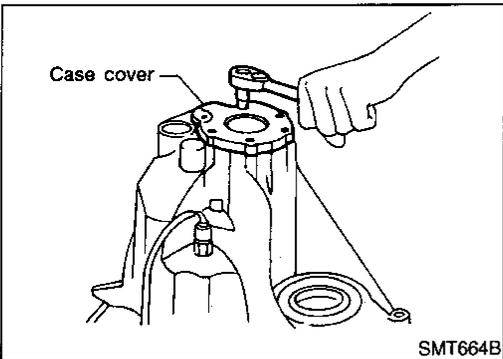
Mainshaft rear bearing end play:

0 - 0.1 mm (0 - 0.004 in)

- Select case cover so that clearance "C" will be specified clearance.

Case cover:

Refer to SDS, MT-46.



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

- Apply recommended sealant to mating surface of transmission case. Refer to MT-15.

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SERVICE DATA AND SPECIFICATIONS (SDS)

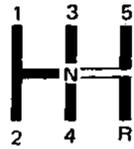
General Specifications

General Specifications

NCMT0024

NCMT0024S01

TRANSAXLE

Engine		SR20DE		
Transaxle model		RS5F32A	RS5F32V	
Number of speeds		5		
Synchronmesh type		Warner		
Shift pattern				
Gear ratio	1st	3.0625		
	2nd	1.8261		
	3rd	1.2857		
	4th	0.9750		
	5th	0.7556		
	Reverse	3.1538		
Number of teeth	Input gear	1st	16	
		2nd	23	
		3rd	28	
		4th	40	
		5th	45	
		Rev.	13	
	Main gear	1st	49	
		2nd	42	
		3rd	36	
		4th	39	
		5th	34	
		Rev.	41	
	Reverse idler gear		31	
	Oil level mm (in)		40 - 45 (1.57 - 1.77)	34 - 40 (1.34 - 1.57)
Oil capacity (Reference) ℓ (Imp pt)		3.6 - 3.8 (6-3/8 - 6-3/4)	3.7 - 3.9 (6-1/2 - 6-7/8)	
Remarks		2nd & 3rd double baulk ring type synchronizer		

FINAL GEAR

NCMT0024S02

Engine		SR20DE	
Transaxle model		RS5F32A	RS5F32V
Final gear ratio		4.1764	
Number of teeth	Final gear/Pinion	71/17	
	Side gear/Pinion mate gear	14/10	

SERVICE DATA AND SPECIFICATIONS (SDS)

Gear End Play

Gear End Play

NCMT0025
Unit: mm (in)

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

Clearance Between Baulk Ring and Gear

NCMT0026

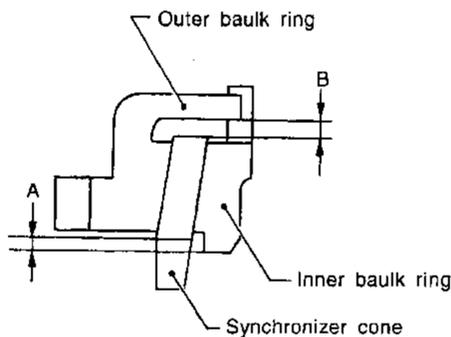
1ST, 4TH, 5TH BAULK RING

NCMT0026S01
Unit: mm (in)

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

2ND AND 3RD BAULK RING

NCMT0026S02
Unit: mm (in)



SMT757C

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

Available Check Plugs

NCMT0027

REVERSE CHECK PLUG

NCMT0027S01

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

* Standard check plug

SERVICE DATA AND SPECIFICATIONS (SDS)

Available Case Cover

Available Case Cover

NCMT0034

CASE COVER

NCMT0034S01

Mainshaft rear bearing end play	0 - 0.1 mm (0 - 0.004 in)
Thickness "T" mm (in)	Part No.
10.78 (0.4244)	32131-50J00
10.83 (0.4264)	32131-50J01
10.88 (0.4283)	32131-50J02
10.93 (0.4303)	32131-50J03
10.98 (0.4323)	32131-50J04
11.03 (0.4343)	32131-50J05

Available Snap Rings

NCMT0028

INPUT SHAFT FRONT BEARING

NCMT0028S01

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

INPUT SHAFT 5TH SYNCHRONIZER HUB

NCMT0028S02

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

SERVICE DATA AND SPECIFICATIONS (SDS)

Available C-rings

Available C-rings

NCMT0029

NCMT0029S01

MAINSHAFT C-RING

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

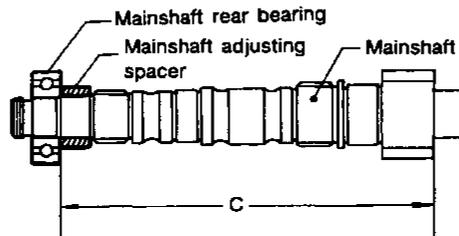
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Available Spacers

NCMT0030

NCMT0030S01

MAINSHAFT BEARING ADJUSTING SPACER



SMT693B

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

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SERVICE DATA AND SPECIFICATIONS (SDS)

Available Washers

Available Washers

DIFFERENTIAL SIDE GEAR THRUST WASHER RS5F32A

NCMT0031

NCMT0031S01

NCMT0031S0101

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

RS5F32V

NCMT0031S0102

Allowable clearance between side gear and differential case or viscous coupling with washer	0.1 - 0.2 mm (0.004 - 0.008 in)	
	Thickness mm (in)	Part number
Differential case side	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
Viscous coupling side	0.70 - 0.75 (0.0276 - 0.0295)	38424-D2110
	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
	1.00 - 1.05 (0.0394 - 0.0413)	38424-D2116
	1.05 - 1.10 (0.0413 - 0.0433)	38424-D2117
	1.10 - 1.15 (0.0433 - 0.0453)	38424-D2118
	1.15 - 1.20 (0.0453 - 0.0472)	38424-D2119
	1.20 - 1.25 (0.0472 - 0.0492)	38424-D2120
1.25 - 1.30 (0.0492 - 0.0512)	38424-D2121	
1.30 - 1.35 (0.0512 - 0.0531)	38424-D2122	

Available Shims — Differential Side Bearing Preload and Adjusting Shim

BEARING PRELOAD (REUSED BEARING)

NCMT0032

NCMT0032S01

Unit: mm (in)

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

TURNING TORQUE (NEW BEARING)

NCMT0032S02

Unit: N·m (kg-cm, in-lb)

Final drive	2.9 - 6.9 (30 - 70, 26 - 61)
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SERVICE DATA AND SPECIFICATIONS (SDS)

Available Shims — Differential Side Bearing Preload and Adjusting Shim (Cont'd)

DIFFERENTIAL SIDE BEARING ADJUSTING SHIMS

RS5F32A

NCMT0032S03

NCMT0032S0301

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

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RS5F32V

NCMT0032S0302

Thickness mm (in)	Part number
0.32 (0.0126)	31493-31X01
0.36 (0.0142)	31493-31X02
0.40 (0.0157)	31493-31X03
0.44 (0.0173)	31493-31X04
0.48 (0.0189)	31493-31X05
0.52 (0.0205)	31493-31X06
0.56 (0.0220)	31493-31X07
0.60 (0.0236)	31493-31X08
0.64 (0.0252)	31493-31X09
0.68 (0.0268)	31493-31X10
0.72 (0.0283)	31493-31X11
0.76 (0.0299)	31493-31X12
0.80 (0.0315)	31493-31X13
0.84 (0.0331)	31493-31X14
0.88 (0.0346)	31493-31X15
0.92 (0.0362)	31493-31X16
0.96 (0.0378)	31493-31X17
1.44 (0.0567)	31493-31X18

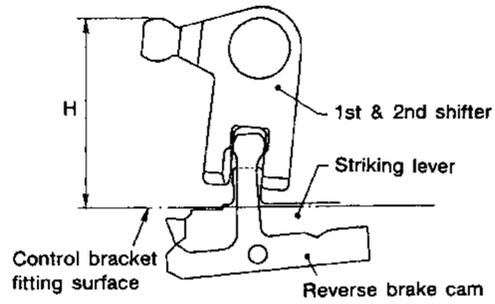
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SERVICE DATA AND SPECIFICATIONS (SDS)

Input Shaft Braking Mechanism

Input Shaft Braking Mechanism

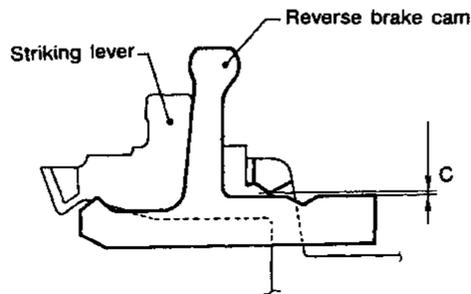
NCMT0033



SMT735B

Maximum height "H" between the control bracket fitting surface and 1-2 shifter
mm (in)

67.16 - 67.64 (2.6441 - 2.6630)



SMT736B

Clearance "C" between reverse brake cam and striking lever
mm (in)

0.05 - 0.125 (0.0020 - 0.0049)