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PRECAUTIONS

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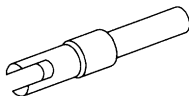
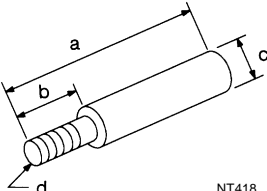
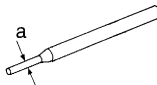
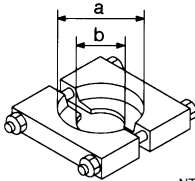
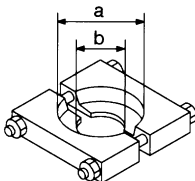
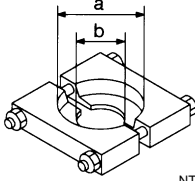

Caution

ECS005G/

- Do not reuse transaxle oil, once it has been drained.
- Check oil level or replace oil with vehicle on level ground.
- During removal or installation, keep inside of transaxle clear of dust or dirt.
- Check for the correct installation status prior to removal or disassembly. If mating marks are required, be certain they do not interfere with the function of the parts they are applied to.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, observe it.
- Be careful not to damage sliding surfaces and mating surfaces.

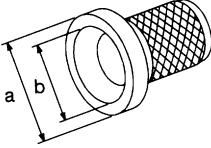
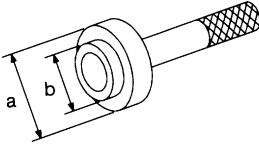
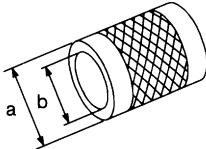
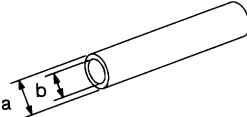
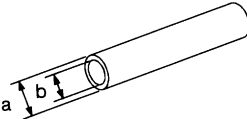
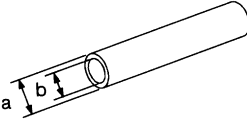
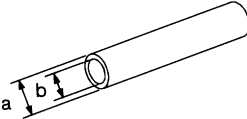
PREPARATION

Special Service Tools

Tool number Tool name	Description
KV38105900 Preload adapter  NT087	<ul style="list-style-type: none"> 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.)
KV38106000 Height gauge adapter (differential side bearing) a: 140 mm (5.51 in) b: 40 mm (1.57 in) c: 16 mm (0.63 in) dia. d: M8 x 1.25P  NT418	<ul style="list-style-type: none"> Selecting differential side bearing adjusting shim (Use with KV38105900.)
KV32101000 Pin punch a: 4 mm (0.16 in) dia.  NT410	<ul style="list-style-type: none"> Removing and installing retaining pin
ST22730000 Puller a: 82 mm (3.23 in) dia. b: 30 mm (1.18 in) dia.  NT411	<ul style="list-style-type: none"> Removing mainshaft front and rear bearing inner race Removing 5th main gear
ST30031000 Puller a: 90 mm (3.54 in) dia. b: 50 mm (1.97 in) dia.  NT411	<ul style="list-style-type: none"> Removing differential side bearing inner race
ST30021000 Puller a: 110 mm (4.33 in) dia. b: 68 mm (2.68 in) dia.  NT411	<ul style="list-style-type: none"> Removing 5th synchronizer
ST33290001 Puller a: 250 mm (9.84 in) b: 160 mm (6.30 in)  NT414	<ul style="list-style-type: none"> Removing differential oil seal Removing mainshaft front bearing outer race Removing differential side bearing outer race

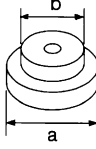
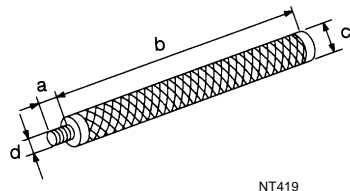
PREPARATION

[RS5F30A]

Tool number Tool name		Description
ST33400001 Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.	 NT086	<ul style="list-style-type: none"> ● Installing differential oil seal
KV38102100 Drift a: 44 mm (1.73 in) dia. b: 24.5 mm (0.965 in) dia.	 NT427	<ul style="list-style-type: none"> ● Installing input shaft rear bearing
ST33200000 Drift a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia.	 NT091	<ul style="list-style-type: none"> ● Installing mainshaft front bearing outer race
ST22350000 Drift a: 34 mm (1.34 in) dia. b: 28 mm (1.10 in) dia.	 NT065	<ul style="list-style-type: none"> ● Installing input shaft front bearing
ST22452000 Drift a: 45 mm (1.77 in) dia. b: 36 mm (1.42 in) dia.	 NT065	<ul style="list-style-type: none"> ● Installing 1st & 2nd synchronizer
ST37750000 Drift a: 40 mm (1.57 in) dia. b: 31 mm (1.22 in) dia.	 NT065	<ul style="list-style-type: none"> ● Installing 5th main gear ● Installing 3rd & 4th synchronizer ● Installing input shaft oil seal ● Installing 5th synchronizer
ST22360002 Drift a: 29 mm (1.14 in) dia. b: 23 mm (0.91 in) dia.	 NT065	<ul style="list-style-type: none"> ● Installing mainshaft rear bearing inner race

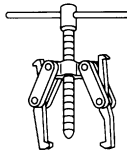
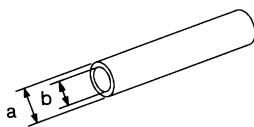
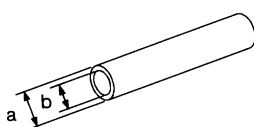
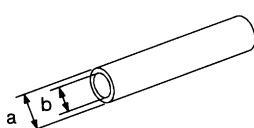
PREPARATION

[RS5F30A]

Tool number Tool name	Description
ST30621000 Drift a: 79 mm (3.11 in) dia. b: 59 mm (2.32 in) dia.  NT073	<ul style="list-style-type: none"> Installing differential side bearing outer race (Use with ST30611000.)
ST30611000 Drift handle a: 15 mm (0.59 in) b: 335 mm (13.19 in) c: 25 mm (0.98 in) dia. d: M12 x 1.5P  NT419	<ul style="list-style-type: none"> Installing differential side bearing outer race (Use with ST30621000.)

Commercial Service Tools

ECS006B0

Tool name	Description
Puller  NT077	<ul style="list-style-type: none"> Removing input shaft front bearing
Drift a: 26 mm (1.02 in) dia. b: 21 mm (0.83 in) dia.  NT065	<ul style="list-style-type: none"> Installing mainshaft front bearing inner race
Drift a: 56 mm (2.20 in) dia. b: 50.5 mm (1.988 in) dia.  NT065	<ul style="list-style-type: none"> Installing differential side bearing inner race
Drift a: 38 mm (1.50 in) dia. b: 32 mm (1.26 in) dia.  NT065	<ul style="list-style-type: none"> Installing striking rod oil seal

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

[RS5F30A]

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting Chart

ECS005GL

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.

MANUAL TRANSAXLE

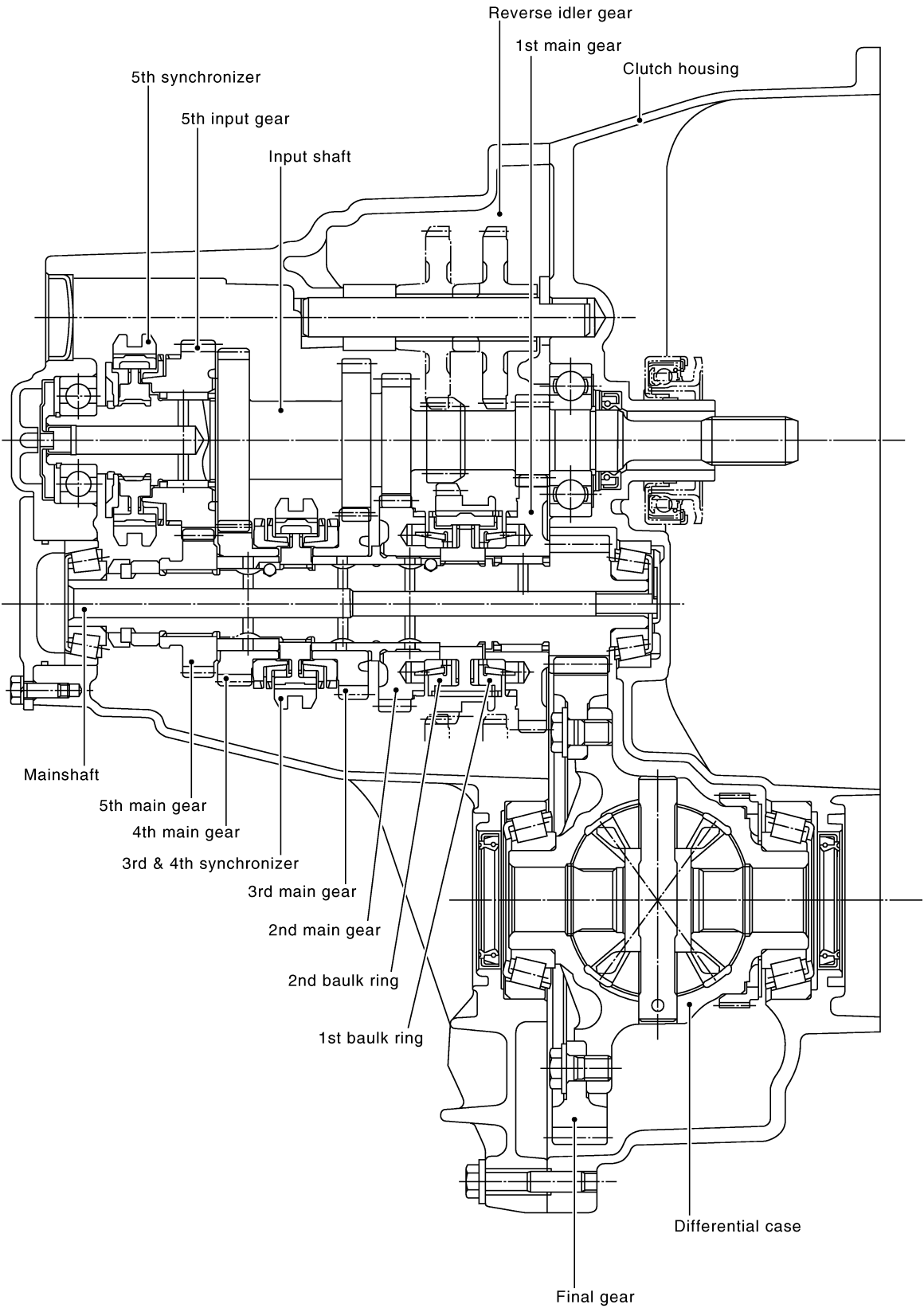
Reference page		MT-11	MT-11	MT-11	MT-19	MT-19	MT-19	MT-15	MT-21	MT-21	MT-20	MT-20	MT-20	MT-20
SUSPECTED PARTS (Possible cause)		(Oil level is low.)	(Wrong oil)	(Oil level is high.)	GASKET (Damaged)	OIL SEAL (Worn or damaged)	O-RING (Worn or damaged)	SHIFT CONTROL ROD (Worn)	CHECK PLUG RETURN SPRING AND 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			

DESCRIPTION

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Cross-Sectional View

ECS005GM



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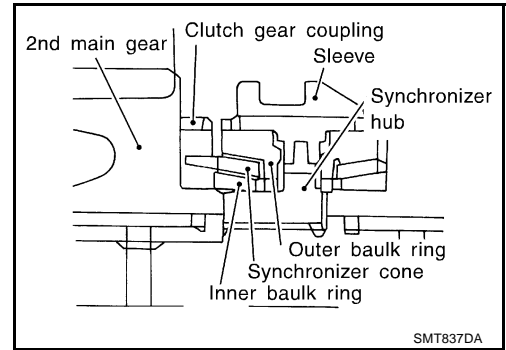
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DOUBLE-CONE SYNCHRONIZER

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




M/T OIL

Changing M/T Oil
DRAINING

1. Start the engine and let it run to warm up the transaxle.
2. Stop the engine. Remove drain plug and drain oil.
3. Set a gasket on the drain plug and install it to the transaxle.

Drain plug:

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

CAUTION:

Do not reuse gasket.

FILLING

1. Remove filler plug. Fill with new oil until oil level reaches the specified limit near filler plug mounting hole.

Oil grade : API GL-4

Capacity (reference) : Approx. 2.8 - 3.0 ℓ (4-7/8 - 5-1/4 Imp pt)

2. After refilling oil, check oil level. Assemble gasket to filler plug, then install it to transaxle body.

Filler plug:

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

CAUTION:

Do not reuse gasket.

Checking M/T Oil
OIL LEAKAGE AND OIL LEVEL

ECS005GO

- Check that oil is not leaking from transaxle or around it.
- Check oil level from filler plug mounting hole as shown in the figure.

CAUTION:

Never start engine while checking oil level.

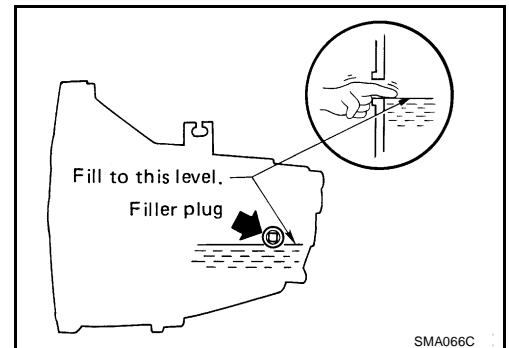
- Set a new gasket on the filler plug and install it on the transaxle.

Filler plug:

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

CAUTION:

Do not reuse gasket.



SIDE OIL SEAL

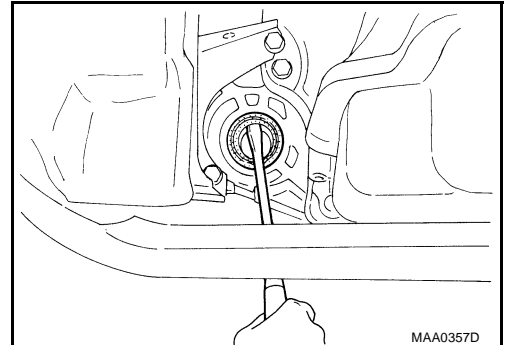
Removal and Installation

REMOVAL

1. Remove the drive shaft from the transaxle. Refer to [FAX-11, "FRONT DRIVE SHAFT"](#).
2. Remove oil seal with a slotted screwdriver.

CAUTION:

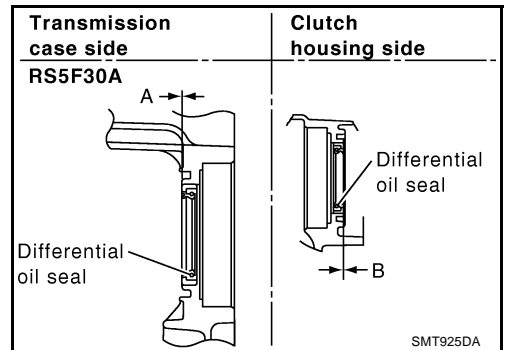
Be careful not to damage the case surface when removing the oil seal.



INSTALLATION

1. Using a drift (special service tool), drive the oil seal straight until it protrudes from the case end equal to dimension A shown in the figure.

Dimension A : Within 0.5 mm of flush with the case.



Drift to be used:

Transaxle case side	ST3340 0001
Clutch housing side	

CAUTION:

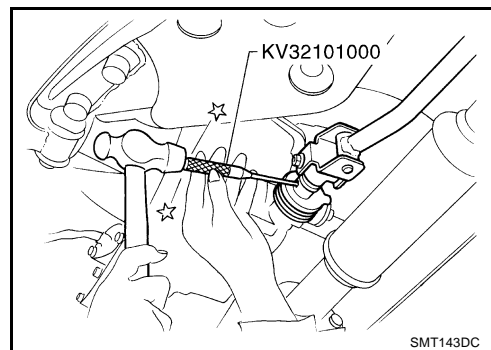
- When installing oil seals, apply multi-purpose grease to oil seal lips.
 - Do not reuse oil seal.
2. Install all parts in reverse order of removal and check oil level after installation.

STRIKING ROD OIL SEAL

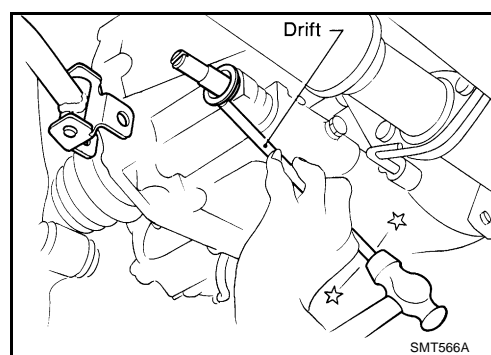
Removal and Installation

REMOVAL

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

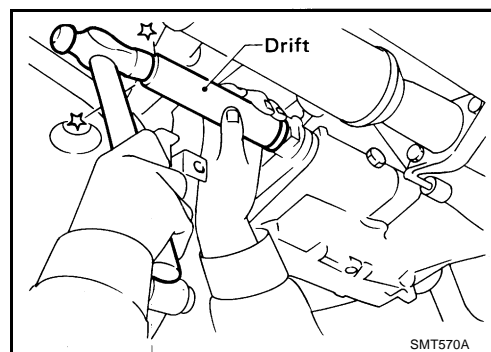


3. Remove striking rod oil seal.

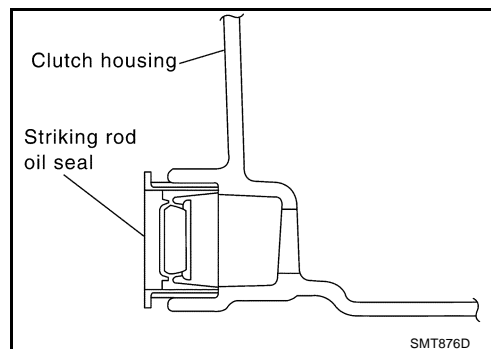


INSTALLATION

1. 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.**

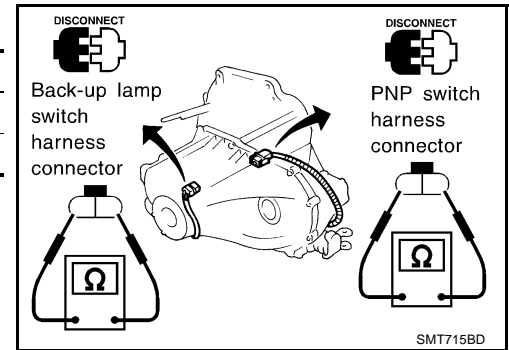


POSITION SWITCH

Checking BACK-UP LAMP SWITCH

- Check continuity.

Gear position	Continuity
Reverse	Yes
Except reverse	No



PNP SWITCH

- Check continuity.

Gear position	Continuity
Neutral	Yes
Except neutral	No

[RS5F30A]

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ECS005GS

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- MT-15**

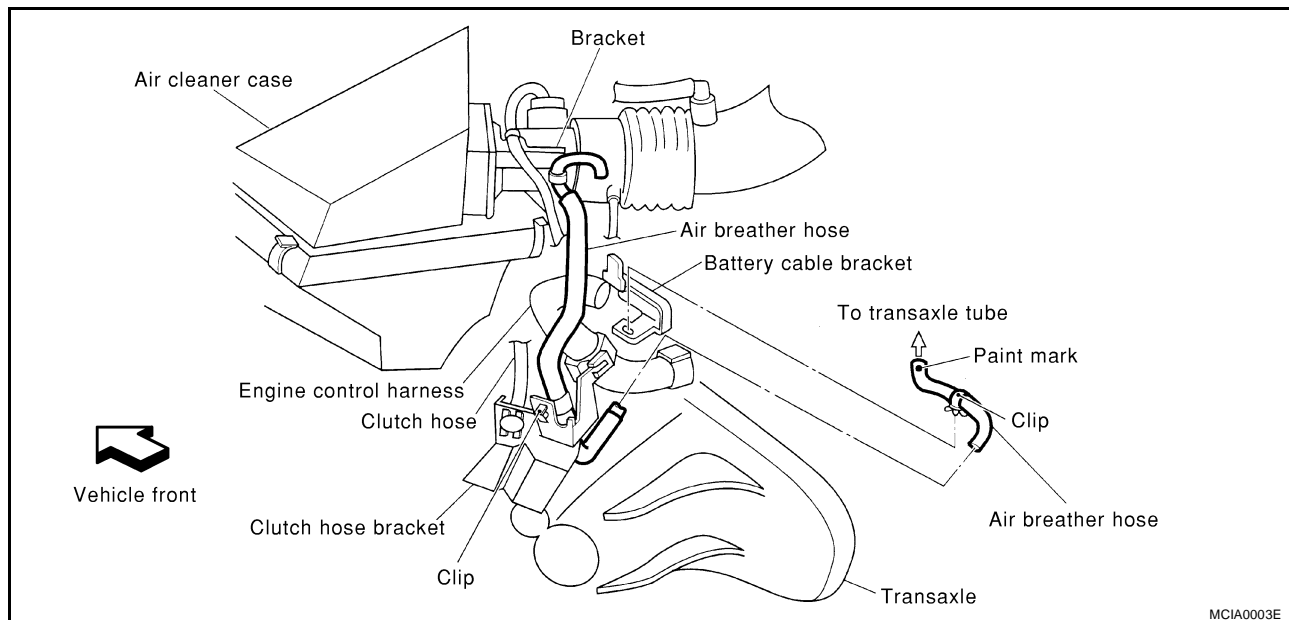
AIR BREATHER HOSE

PFP:31098

Removal and Installation

ECS005GT

Refer to the figure for air breather hose removal and installation information.



MCIA0003E

CAUTION:

- Make sure there are no pinched or restricted areas on the air breather hose caused by bending or winding when installing it.
- Be sure to insert hose into the transaxle tube until overlap area reaches the spool.

TRANSAXLE ASSEMBLY

Removal and Installation

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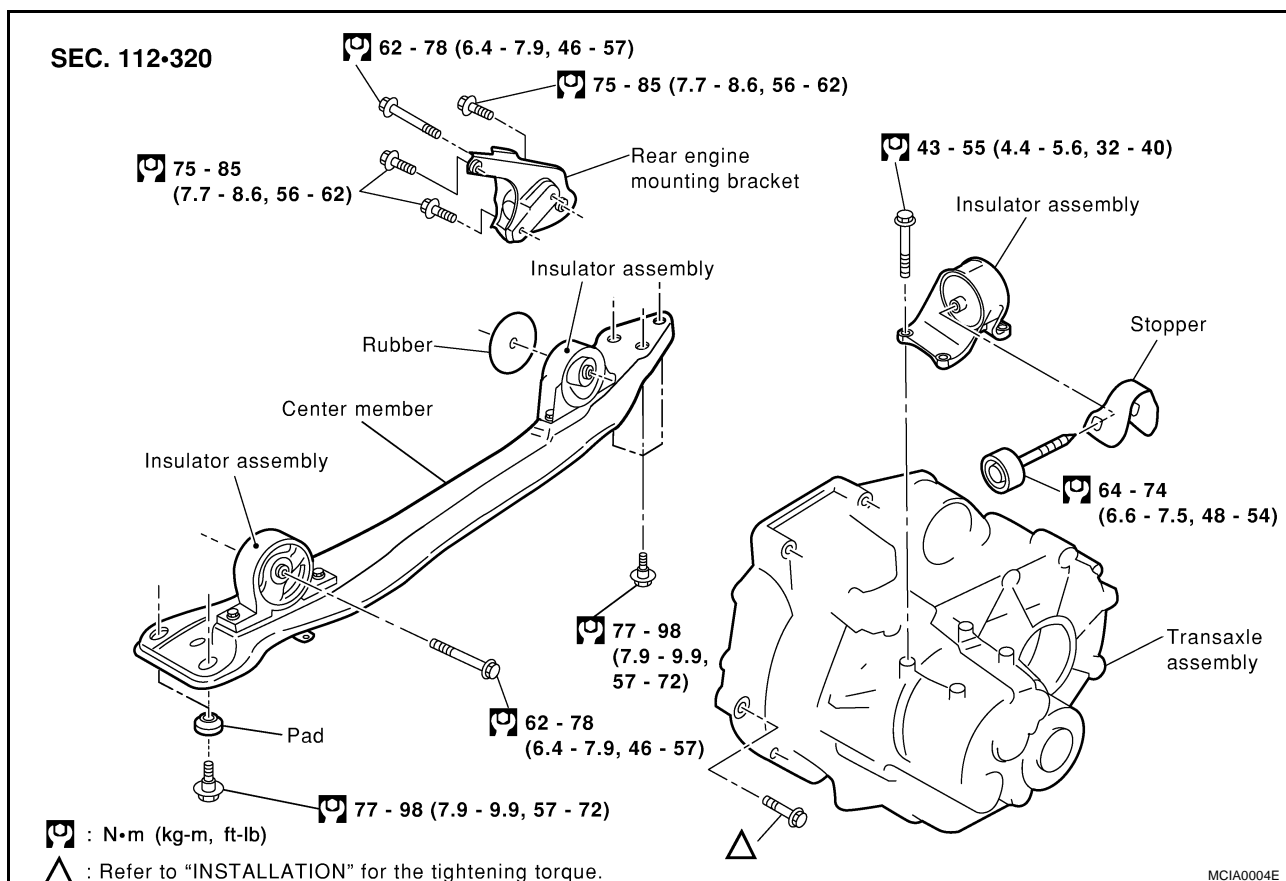
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REMOVAL

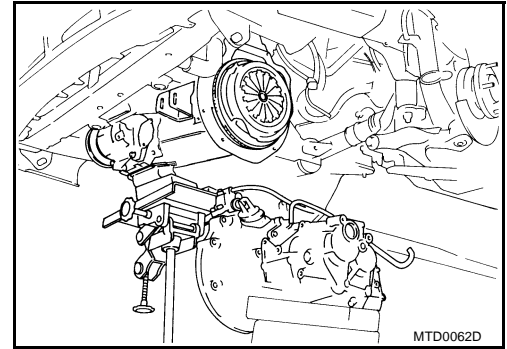
1. Remove air cleaner, air duct, and battery.
2. Remove the air breather hose.
3. Remove clutch operating cylinder.
- CAUTION:**
Do not depress clutch pedal during removal procedure.
4. Disconnect control linkage from transaxle.
5. Disconnect PNP switch, back-up lamp switch, vehicle speed sensor and ground harness connectors.
6. Remove starter motor.
7. Drain gear oil from transaxle.
8. Remove suspension cross bar.
9. Remove exhaust front tube and the drive shaft.
10. Place a jack onto the transaxle.

CAUTION:

When setting jack, be careful not to bring it into contact with the switch.

11. Remove center member, engine insulator and engine mount bracket.
12. Support engine by placing a jack under oil pan.
13. Remove bolts securing transaxle to engine.

14. Remove transaxle from vehicle.



INSTALLATION

Paying attention to the following items, install in the reverse order of removal.

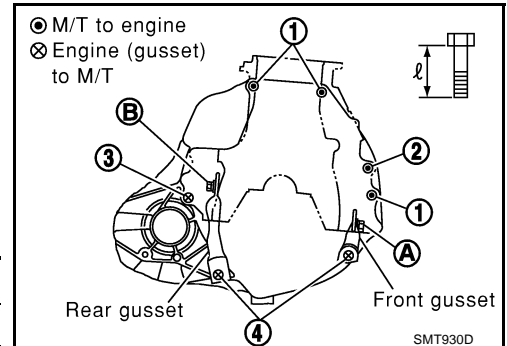
- When installing the transaxle to the engine, tighten to the specified torque.

CAUTION:

When installing transaxle, be careful not to bring transaxle input shaft into contact with the clutch cover.

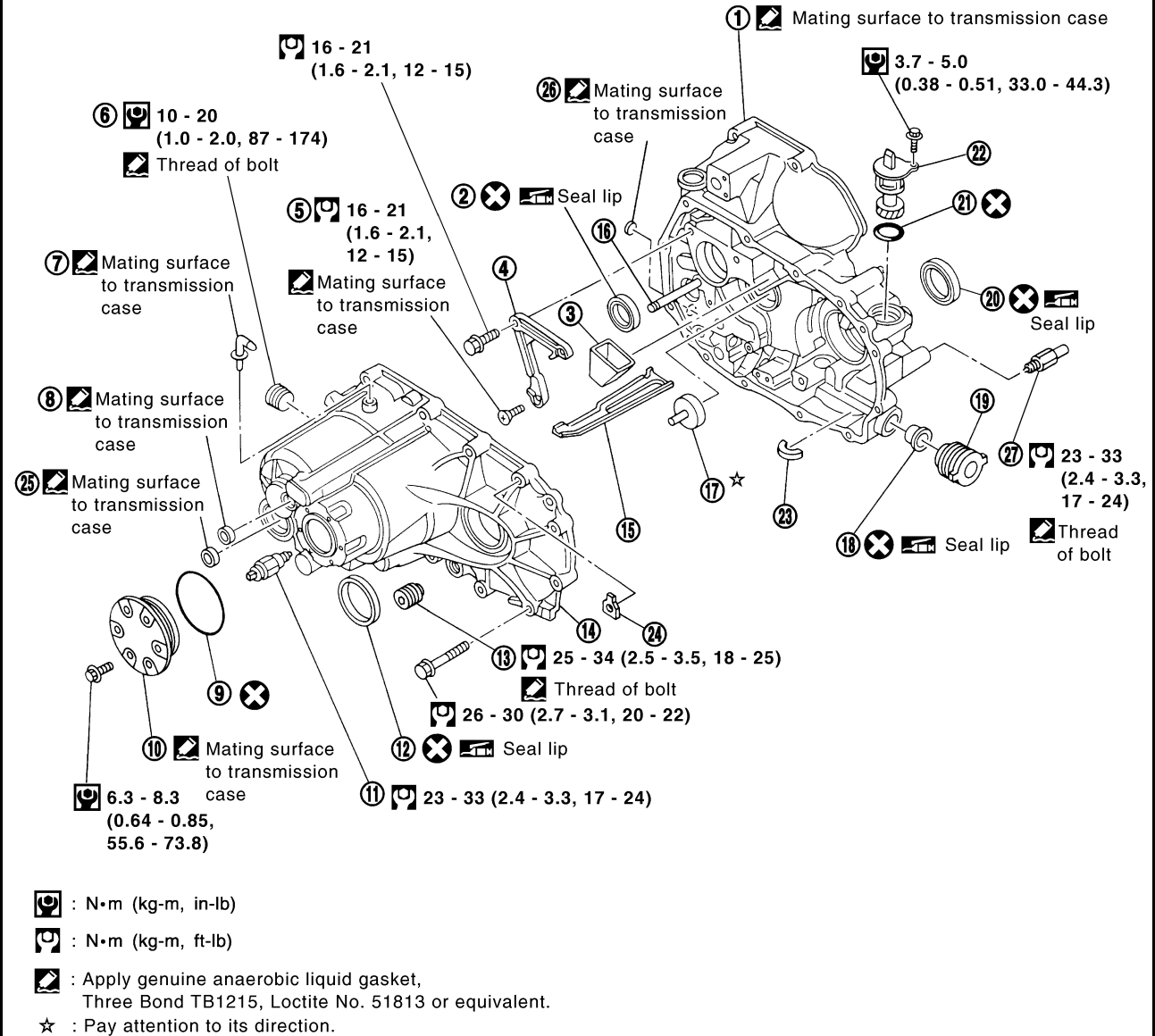
Bolt No.	Tightening torque N·m (kg-m, ft-lb)	"ℓ" mm (in)
1	30 - 40 (3.1 - 4.1, 22 - 30)	70 (2.76)
2	30 - 40 (3.1 - 4.1, 22 - 30)	80 (3.15)
3	30 - 40 (3.1 - 4.1, 22 - 30)	30 (1.18)
4*1	15 - 20 (1.6 - 2.1, 12 - 15)	25 (0.98)
Front gusset A to engine	30 - 40 (3.1 - 4.1, 22 - 30)	20 (0.79)
Rear gusset B to engine	15 - 20 (1.6 - 2.1, 12 - 15)	16 (0.63)

*1: With gussets



Component Parts CASE AND HOUSING COMPONENTS

SEC. 320



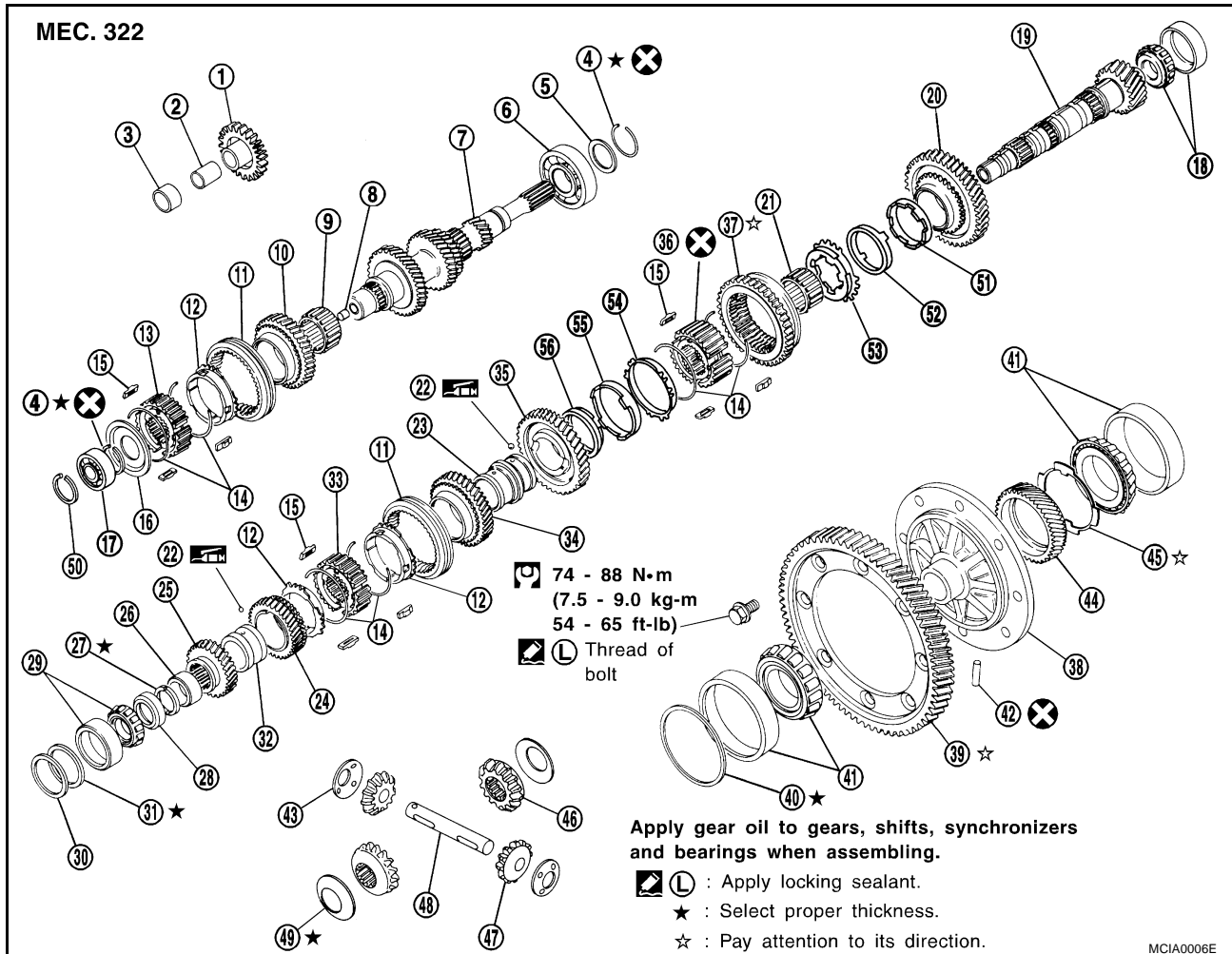
MCIA0005E

- | | | |
|---------------------------------|---------------------------|---------------------------|
| 1. Clutch housing | 2. Input shaft oil seal | 3. Oil pocket |
| 4. Bearing retainer | 5. Torx screw | 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. Transaxle case | 15. Oil gutter |
| 16. Reverse idler shaft | 17. Oil channel | 18. Striking rod oil seal |
| 19. Boot | 20. Differential oil seal | 21. O-ring |
| 22. Speedometer pinion assembly | 23. Magnet | 24. Earth term |
| 25. Welch plug | 26. Welch plug | 27. PNP switch |

TRANSAXLE ASSEMBLY

[RS5F30A]

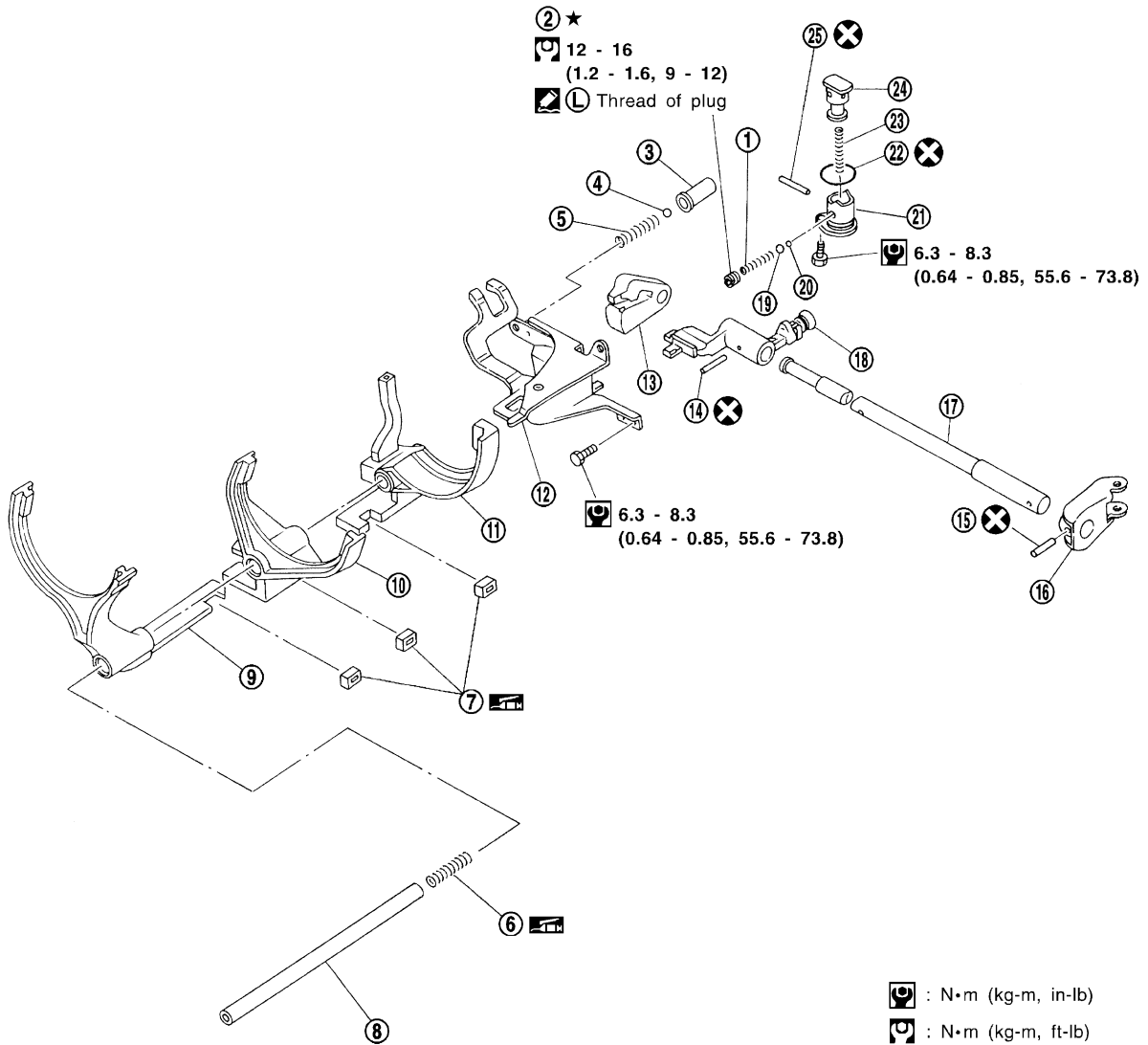
GEAR COMPONENTS



- | | | |
|--|-------------------------------|--------------------------------|
| 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. Oil plug | 9. 5th gear needle bearing |
| 10. 5th input gear | 11. Coupling sleeve | 12. Baulk ring |
| 13. 5th synchronizer hub | 14. Spread spring | 15. Shifting insert |
| 16. 5th stopper | 17. Input shaft rear bearing | 18. Mainshaft front bearing |
| 19. Mainshaft | 20. 1st main gear | 21. 1st gear needle bearing |
| 22. Steel ball | 23. 2nd & 3rd bushing | 24. 4th main gear |
| 25. 5th main gear | 26. Thrust washer | 27. Mainshaft C-ring |
| 28. C-ring holder | 29. Mainshaft rear bearing | 30. Spacer |
| 31. Mainshaft rear bearing adjusting shim | 32. 4th bushing | 33. 3rd & 4th synchronizer hub |
| 34. 3rd main gear | 35. 2nd main gear | 36. 1st & 2nd synchronizer hub |
| 37. Reverse main gear (Coupling sleeve) | 38. Differential case | 39. Final gear |
| 40. Differential side bearing adjusting shim | 41. Differential side bearing | 42. Retaining pin |
| 43. Pinion mate thrust washer | 44. Speedometer drive gear | 45. Speedometer stopper |
| 46. Side gear | 47. Pinion mate gear | 48. Pinion mate shaft |
| 49. Side gear thrust washer | 50. Snap ring | 51. 1st inner baulk ring |
| 52. 1st synchronizer cone | 53. 1st outer baulk ring | 54. 2nd outer baulk ring |
| 55. 2nd synchronizer cone | 56. 2nd inner baulk ring | |

SHIFT CONTROL COMPONENTS

SEC. 328



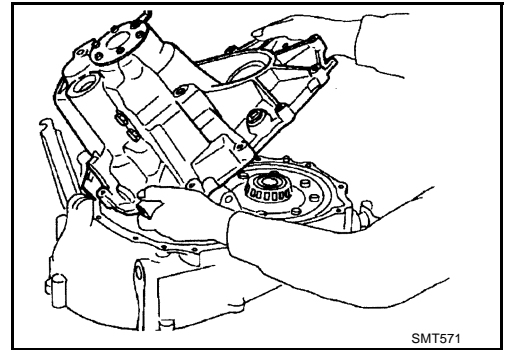
SMT592D

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

Disassembly and Assembly

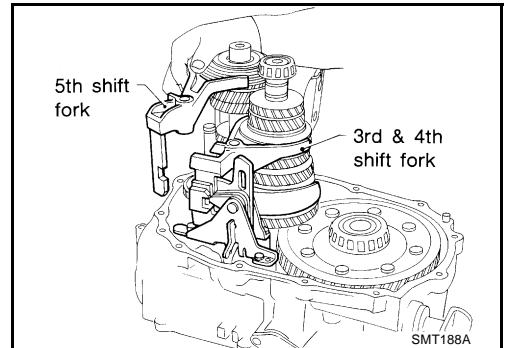
DISASSEMBLY

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



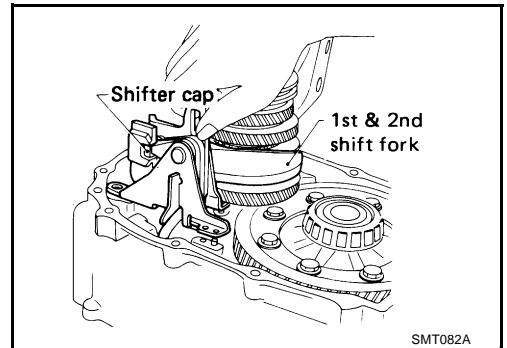
2. Draw out reverse idler spacer and fork shaft, then remove 5th and 3rd & 4th shift forks.

- Be careful not to lose shifter cap.

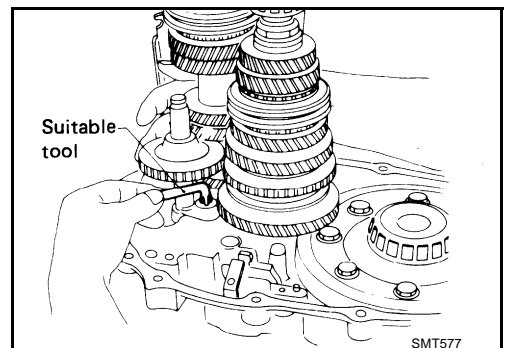


3. Remove control bracket with 1st & 2nd shift fork.

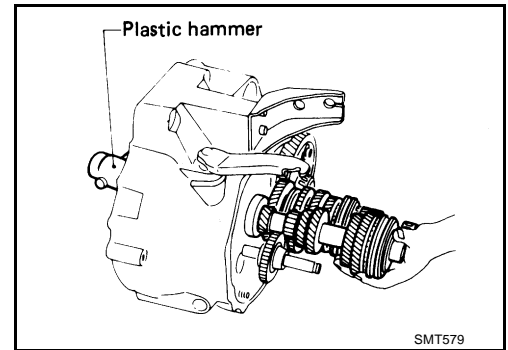
- Be careful not to lose shifter cap.



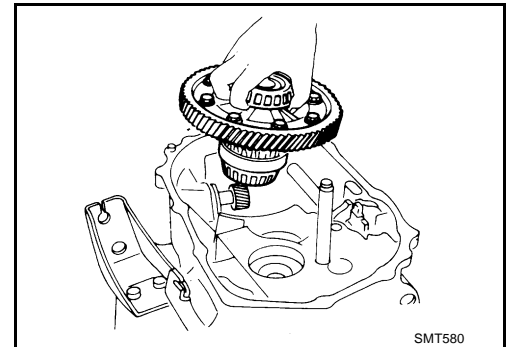
4. Remove gear components from clutch housing.
- a. Remove three screws and detach bearing retainer.
 - One of these three screws is torx type and should be removed with a suitable tool, as shown.



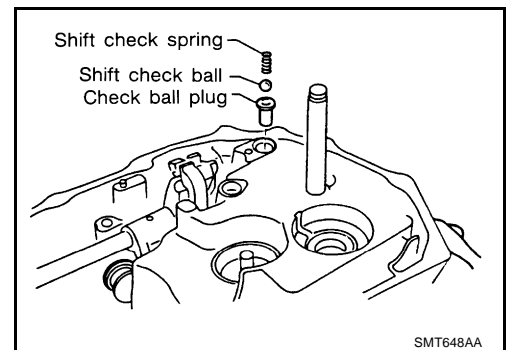
- b. Remove input shaft together with mainshaft by tapping lightly.
- **Always withdraw mainshaft straight out. Failure to do so can damage resin oil channel on clutch housing side.**
 - **Do not draw out reverse idler shaft from clutch housing because these fittings will be loose.**
 - **When removing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



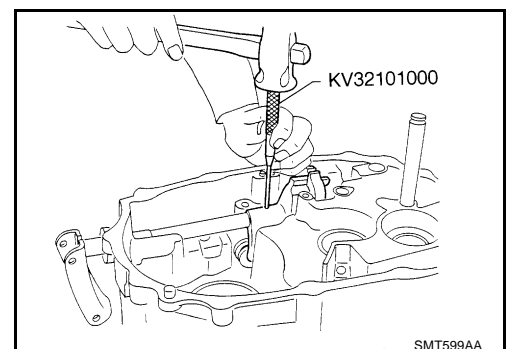
- c. Remove reverse idler gear and final drive assembly.



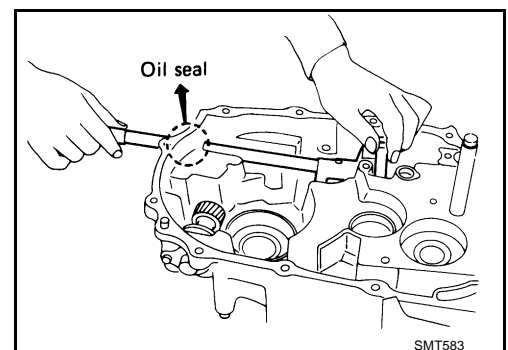
5. Remove oil pocket, shift check ball, shift check spring and check ball plug.



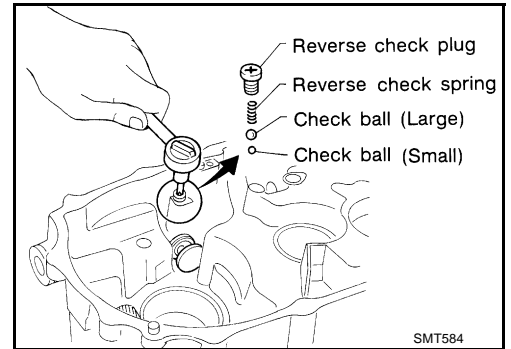
6. Drive retaining pin out of striking lever, then remove striking rod, striking lever and striking interlock.
- **Select a position where retaining pin does not interfere with clutch housing when removing retaining pin.**



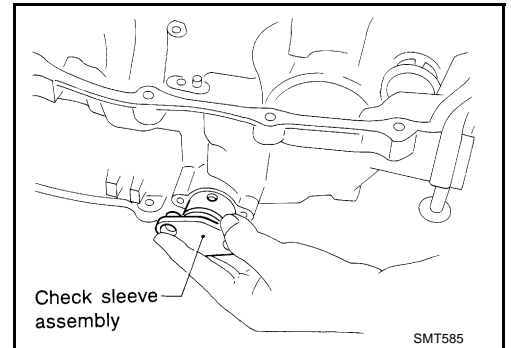
- **Be careful not to damage oil seal lip, when removing striking rod. If necessary, tape edges of striking rod.**



7. Remove reverse check plug, then detach reverse check spring and check balls.

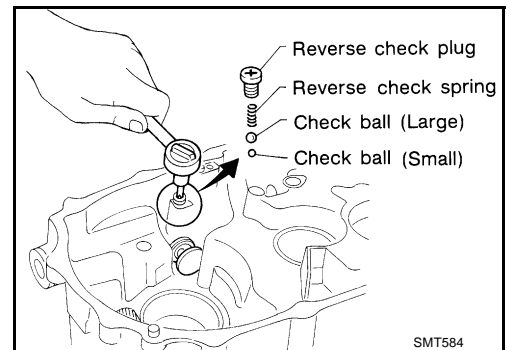
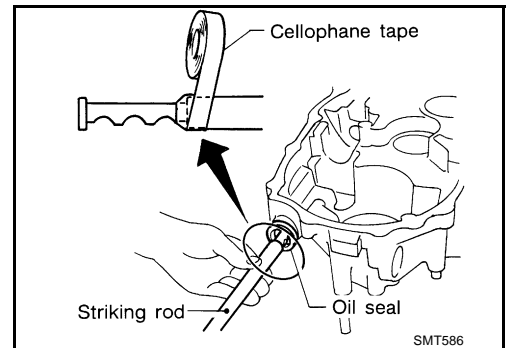


8. Remove check sleeve assembly.



ASSEMBLY

1. Install striking rod, lever and interlock.
 - Tape edges of striking rod to avoid damaging oil seal lip during installation.
 - When taped edges of striking rod are past the oil seal, remove tape.
2. Install reverse check sleeve assembly.
3. Install check balls, reverse check spring and check plug.



4. Check reverse check turning torque (At striking rod).

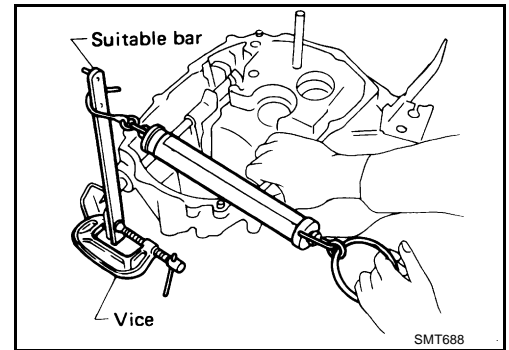
Reverse check turning
torque (At striking rod)

: Refer to MT-49,
"REVERSE
CHECK PLUGS"

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

Reverse check plug

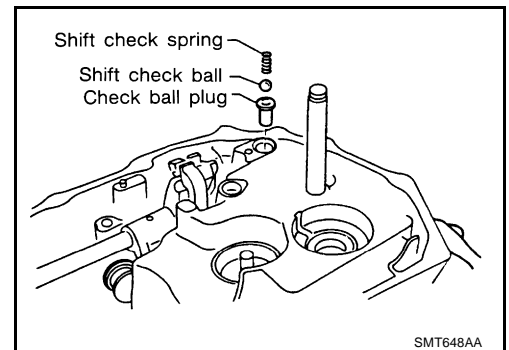
: Refer to MT-49,
"REVERSE
CHECK PLUGS"



5. Install selected reverse check plug.

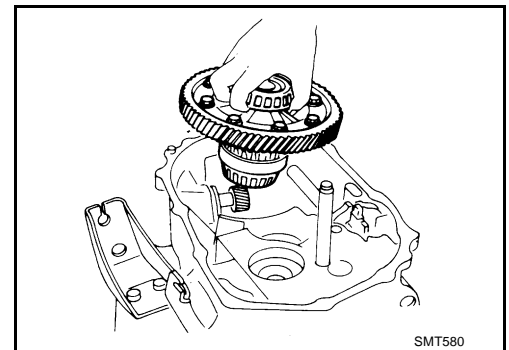
- **Apply locking sealant to thread of plug before installing it.**

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



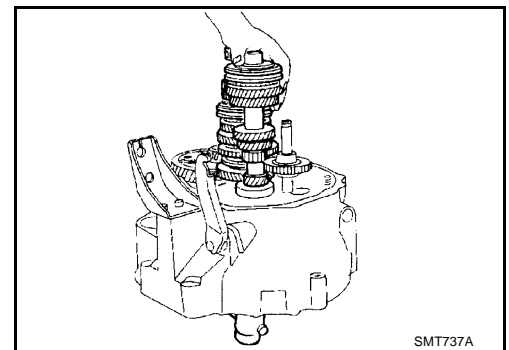
8. Install gear components onto clutch housing.

- a. Install final drive assembly and reverse idler gear.



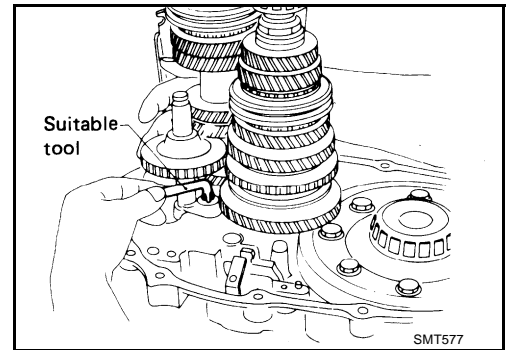
- b. Install mainshaft and input gear as a set.

- **Take care not to damage oil seal lip with splines of input shaft while shaft is being inserted into clutch housing.**
- **Take care not to damage oil channel when inserting mainshaft into clutch housing.**

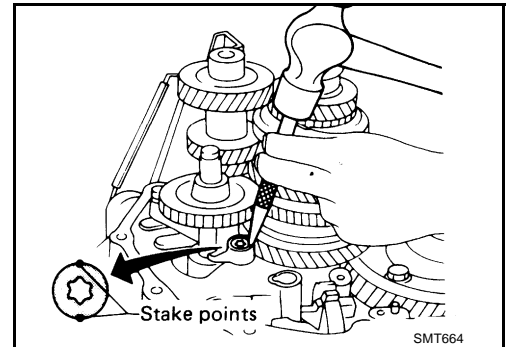


c. Install bearing retainer.

- One of these three screws is torx type and should be installed with suitable tool, as shown.

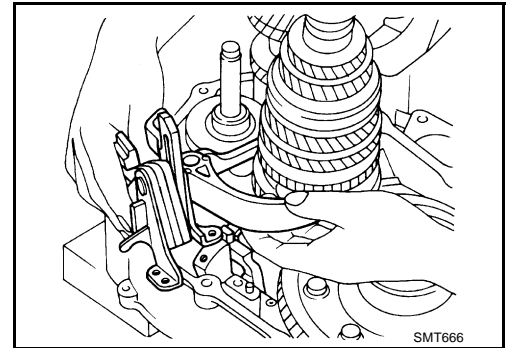


d. After installing torx screw, stake it at two points.



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

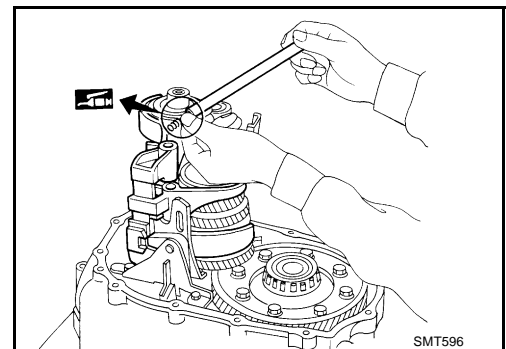
10. Install 3rd & 4th and 5th shift forks.



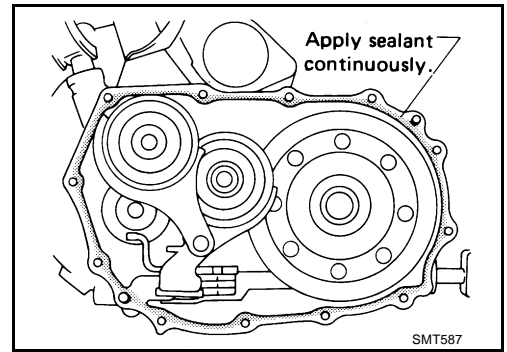
11. Insert fork shaft.

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

12. Install reverse idler spacer.



13. Apply recommended sealant to mating surface of clutch housing.
14. Install transaxle case on clutch housing.



ECS005PL

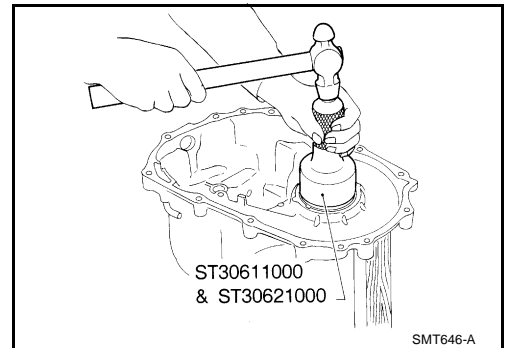
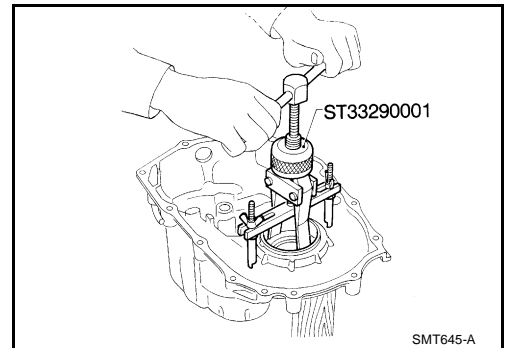
Adjustment

DIFFERENTIAL SIDE BEARING PRELOAD

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

- Differential case
- Differential side bearing
- Clutch housing
- Transaxle case

1. Remove differential side bearing outer race (transaxle case side) and shim(s).
 - Tighten transaxle case fixing bolts to the specified torque. Refer to .
2. Reinstall differential side bearing outer race without shim(s).
3. Install final drive assembly on clutch housing.
4. Install transaxle case on clutch housing.

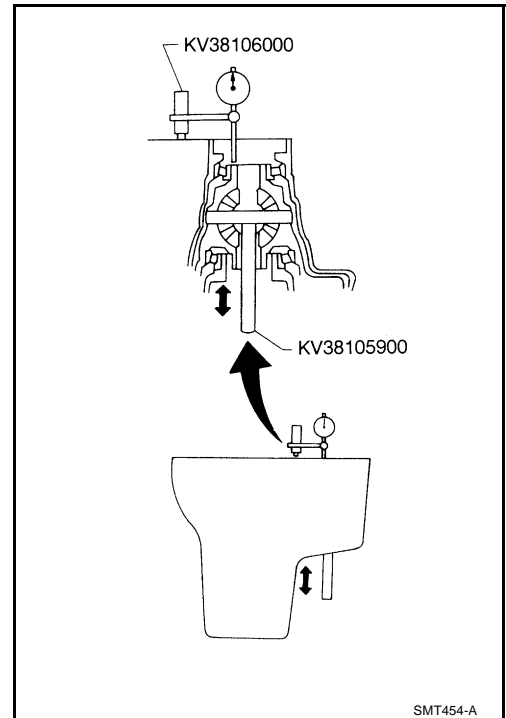


5. Set dial indicator on front end of differential case.
6. Insert Tool all the way into differential side gear.
7. Move Tool up and down and measure dial indicator deflection.
8. Select shim considering bearing preload.

Suitable shim thickness = Dial indicator deflection + specified bearing preload

Differential side bearing preload and adjusting shims : Refer to MT-51, "BEARING PRELOAD" .

9. Install selected shim(s) and differential side bearing outer race.
10. Check differential side bearing turning torque.
 - a. Install final drive assembly on clutch housing.
 - b. Install transaxle case on clutch housing.
 - **Tighten transaxle case fixing bolts to the specified torque. Refer to MT-19, "CASE AND HOUSING COMPONENTS" .**

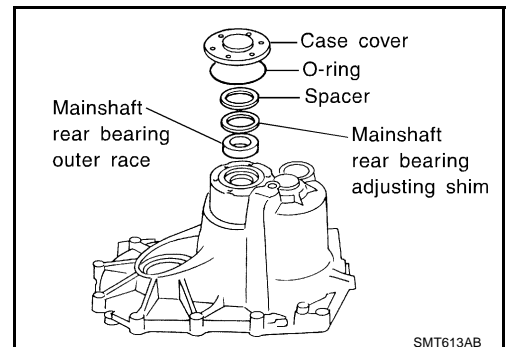


MAINSHAFT BEARING PRELOAD

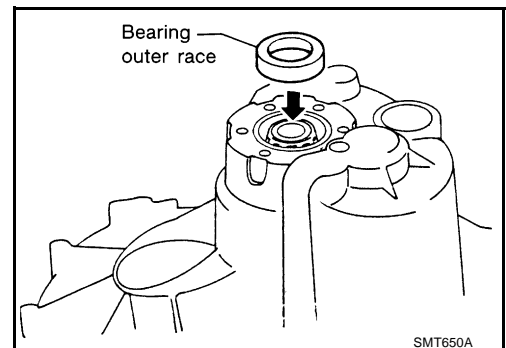
If any of the following parts are replaced, adjust mainshaft bearing preload.

- **Mainshaft**
- **Mainshaft bearings**
- **Clutch housing**
- **Transaxle case**

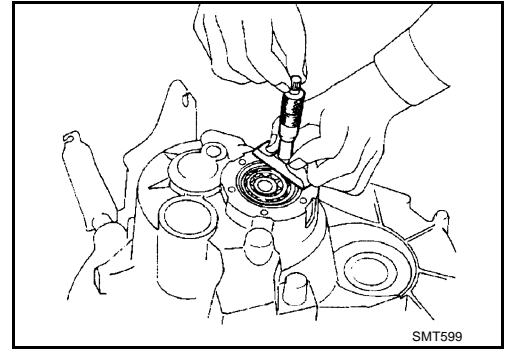
1. Remove case cover, O-ring, spacer, mainshaft rear bearing adjusting shim and mainshaft rear bearing outer race from transaxle case.
2. Install mainshaft assembly on clutch housing.
3. Install transaxle case on clutch housing.
 - **Tighten transaxle case fixing bolts to the specified torque. Refer to MT-19, "CASE AND HOUSING COMPONENTS" .**



4. Install mainshaft rear bearing outer race on inner race.



5. Measure distance ("ℓ") from transaxle case to bearing outer race.
 ● **Make sure that bearing is properly seated.**
6. Select shim considering bearing preload.
 Suitable shim thickness = measure distance ("ℓ") – 12.5 mm (0.492 in) + (specified bearing preload)
 Mainshaft rear bearing preload and adjusting shims:
 Refer to SDS, [MT-51, "BEARING PRELOAD"](#).



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INPUT SHAFT AND GEARS

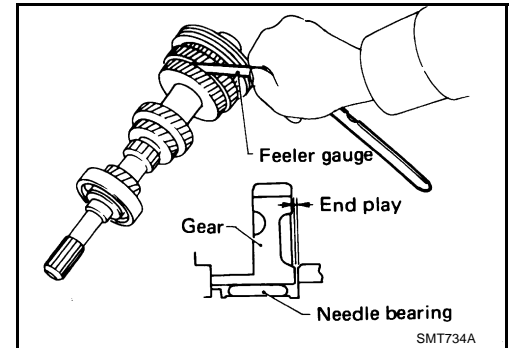
Assembly and Disassembly DISASSEMBLY

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

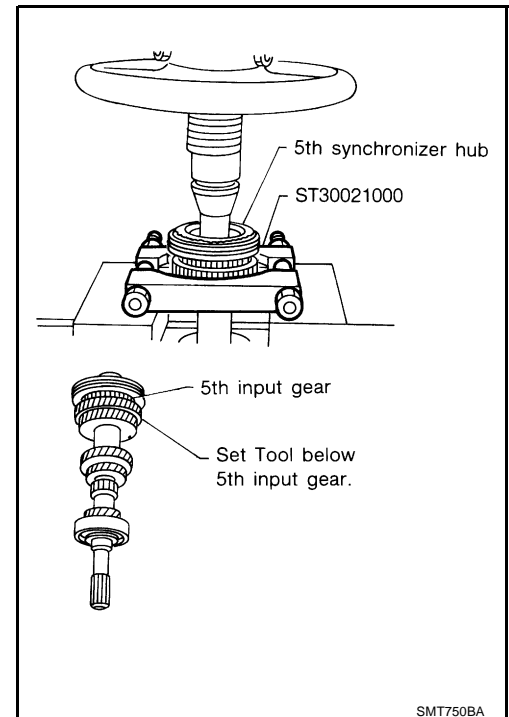
Gear end play

: Refer to [MT-49](#),
["Gear End Play"](#)

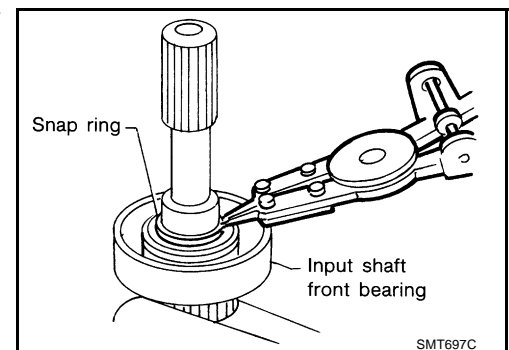
- If not within specification, disassemble and check contact surface of gear, shaft and hub. Then check clearance of snap ring groove. Refer to [MT-32, "ASSEMBLY"](#).



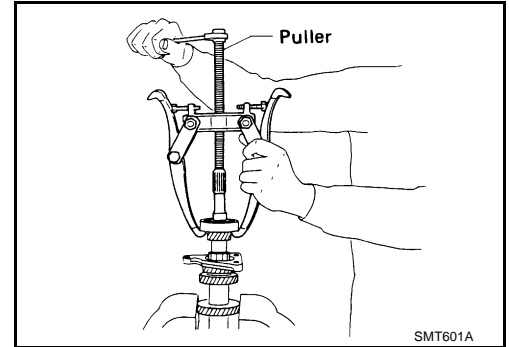
2. Remove snap ring and rear bearing.
3. Remove snap ring and 5th stopper.
4. Remove 5th synchronizer, 5th input gear and 5th gear needle bearing.



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



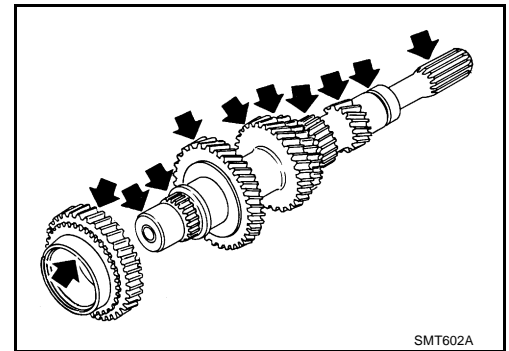
6. Pull out input shaft front bearing.
7. Remove bearing retainer.



INSPECTION AFTER DISASSEMBLY

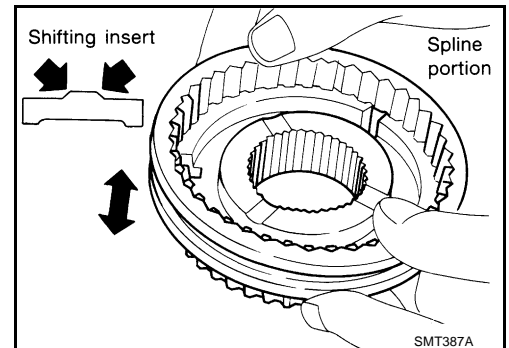
Input Shaft and Gear

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



Synchronizer

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



- Measure clearance between baulk ring and 5th input gear.

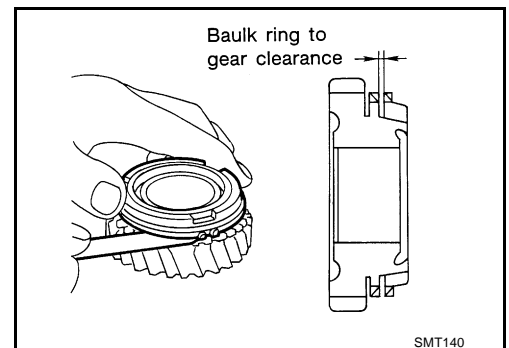
Clearance between baulk ring and 5th input gear:

Standard

1.0 - 1.35 mm (0.0394 - 0.0531 in)

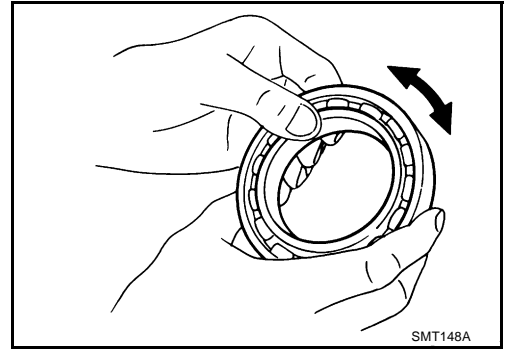
Wear limit

0.7 mm (0.028 in)



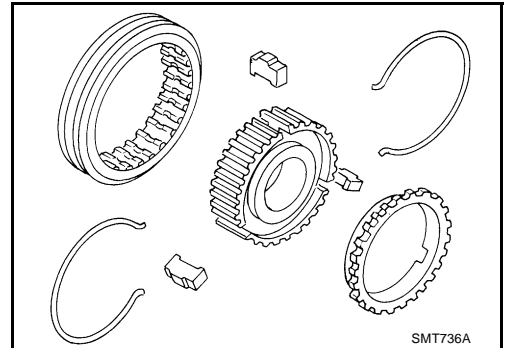
Bearing

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

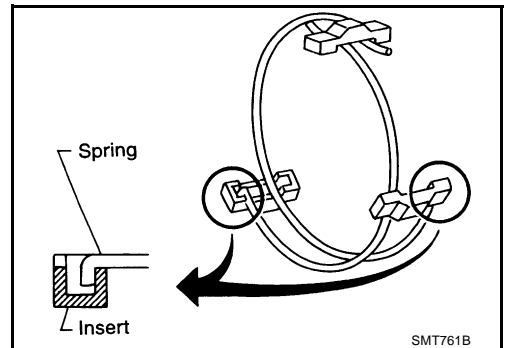


ASSEMBLY

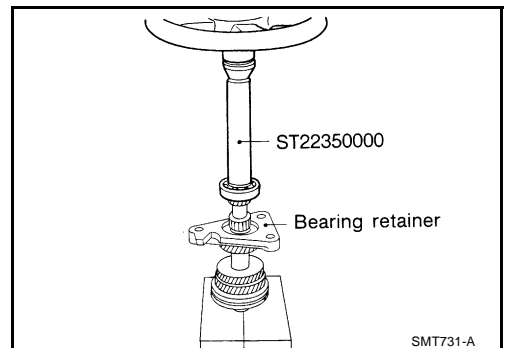
1. Assemble 5th synchronizer.



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



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



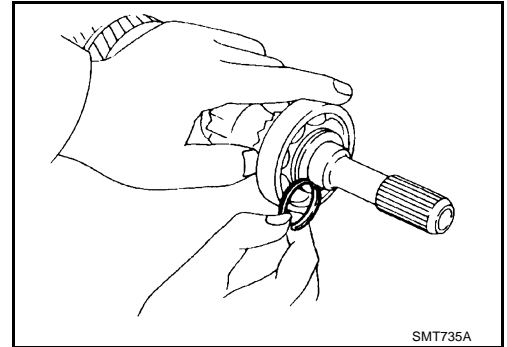
INPUT SHAFT AND GEARS

[RS5F30A]

5. Select and install snap ring that gives the proper clearance of input shaft groove.

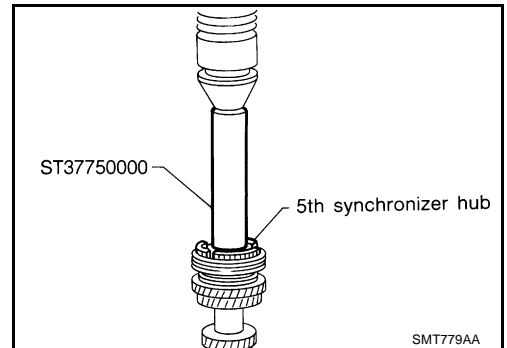
Allowable clearance of groove : 0 - 0.1 mm (0 - 0.004 in)

Snap ring of input shaft front bearing : Refer to [MT-49, "INPUT SHAFT FRONT BEARING"](#) .



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

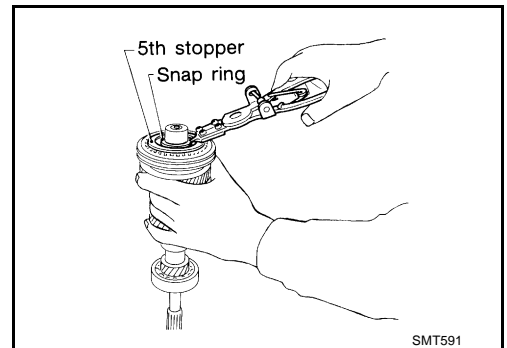
7. Measure gear end play as the final check. Refer to [MT-30, "DIS-ASSEMBLY"](#) .



8. Select and install snap ring that gives the proper clearance of input shaft groove.

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

Snap ring of input shaft 5th synchronizer hub : Refer to [MT-50, "INPUT SHAFT 5TH SYNCHRONIZER HUB"](#) .

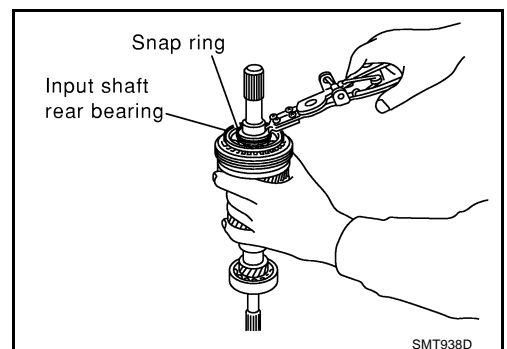


9. Install input shaft rear bearing.

10. Select and install snap ring that gives the proper clearance of input shaft groove.

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

Snap ring of input shaft rear bearing : Refer to [MT-50, "INPUT SHAFT REAR BEARING"](#) .



MAINSHAFT AND GEARS

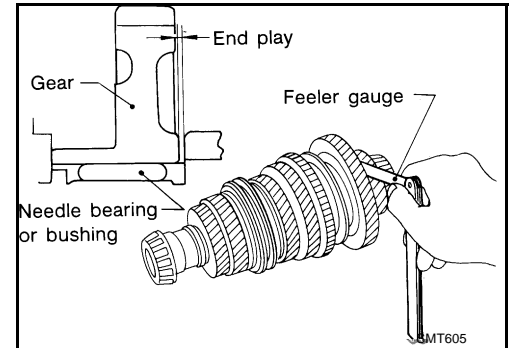
Assembly and Disassembly DISASSEMBLY

1. Before disassembly, check 1st, 2nd, 3rd and 4th main gear end plays.

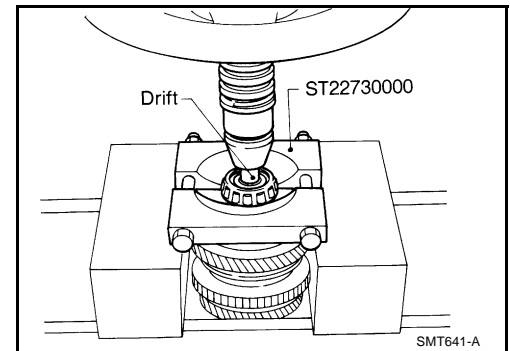
Gear end play

: Refer to [MT-49, "Gear End Play"](#)

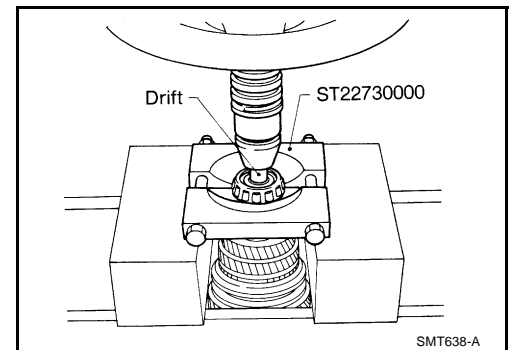
- If not within specification, disassemble and check contact surface of gear, shaft and hub. Then check clearance of C-ring groove. Refer to [MT-37, "ASSEMBLY"](#).



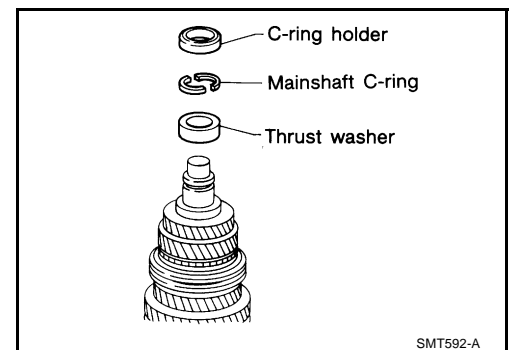
2. Press out mainshaft front bearing.



3. Press out mainshaft rear bearing.



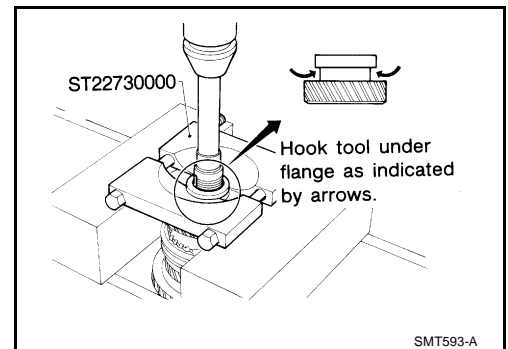
4. Remove C-ring holder, mainshaft C-rings and thrust washer.



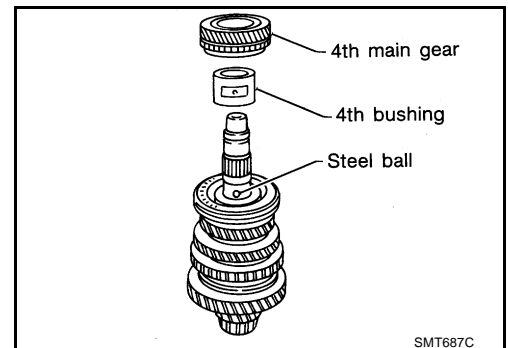
MAINSHAFT AND GEARS

[RS5F30A]

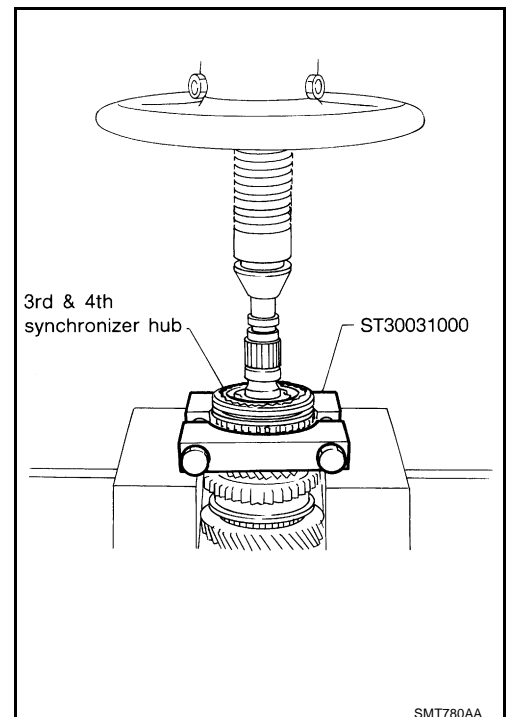
5. Press out 5th main gear.



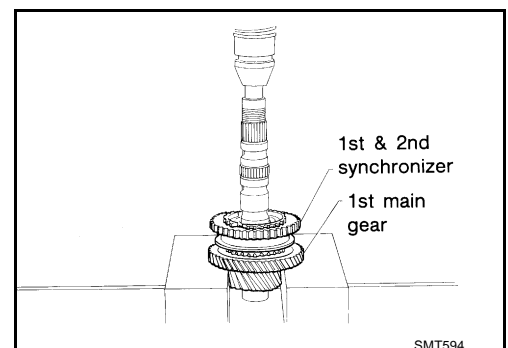
6. Remove 4th main gear, 4th bushing and steel ball.
- Be careful not to lose steel ball.



7. Remove & 4th synchronizer, 3rd main gear, 2nd & 3rd bushing, steel ball and 2nd main gear.
- Be careful not to lose steel ball.



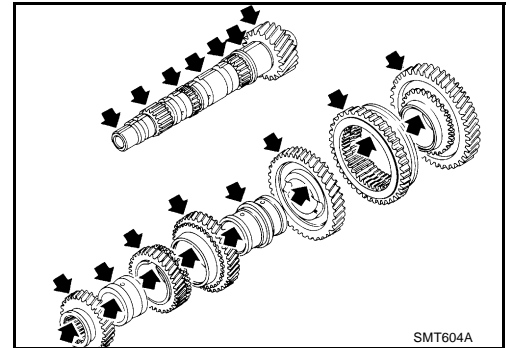
8. Remove 1st & 2nd synchronizer and 1st main gear, then remove 1st gear needle bearing.



INSPECTION AFTER DISASSEMBLY

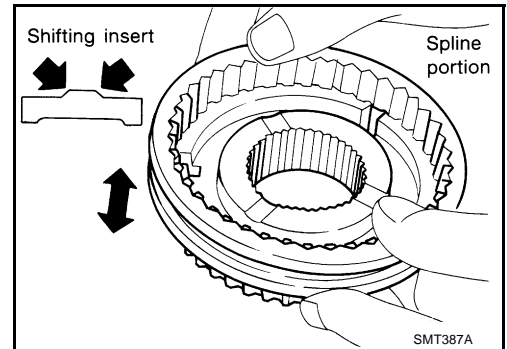
Mainshaft and Gears

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



Synchronizer

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



- Measure clearance between baulk ring and main gears.

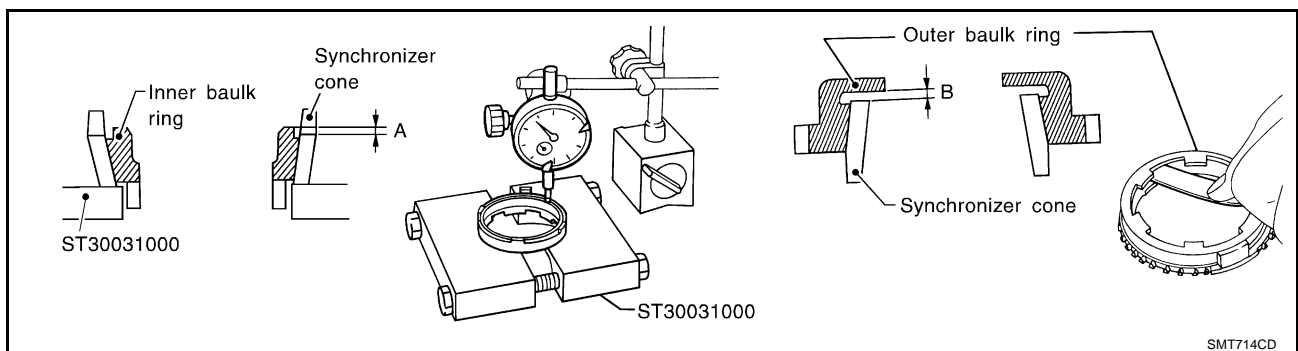
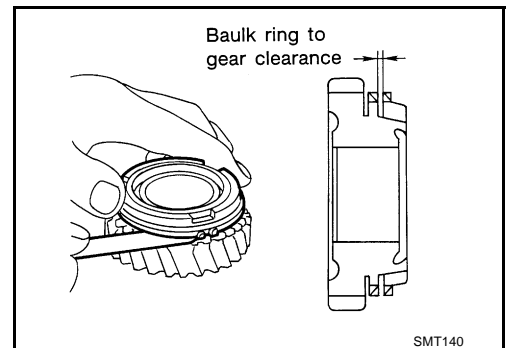
Clearance between baulk rings and main gears:

Standard

1.0 - 1.35 mm (0.0394 - 0.0531 in)

Wear limit

0.7 mm (0.028 in)



- Measure wear of 1st and 2nd baulk ring.
 - Place baulk rings in position on synchronizer cone.
 - 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

0.7 - 1.0 mm (0.028 - 0.039 in)

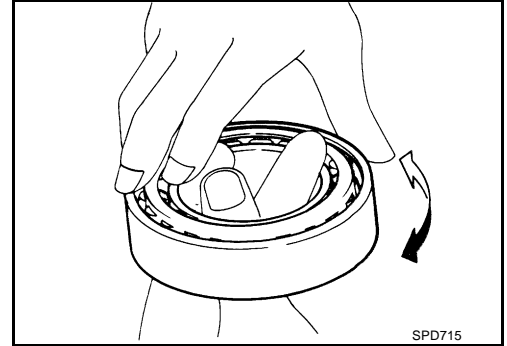
Wear limit:

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.

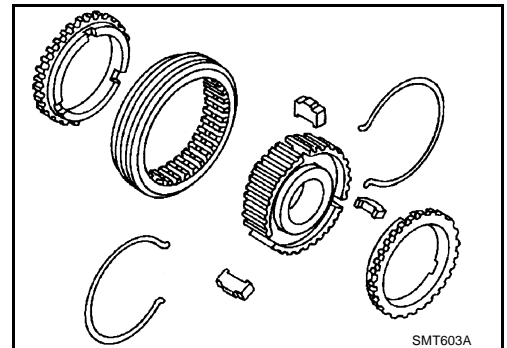
Bearing

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

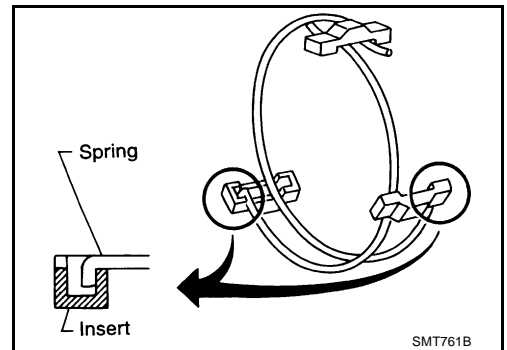


ASSEMBLY

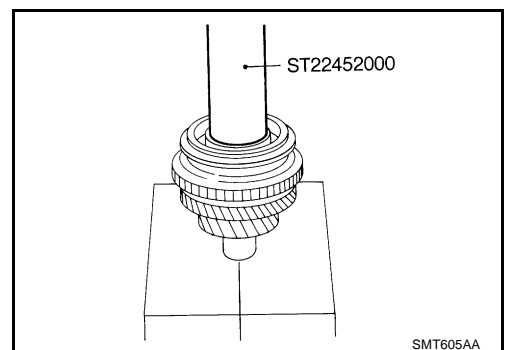
1. Assemble 1st & 2nd and 3rd & 4th synchronizers.



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

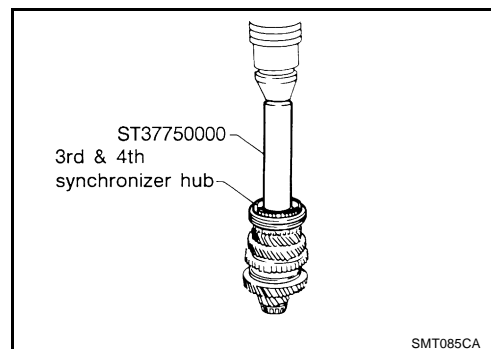


2. Install 1st gear needle bearing and 1st main gear.
3. Press on 1st & 2nd synchronizer.



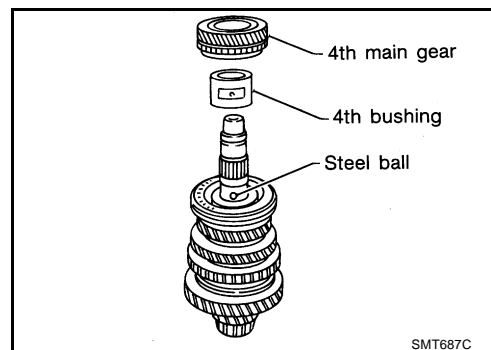
4. Install steel ball, 2nd main gear, 2nd & 3rd bushing, 3rd main gear and 3rd & 4th synchronizer.

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

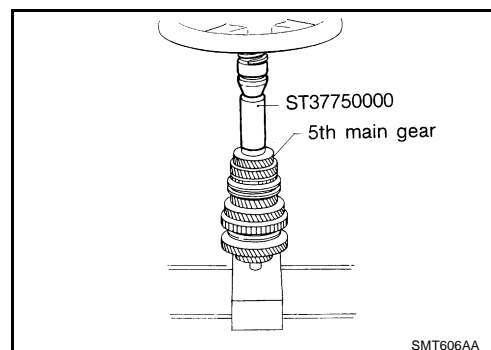


5. Install steel ball, 4th bushing and 4th main gear.

- Apply multi-purpose grease to steel ball before installing it.
- 4th bushing has a groove in which steel ball fits.



6. Press on 5th main gear.



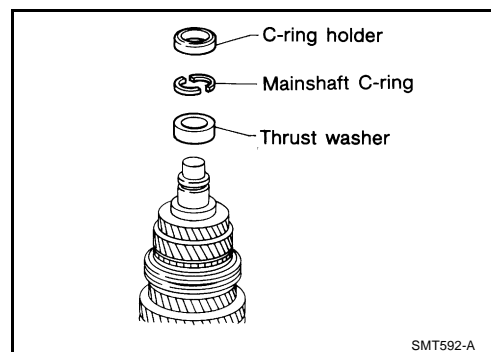
7. Install thrust washer.

8. Select and install mainshaft C-ring that gives proper clearance of groove in mainshaft.

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

Mainshaft C-ring : Refer to [MT-50, "MAIN-SHAFT C-RING"](#).

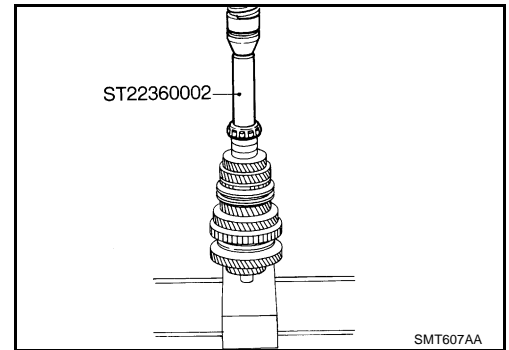
9. Install C-ring holder.



MAINSHAFT AND GEARS

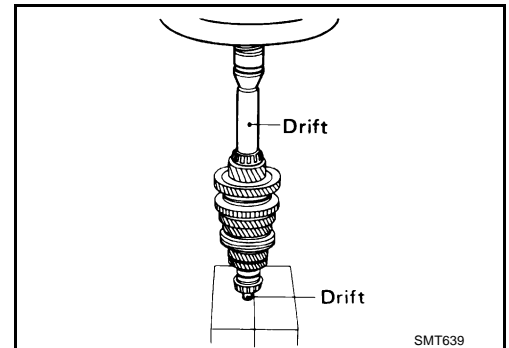
[RS5F30A]

10. Press on mainshaft rear bearing.



11. Press on mainshaft front bearing.

12. Measure gear end play as the final check — Refer to [MT-34](#).
["DISASSEMBLY"](#) .



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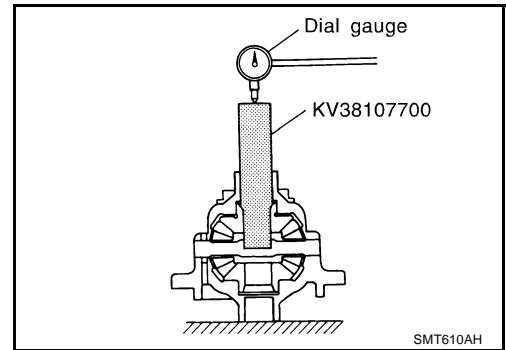
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FINAL DRIVE

Assembly and Disassembly PRE-INSPECTION

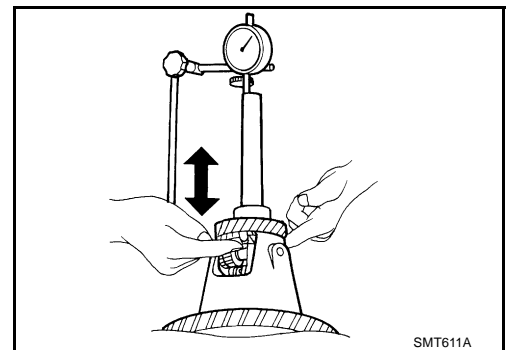
- Check the clearance between side gear and differential case as follows.
- 1. Clean final drive assembly sufficiently to prevent side gear thrust washer, differential case, side gear, and other parts from sticking by gear oil.



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

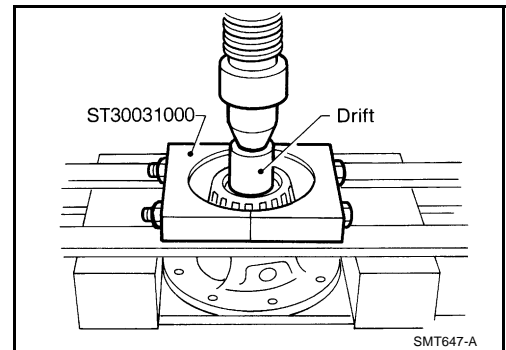
**Clearance between side gear and differential case
: 0.1 - 0.2 mm (0.004 - 0.008 in)**

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

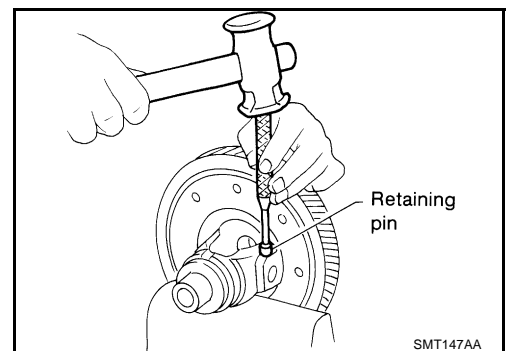


DISASSEMBLY

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



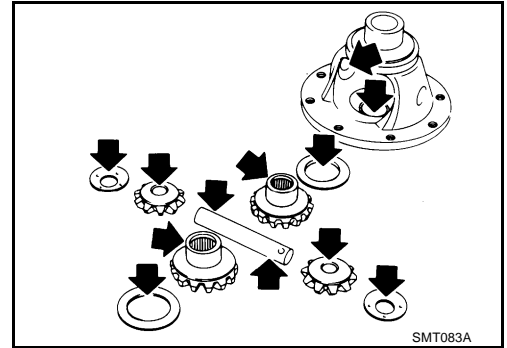
4. Drive out retaining pin and draw out pinion mate shaft.
5. Remove pinion mate gears and side gears.



INSPECTION AFTER DISASSEMBLY

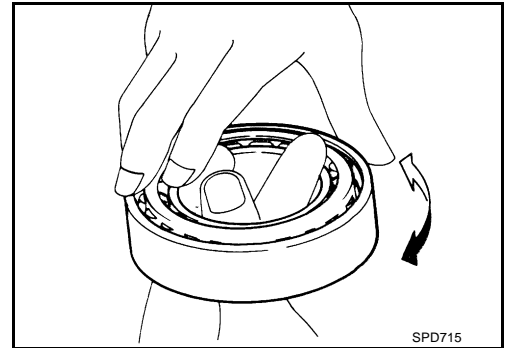
Gear, Washer, Shaft and Case

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



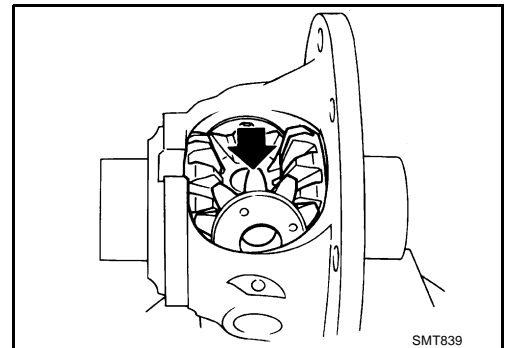
Bearing

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

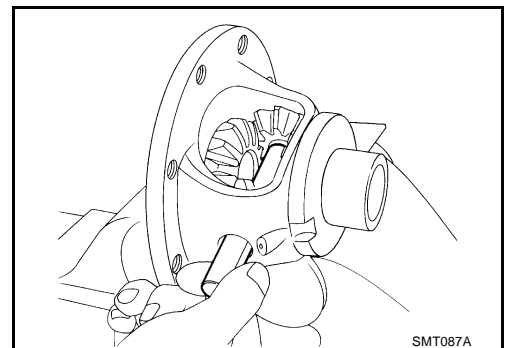


ASSEMBLY

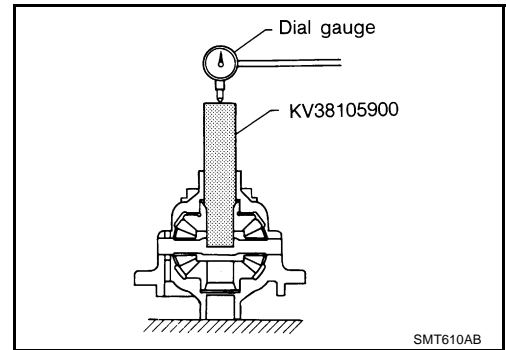
1. Attach side gear thrust washers to side gears and install in differential case.
2. Install pinion mate thrust washers and pinion mate gears.



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



4. 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.

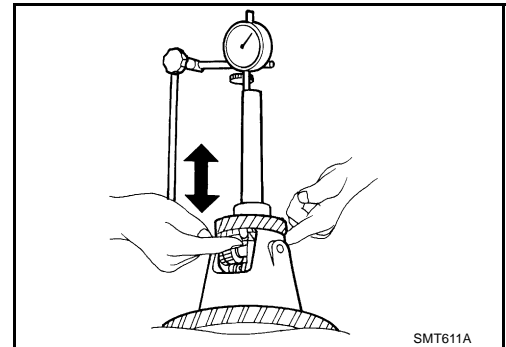
Clearance between side gear and differential case with washers

: 0.1 - 0.2 mm (0.004 - 0.008 in)

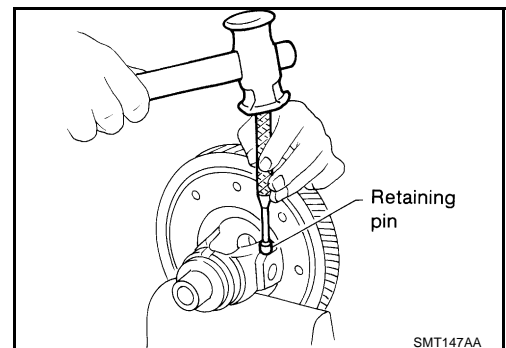
- c. If not within specification, adjust clearance by changing thickness of side gear thrust washers.

Differential side gear thrust washer

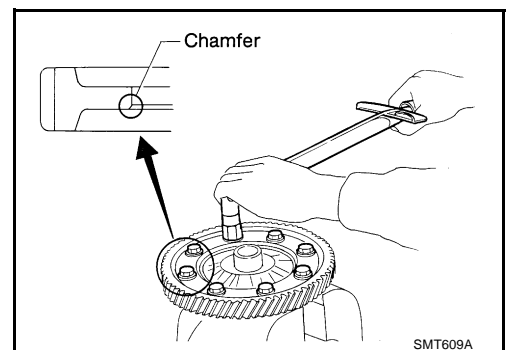
: Refer to MT-50, "DIFFERENTIAL SIDE GEAR THRUST WASHER".



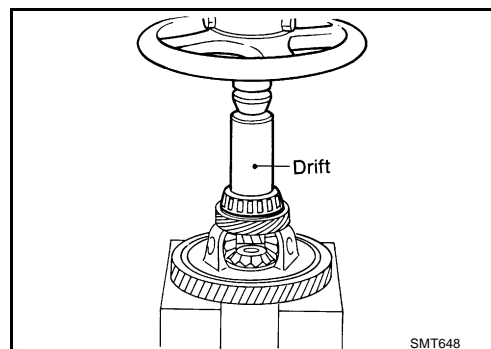
5. Install retaining pin.
 - **Make sure that retaining pin is flush with case.**



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



8. Press on differential side bearings.



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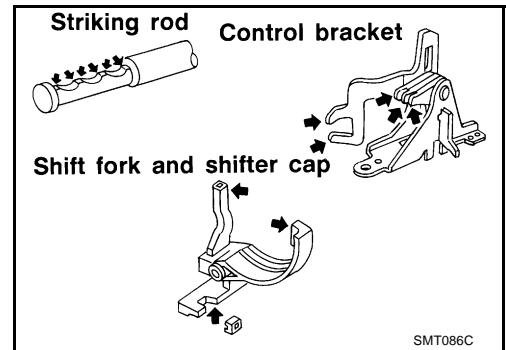
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SHIFT CONTROL

Inspection

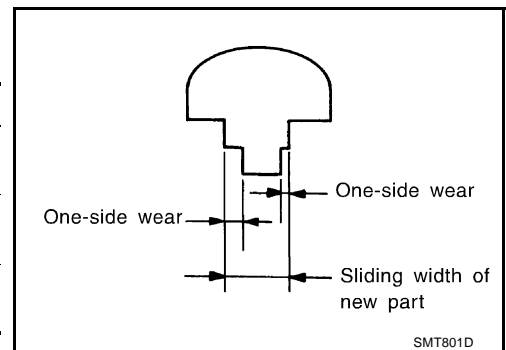
- Check contact surfaces and sliding area for wear, scratches, projections or other damage.



SHIFT FORK

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

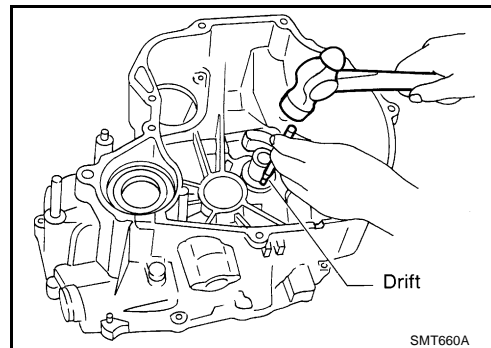
Item	One-side wear specification	Sliding width of new part
1st & 2nd	0.3 mm (0.012 in)	10.80 - 11.00 mm (0.4252 - 0.4331 in)
3rd & 4th	0.3 mm (0.012 in)	5.80 - 6.00 mm (0.2283 - 0.2362 in)
5th	0.3 mm (0.012 in)	5.80 - 6.00 mm (0.2283 - 0.2362 in)



CASE AND HOUSING

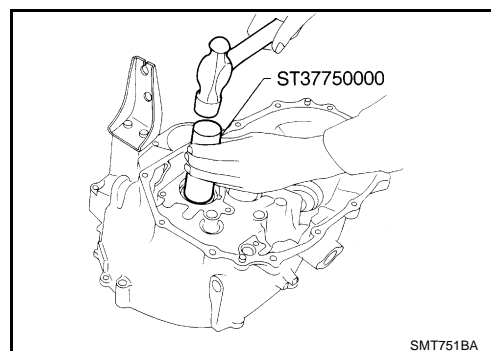
Assembly and Disassembly
INPUT SHAFT OIL SEAL

1. Drive out input shaft oil seal.



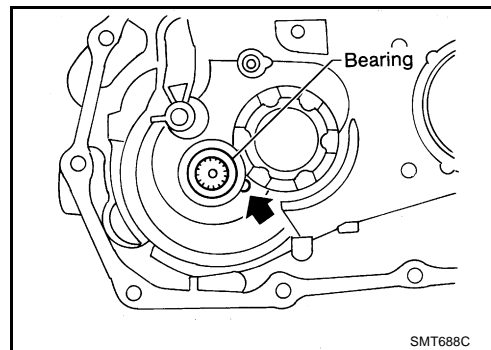
2. Install input shaft oil seal.

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

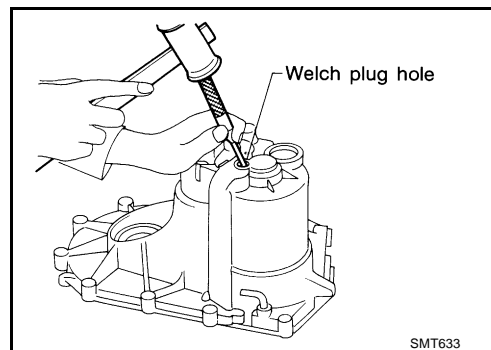


INPUT SHAFT REAR BEARING

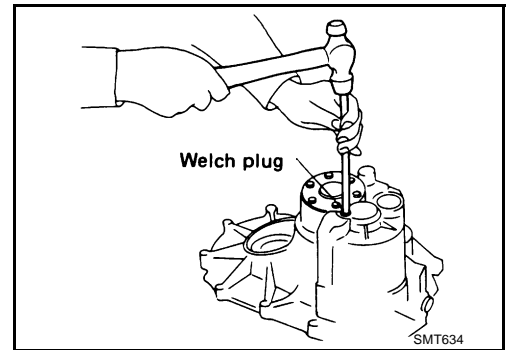
1. Remove welch plug from transmission case.



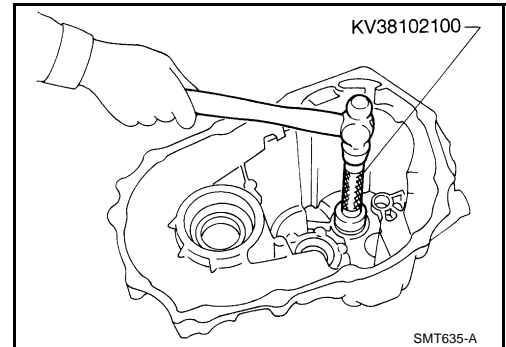
2. Remove input shaft rear bearing by tapping it from welch plug hole.



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

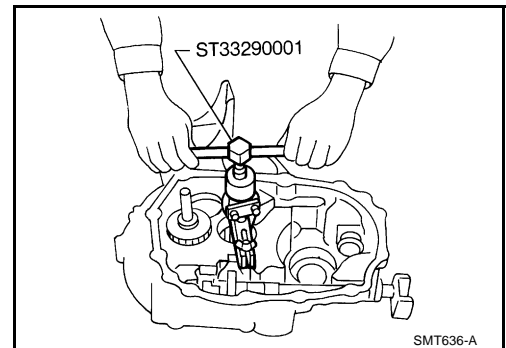


4. Install input shaft rear bearing.

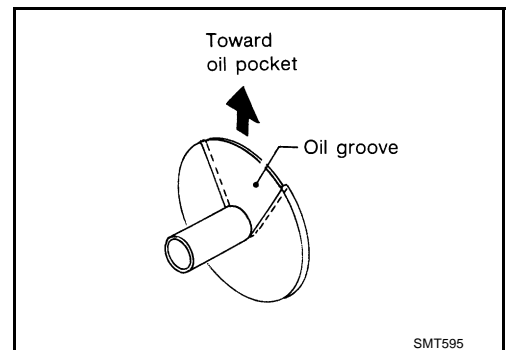


MAINSHAFT FRONT BEARING OUTER RACE AND OIL CHANNEL

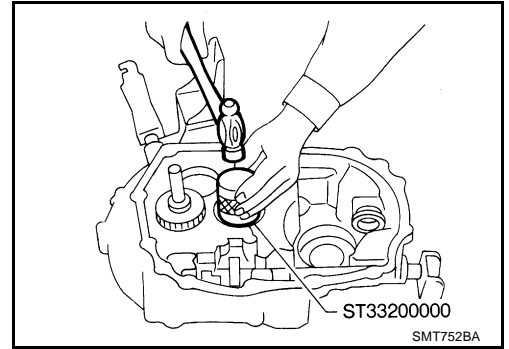
1. Remove mainshaft front bearing outer race.
2. Remove oil channel.



3. Install oil channel.
 - Ensure the oil groove faces the oil pocket.



4. Install mainshaft front bearing outer race.



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SERVICE DATA AND SPECIFICATIONS (SDS)

[RS5F30A]

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications TRANSAXLE

ECS005PO

Engine			QG16DE
Transaxle model			RS5F30A
Model code number			AV708
Number of speed			5
Synchromesh type			Warner
Shift pattern			<div><div>135</div><div>24R</div><div>N</div></div>
Gear ratio	1st		3.333
	2nd		1.955
	3rd		1.286
	4th		0.926
	5th		0.756
	Reverse		3.417
Number of teeth	Input gear	1st	15
		2nd	22
		3rd	28
		4th	41
		5th	45
		Reverse	12
	Main gear	1st	50
		2nd	43
		3rd	36
		4th	38
		5th	34
		Reverse	41
	Reverse idler gear		30
Oil capacity ℓ (Imp pt)			2.8 - 3.0 (4-7/8 - 5-1/4)
Remarks			1st & 2nd double baulk ring type synchronizer

FINAL GEAR

Engine			QG16DE
Transaxle model			RS5F30A
Model code number			AV708
Final gear ratio			4.471
Number of teeth	Final gear/Pinion		76/17
	Side gear/Pinion mate gear		14/10

SERVICE DATA AND SPECIFICATIONS (SDS)

[RS5F30A]

Gear End Play

ECS005PP

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 input gear	0.20 - 0.30 (0.0079 - 0.0118)
4th input 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 3RD, 4TH & 5TH BAULK RING

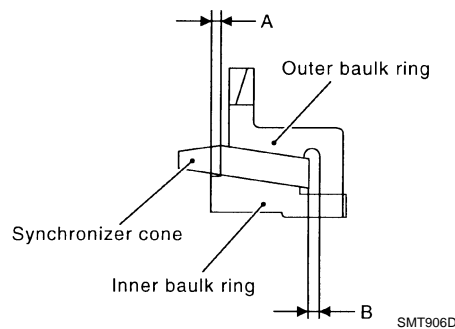
ECS005PQ

Unit: mm (in)

Standard	Wear limit
1.0 - 1.35 (0.0394 - 0.0531)	0.7 (0.028)

1ST AND 2ND DOUBLE BAULK RING

Unit: mm (in)



Dimension	Standard	Wear limit
A	0.7 - 0.9 (0.028 - 0.035)	0.2 (0.008)
B	0.7 - 1.0 (0.028 - 0.039)	

Available Check Plugs REVERSE CHECK PLUGS

ECS005PR

Reverse check turning torque (At striking rod)	N-m (kg-cm, in-lb)	4.9 - 7.4 (50 - 75, 43 - 65)
Thickness	mm (in)	Part number*2
8.3 (0.327)		32188-M8001*1
7.1 (0.280)		32188-M8002
7.7 (0.303)		32188-M8003
8.9 (0.350)		32188-M8004

*1: Standard size check plug

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

Available Snap Rings INPUT SHAFT FRONT BEARING

ECS005PS

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

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

SERVICE DATA AND SPECIFICATIONS (SDS)

[RS5F30A]

INPUT SHAFT 5TH SYNCHRONIZER HUB

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

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

INPUT SHAFT REAR BEARING

Allowable clearance	0 - 0.1 mm (0 - 0.004 in)
Thickness mm (in)	Part number*
1.27 (0.0500)	32204-4M400
1.33 (0.0524)	32204-4M401
1.39 (0.0547)	32204-4M402
1.45 (0.0571)	32204-4M403

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

Available C-rings MAINSHAFT C-RING

ECS005PT

Allowable clearance		0 - 0.1 mm (0 - 0.004 in)	
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
3.63 (0.1429)	32348-M8800	4.12 (0.1622)	32348-M8807
3.70 (0.1457)	32348-M8801	4.19 (0.1650)	32348-M8808
3.77 (0.1484)	32348-M8802	4.26 (0.1677)	32348-M8809
3.84 (0.1512)	32348-M8803	4.33 (0.1705)	32348-M8810
3.91 (0.1539)	32348-M8804	4.40 (0.1732)	32348-M8811
3.98 (0.1567)	32348-M8805	4.47 (0.1760)	32348-M8812
4.05 (0.1594)	32348-M8806	4.54 (0.1787)	32348-M8813

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

Available Thrust Washer DIFFERENTIAL SIDE GEAR THRUST WASHER

ECS005PU

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*
0.76 - 0.81 (0.0299 - 0.0319)	38424-01M10
0.81 - 0.86 (0.0319 - 0.0339)	38424-01M11
0.86 - 0.91 (0.0339 - 0.0358)	38424-01M12
0.91 - 0.96 (0.0358 - 0.0378)	38424-01M13

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

SERVICE DATA AND SPECIFICATIONS (SDS)

[RS5F30A]

Available Adjusting Shims BEARING PRELOAD

ECS005PV

Unit: mm (in)

Mainshaft bearing	Differential side bearing
0.20 - 0.25 (0.0079 - 0.0098)	0.24 - 0.32 (0.0094 - 0.0126)

MAINSHAFT REAR BEARING ADJUSTING SHIMS

Thickness mm (in)	Part number*
0.10 (0.0039)	32137-M8000
0.15 (0.0059)	32137-M8001
0.20 (0.0079)	32137-M8002
0.25 (0.0098)	32137-M8003
0.30 (0.0118)	32137-M8004
0.35 (0.0138)	32137-M8005
0.40 (0.0157)	32137-M8006
0.45 (0.0177)	32137-M8007
0.50 (0.0197)	32137-M8008
0.55 (0.0217)	32137-M8009
0.60 (0.0236)	32137-M8010
0.65 (0.0256)	32137-M8011
0.70 (0.0276)	32137-M8012
0.75 (0.0295)	32137-M8013
0.80 (0.0315)	32137-M8014
0.85 (0.0335)	32137-M8015
0.90 (0.0354)	32137-M8016
0.95 (0.0374)	32137-M8017
1.00 (0.0394)	32137-M8018

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

DIFFERENTIAL SIDE BEARING ADJUSTING SHIMS

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

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

PRECAUTIONS

PFP:00001

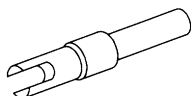
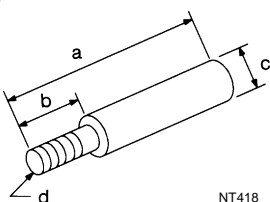
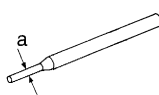
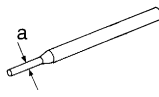
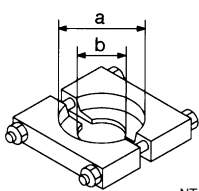
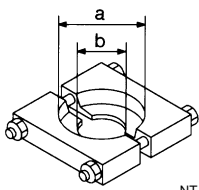
Caution

ECS005HB

- Do not reuse transaxle oil, once it has been drained.
- Check oil level or replace oil with vehicle on level ground.
- During removal or installation, keep inside of transaxle clear of dust or dirt.
- Check for the correct installation status prior to removal or disassembly. If mating marks are required, be certain they do not interfere with the function of the parts they are applied to.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, observe it.
- Be careful not to damage sliding surfaces and mating surfaces.

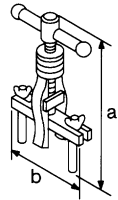
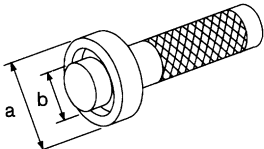
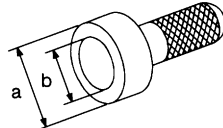
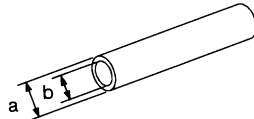
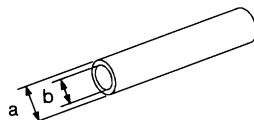
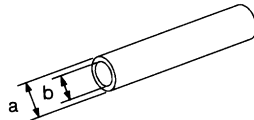
PREPARATION

Special Service Tools

Tool number Tool name	Description
KV38107700 Preload adapter  NT087	<ul style="list-style-type: none"> 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.)
KV38106000 Height gauge adapter (differential side bearing) a: 140 mm (5.51 in) b: 40 mm (1.57 in) c: 16 mm (0.63 in) dia. d: M8 x 1.25P  NT418	<ul style="list-style-type: none"> Selecting differential side bearing adjusting shim (Use with KV38107700.)
KV32101000 Pin punch a: 4 mm (0.16 in) dia.  NT410	<ul style="list-style-type: none"> Removing and installing retaining pin Removing and installing lock pin Removing selector shaft Removing welch plug
KV31100300 Pin punch a: 4.5 mm (0.177 in) dia.  NT410	<ul style="list-style-type: none"> Removing and installing retaining pin
ST30031000 Puller a: 90 mm (3.54 in) dia. b: 50 mm (1.97 in) dia.  NT411	<ul style="list-style-type: none"> Removing 3rd, 5th input gear Removing 3rd & 4th and 5th & reverse synchronizer hub Removing mainshaft rear bearing Removing 2nd gear, 5th gear bushing Removing 1st & 2nd synchronizer hub, 1st and 4th main gear Removing and installing differential side bearing
ST30021000 Puller a: 110 mm (4.33 in) dia. b: 68 mm (2.68 in) dia.  NT411	<ul style="list-style-type: none"> 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 & reverse synchronizer hub Installing 2nd gear bushing, 5th gear bushing, reverse gear bushing Installing mainshaft rear bearing

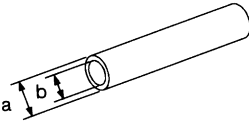
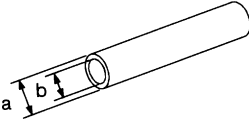
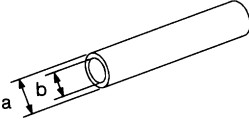
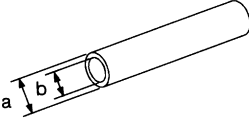
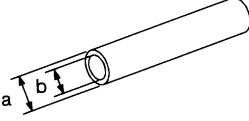
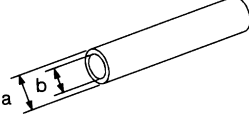
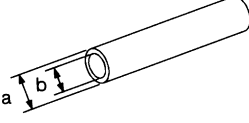
PREPARATION

[RS5F70A]

Tool number Tool name	Description
<p>ST33290001 Puller a: 250 mm (9.84 in) b: 160 mm (6.30 in)</p>  <p>NT414</p>	<ul style="list-style-type: none"> ● Removing idler gear bearing outer race
<p>ST33230000 Drift a: 51 mm (2.01 in) dia. b: 28.5 mm (1.122 in) dia.</p>  <p>NT084</p>	<ul style="list-style-type: none"> ● Installing differential side bearing
<p>ST30720000 Drift a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.</p>  <p>NT115</p>	<ul style="list-style-type: none"> ● Installing differential side bearing outer race
<p>ST22350000 Drift a: 34 mm (1.34 in) dia. b: 28 mm (1.10 in) dia.</p>  <p>NT065</p>	<ul style="list-style-type: none"> ● Installing input shaft front and rear bearing
<p>ST22452000 Drift a: 45 mm (1.77 in) dia. b: 36 mm (1.42 in) dia.</p>  <p>NT065</p>	<ul style="list-style-type: none"> ● Installing 3rd and 4th main gear ● Installing 5th gear bushing ● Installing 5th & reverse synchronizer hub ● Installing reverse gear bushing ● Installing mainshaft rear bearing
<p>ST37750000 Drift a: 40 mm (1.57 in) dia. b: 31 mm (1.22 in) dia.</p>  <p>NT065</p>	<ul style="list-style-type: none"> ● 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

Commercial Service Tools

ECS006BQ

Tool name	Description
<p>Drift a: 12 mm (0.47 in) dia. b: 10 mm (0.39 in) dia.</p>  <p>NT065</p>	<ul style="list-style-type: none"> ● Installing welch plug
<p>Drift a: 22 mm (0.87 in) dia. b: 16 mm (0.63 in) dia.</p>  <p>NT065</p>	<ul style="list-style-type: none"> ● Removing input shaft rear bearing ● Removing mainshaft rear bearing
<p>Drift a: 58 mm (2.28 in) dia. b: 50 mm (1.97 in) dia.</p>  <p>NT065</p>	<ul style="list-style-type: none"> ● Installing differential oil seal
<p>Drift a: 54 mm (2.13 in) dia. b: 50 mm (1.97 in) dia.</p>  <p>NT065</p>	<ul style="list-style-type: none"> ● Installing differential oil seal
<p>Drift a: 38 mm (1.50 in) dia. b: 33 mm (1.30 in) dia.</p>  <p>NT065</p>	<ul style="list-style-type: none"> ● Installing 2nd gear bushing
<p>Drift a: 50 mm (1.97 in) dia. b: 41 mm (1.61 in) dia.</p>  <p>NT065</p>	<ul style="list-style-type: none"> ● Installing 3rd & 4th and 1st & 2nd synchronizer hub ● Installing mainshaft front bearing
<p>Drift a: 39 mm (1.54 in) dia. b: 30 mm (1.18 in) dia.</p>  <p>NT065</p>	<ul style="list-style-type: none"> ● Installing input shaft oil seal ● Installing 5th input gear

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NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

[RS5F70A]

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting Chart

ECS005HE

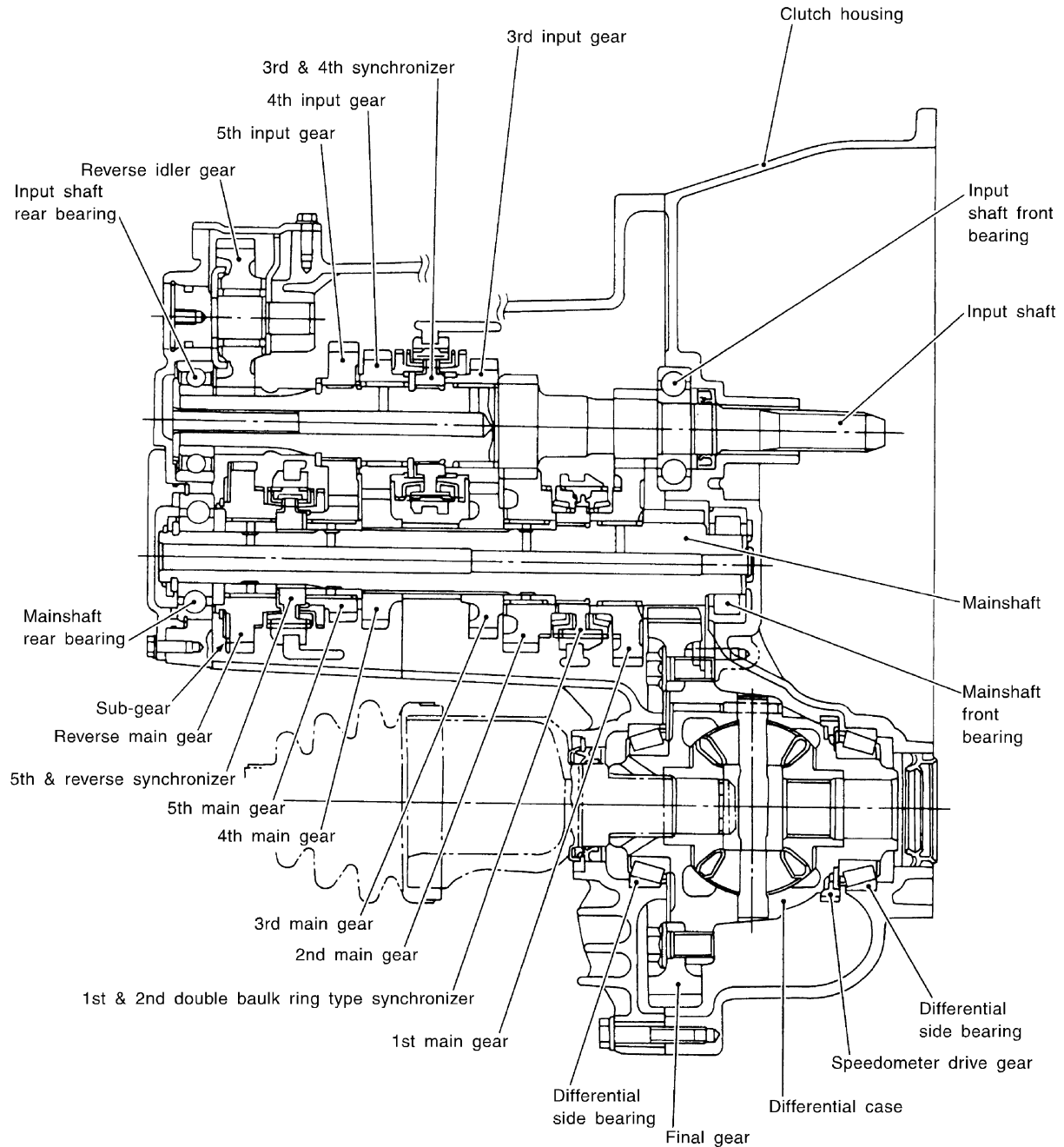
Use the chart below to help you find the cause of the symptom. The numbers indicate the order of the inspection. If necessary, repair or replace these parts.

MANUAL TRANSAXLE

Reference page		MT-59	MT-59	MT-59	MT-6Z	MT-6Z	MT-6Z	MT-63	MT-69	MT-69	MT-68	MT-68	MT-68	MT-68
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)l	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			

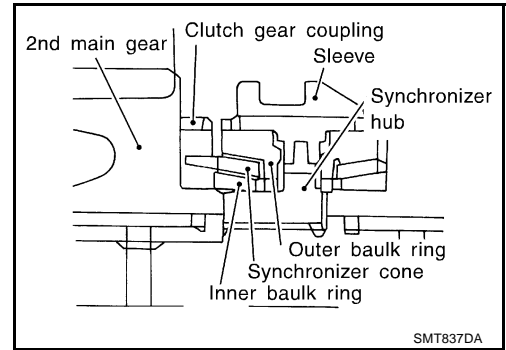
DESCRIPTION

Cross-sectional View



DOUBLE-CONE SYNCHRONIZER

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




M/T OIL

Changing M/T Oil DRAINING

1. Start the engine and let it run to warm up the transaxle.
2. Stop the engine. Remove drain plug and drain oil.
3. Set a gasket on the drain plug and install it to the transaxle.

Drain plug:

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

CAUTION:

Do not reuse gasket.

FILLING

1. Remove filler plug. Fill with new oil until oil level reaches the specified limit near filler plug mounting hole.

Oil grade : API GL-4

Capacity (reference) : Approx. 2.9 - 3.1 ℓ (5-1/4 Imp pt)

2. After refilling oil, check oil level. Assemble gasket to filler plug, then install it to transaxle body.

Filler plug:

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

CAUTION:

Do not reuse gasket.

Checking M/T Oil OIL LEAKAGE AND OIL LEVEL

ECS005HH

- Check that oil is not leaking from transaxle or around it.
- Check oil level from filler plug mounting hole as shown in the figure.

CAUTION:

Never start engine while checking oil level.

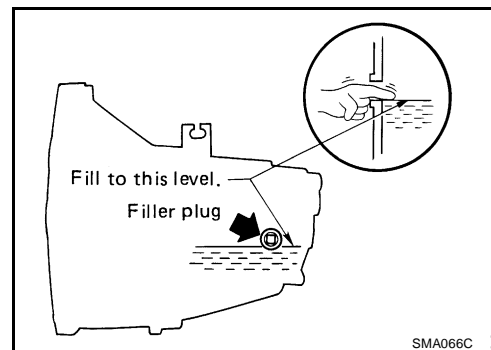
- Set a new gasket on the filler plug and install it on the transaxle.

Filler plug:

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

CAUTION:

Do not reuse gasket.



SIDE OIL SEAL

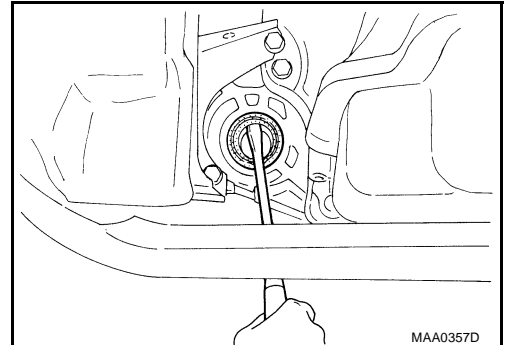
Removal and Installation

REMOVAL

1. Remove the drive shaft from the transaxle. Refer to [FAX-11, "FRONT DRIVE SHAFT"](#).
2. Remove oil seal with a slotted screwdriver.

CAUTION:

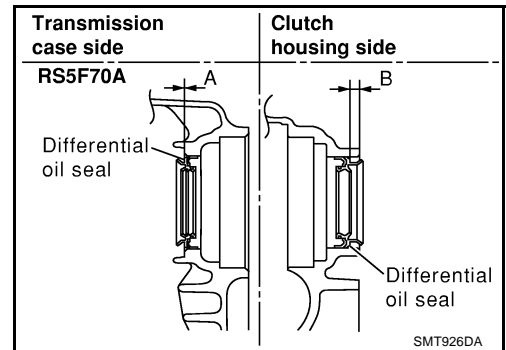
Be careful not to damage the case surface when removing the oil seal.



INSTALLATION

1. Using a drift, drive the oil seal straight until it protrudes from the case end equal to dimension A shown in the figure.

Dimension A : Within 0.5 mm of flush with the case.

**CAUTION:**

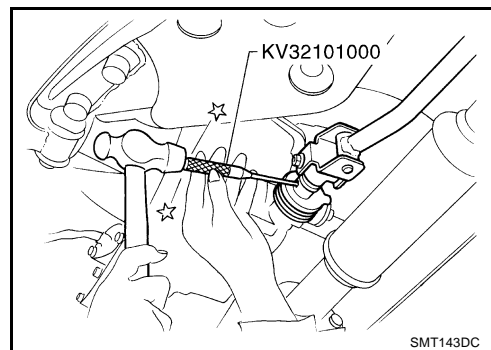
- When installing oil seals, apply multi-purpose grease to oil seal lips.
 - Do not reuse oil seal.
2. Install all parts in reverse order of removal and check oil level after installation.

STRIKING ROD OIL SEAL

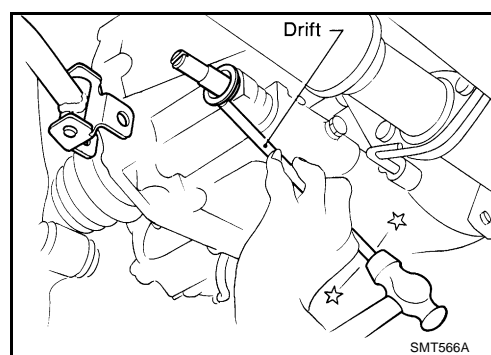
Removal and Installation

REMOVAL

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

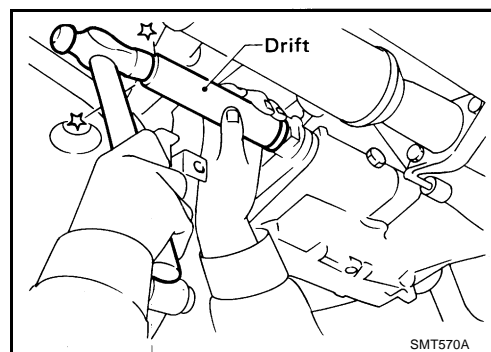


3. Remove striking rod oil seal.

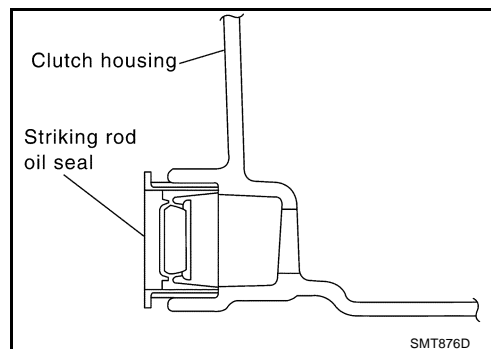


INSTALLATION

1. 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

[RS5F70A]

POSITION SWITCH

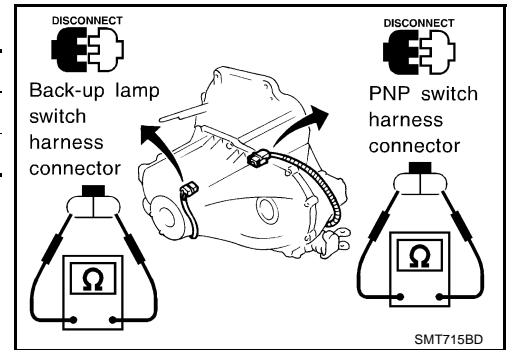
PFP:32005

Checking BACK-UP LAMP SWITCH

ECS005HK

- Check continuity.

Gear position	Continuity
Reverse	Yes
Except reverse	No



PNP SWITCH

- Check continuity.

Gear position	Continuity
Neutral	Yes
Except neutral	No

CONTROL LINKAGE

Removal and Installation

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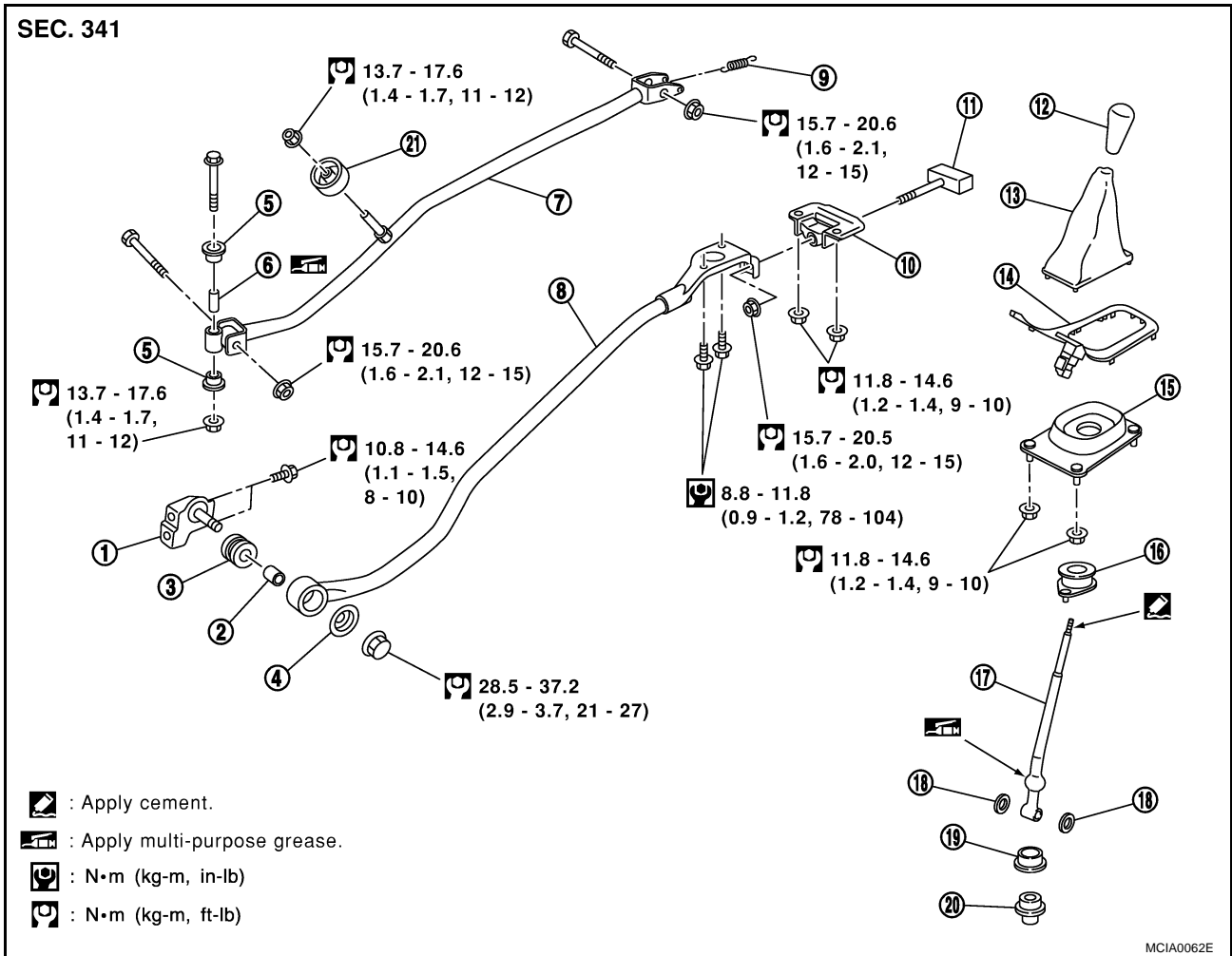
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- | | | |
|--------------------------|-------------------|--------------------------|
| 1. Support rod bracket | 2. Collar | 3. Bushing |
| 4. Washer | 5. Bushing | 6. Collar |
| 7. Control rod | 8. Support rod | 9. Return spring |
| 10. Holder bracket | 11. Mass damper | 12. Control lever knob |
| 13. Boot | 14. Finisher | 15. Transaxle hole cover |
| 16. Control lever socket | 17. Control lever | 18. Bushing |
| 19. Ball socket | 20. Dust boot | 21. Dynamic damper |

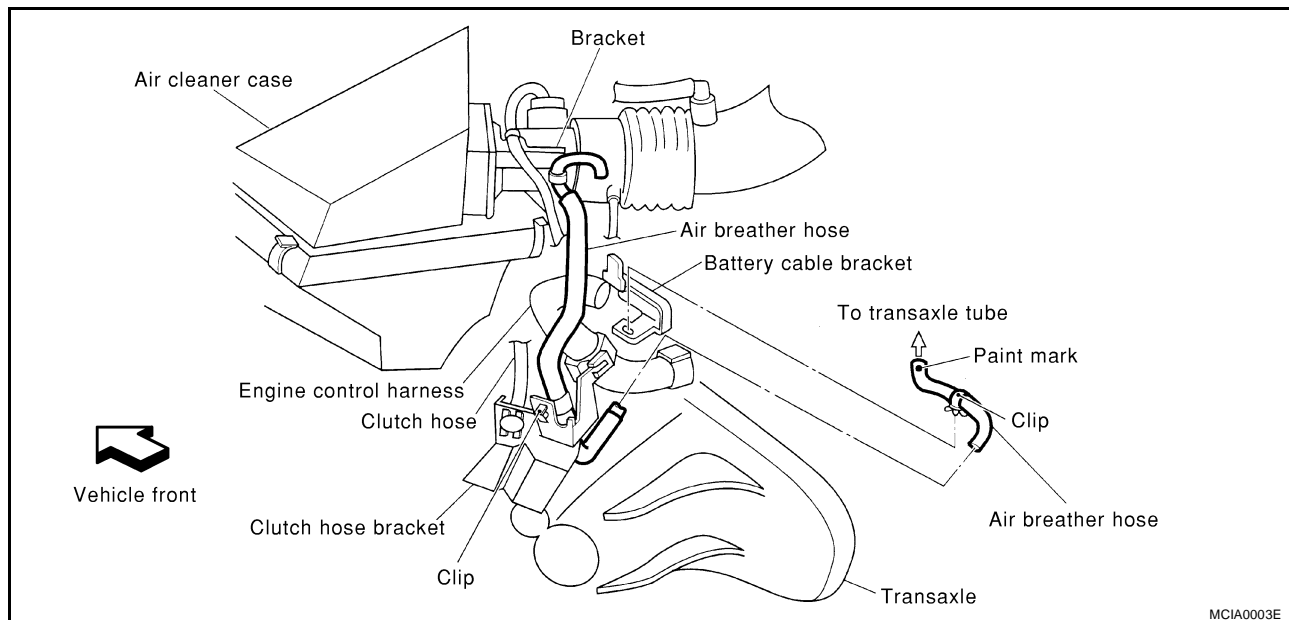
AIR BREATHER HOSE

PFP:31098

Removal and Installation

ECS005HM

Refer to the figure for air breather hose removal and installation information.



MCIA0003E

CAUTION:

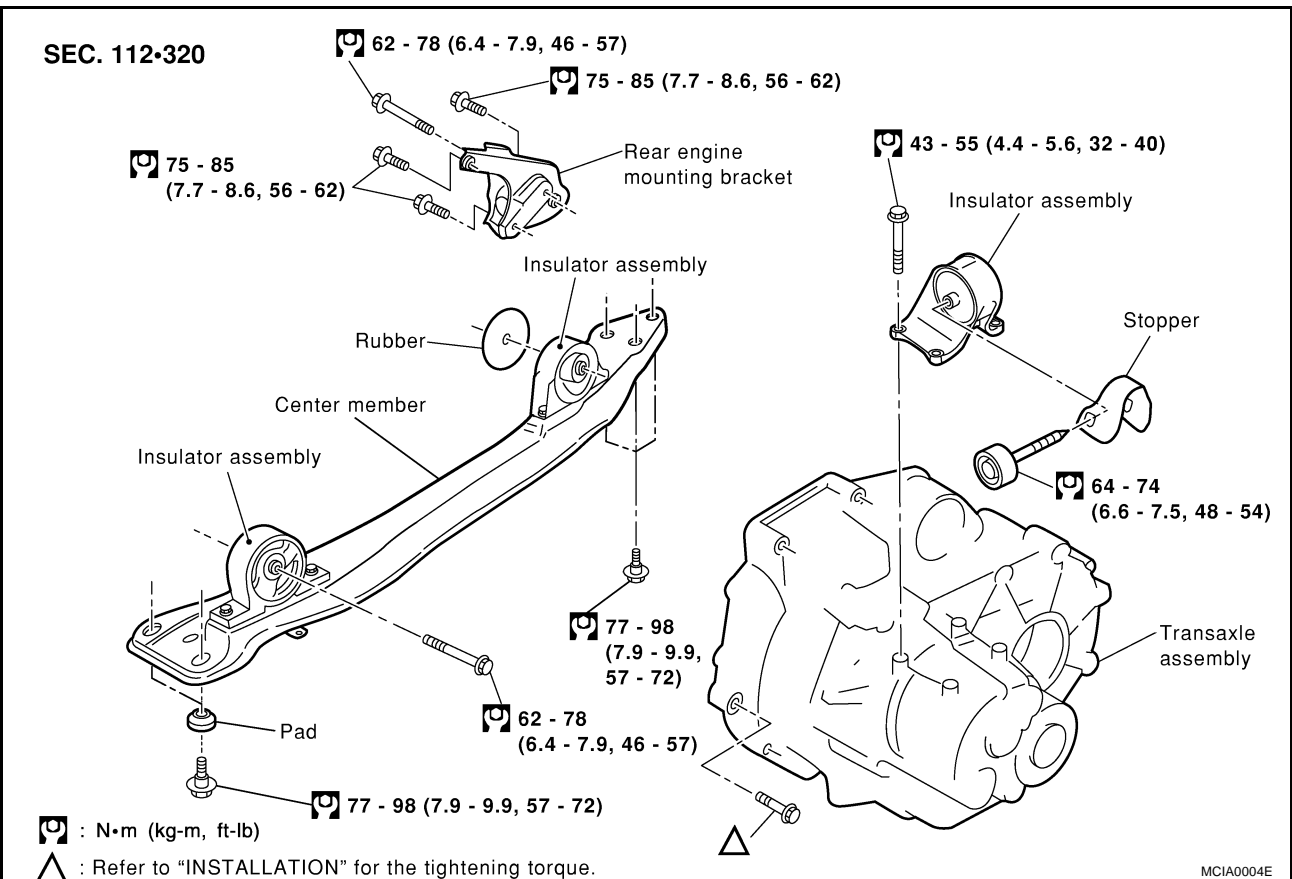
- Make sure there are no pinched or restricted areas on the air breather hose caused by bending or winding when installing it.
- Be sure to insert hose into the transaxle tube until overlap area reaches the spool.

TRANSAXLE ASSEMBLY

PFP:32010

Removal and Installation

ECS005PW



REMOVAL

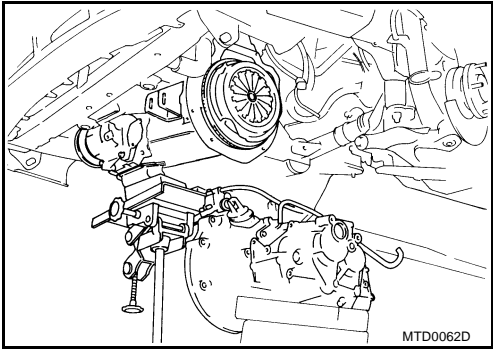
1. Remove air cleaner, air duct, and battery.
2. Remove the air breather hose.
3. Remove clutch operating cylinder.
- CAUTION:**
Do not depress clutch pedal during removal procedure.
4. Disconnect control linkage from transaxle.
5. Disconnect PNP switch, back-up lamp switch, vehicle speed sensor and ground harness connectors.
6. Remove starter motor.
7. Drain gear oil from transaxle.
8. Remove suspension cross bar.
9. Remove exhaust front tube and the driveshaft.
10. Place a jack onto the transaxle.

CAUTION:

When setting jack, be careful not to bring it into contact with the switch.

11. Remove center member, engine insulator and engine mount bracket.
12. Support engine by placing a jack under oil pan.
13. Remove bolts securing transaxle to engine.

14. Remove transaxle from vehicle.



INSTALLATION

Paying attention to the following items, install in the reverse order of removal.

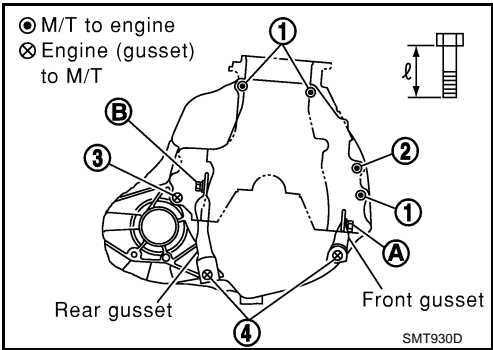
- When installing the transaxle to the engine, tighten to the specified torque.

CAUTION:

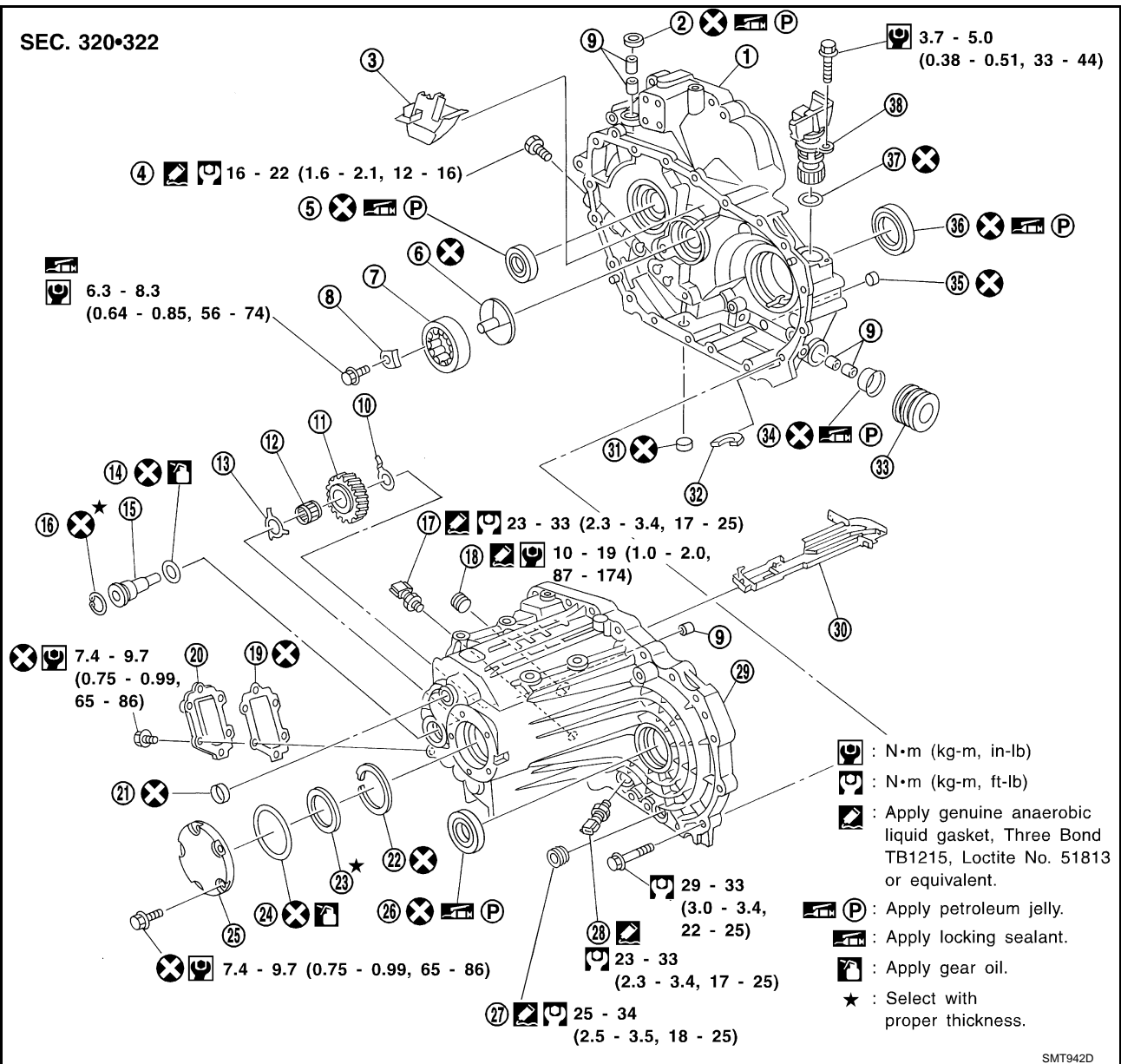
When installing transaxle, be careful not to bring transaxle input shaft into contact with the clutch cover.

Bolt No.	Tightening torque N·m (kg-m, ft-lb)	"ℓ" mm (in)
1	30 - 40 (3.1 - 4.1, 22 - 30)	70 (2.76)
2	30 - 40 (3.1 - 4.1, 22 - 30)	95 (3.74)
3	30 - 40 (3.1 - 4.1, 22 - 30)	30 (1.18)
4*1	16 - 21 (1.6 - 2.1, 12 - 15)	25 (0.98)
Front gusset A to engine	30 - 40 (3.1 - 4.1, 22 - 30)	20 (0.79)
Rear gusset B to engine	16 - 21 (1.6 - 2.1, 12 - 15)	16 (0.63)

*1: With gussets



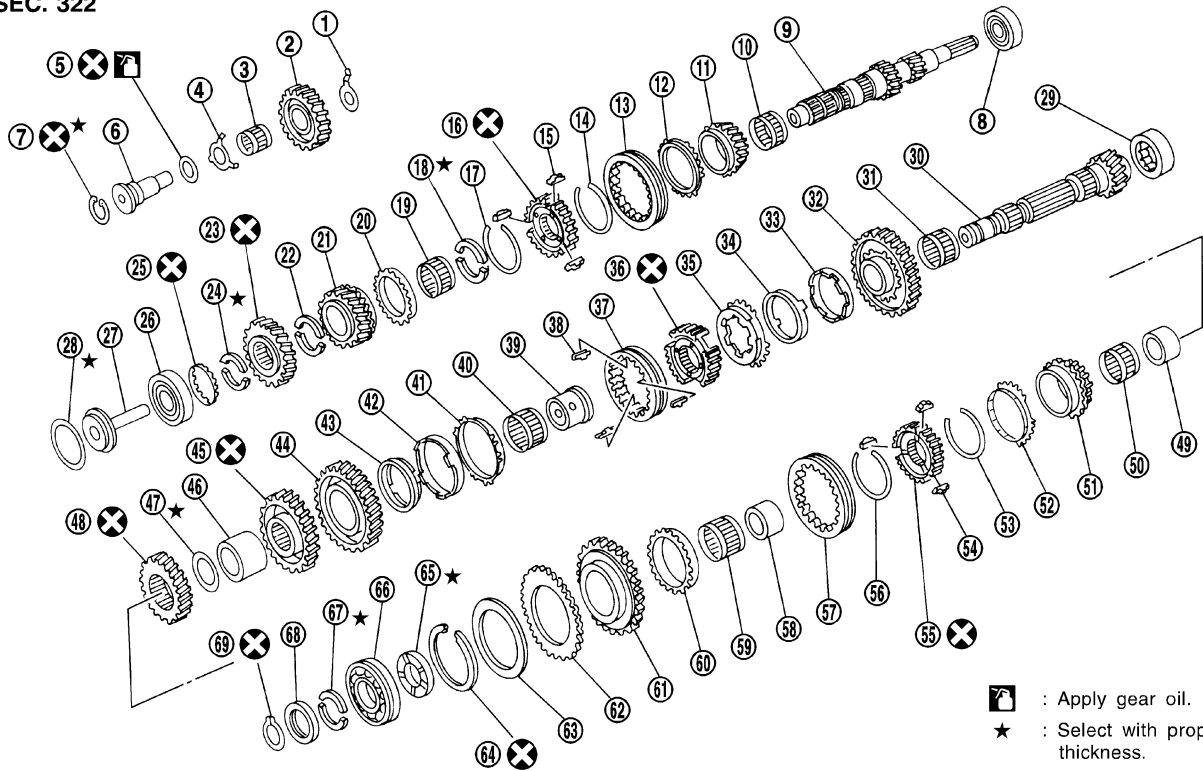
Component Parts CASE AND HOUSING COMPONENTS



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

GEAR COMPONENTS

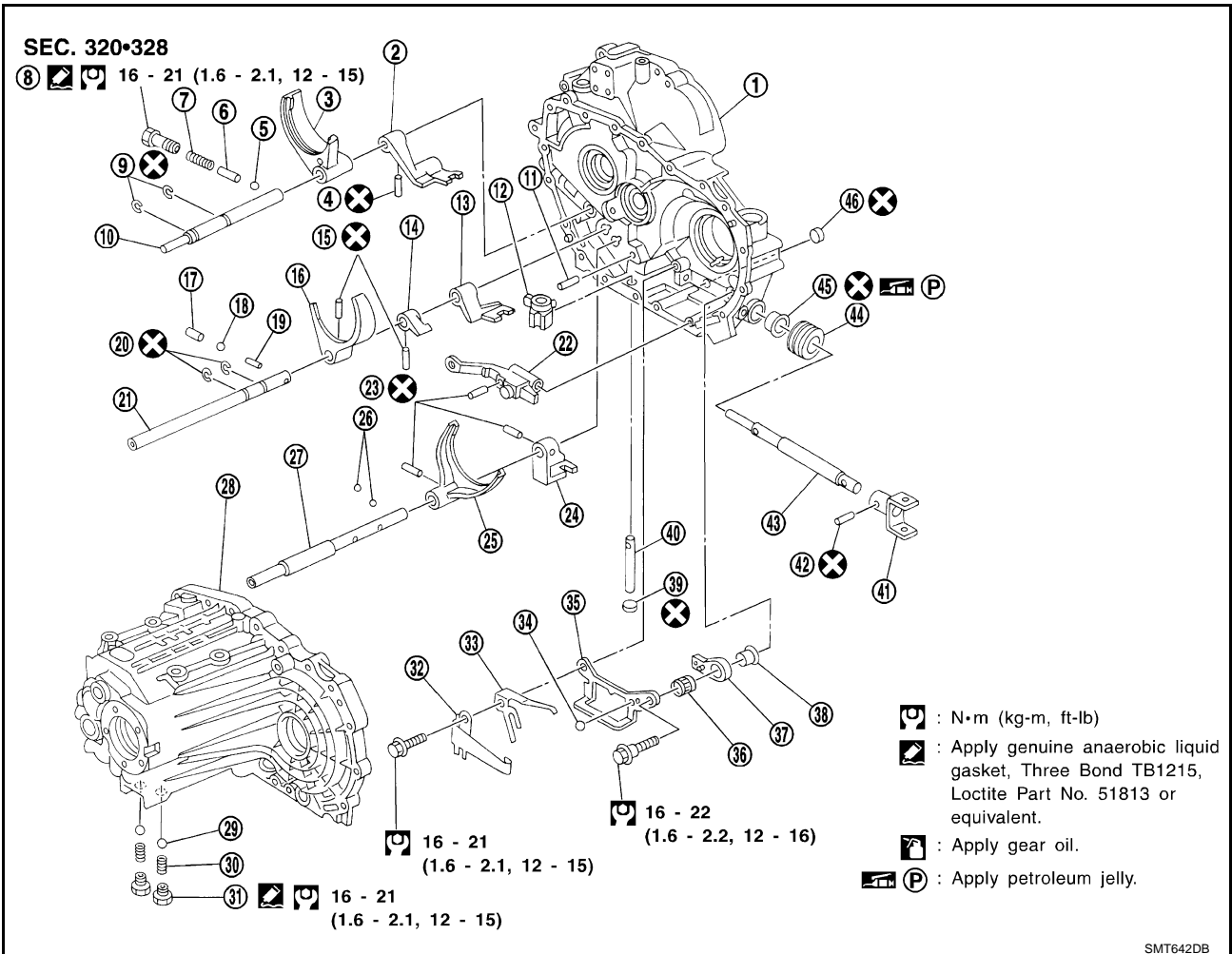
SEC. 322



SMT641DA

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

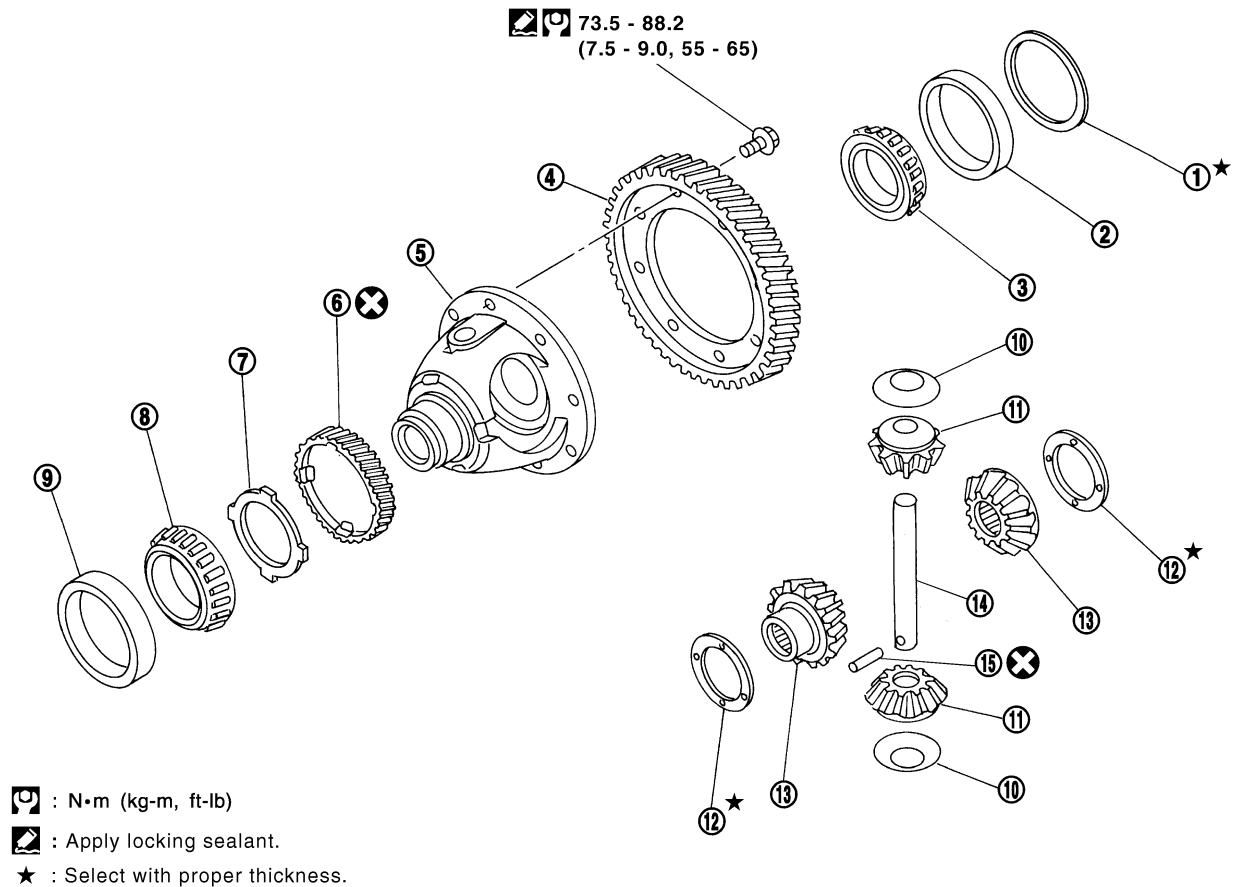
SHIFT CONTROL COMPONENTS



- | | | |
|------------------------------|------------------------------|----------------------------|
| 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 | 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 | 32. Select check leaf spring | 33. Return spring |
| 34. Steel ball | 35. Reverse gate | 36. Return bearing |
| 37. Selector arm | 38. Bushing | 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

SEC. 322



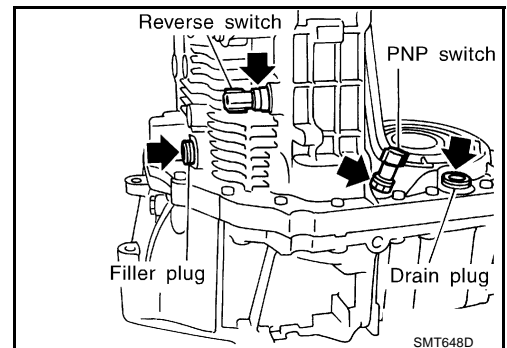
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Disassembly and Assembly

DISASSEMBLY

Transaxle Case

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

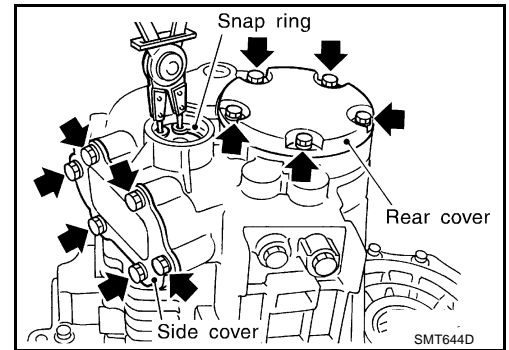


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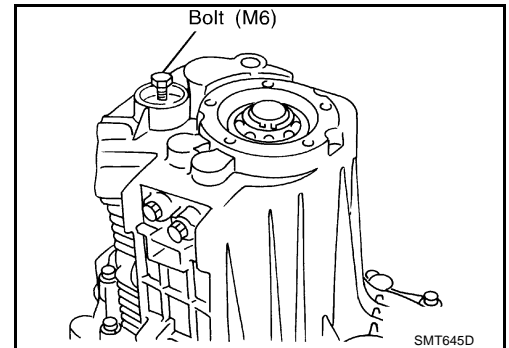
TRANSAXLE ASSEMBLY

[RS5F70A]

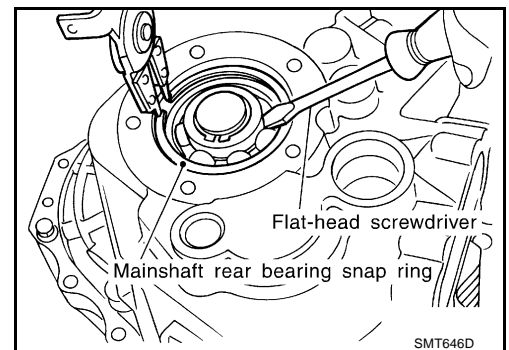
2. Remove snap rings from reverse idler shaft.
3. Remove side cover and rear cover from case.
4. Remove O-ring and mainshaft bearing adjusting shim.



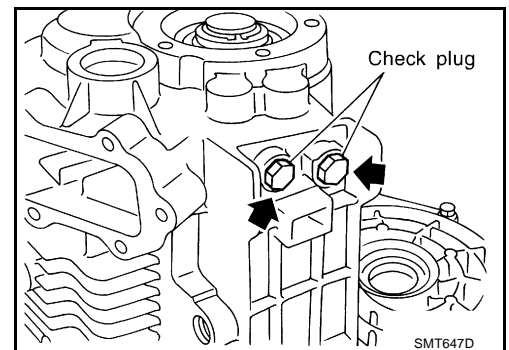
5. Remove reverse idler gear shaft.
 - a. Attach bolt (M6) to thread of reverse idler gear shaft end.
 - b. Pull out the attached bolt, and remove reverse idler gear shaft from case.
6. Remove reverse idler gear, thrust washer (front, rear), and bearing from case.



7. Remove snap ring of mainshaft bearing from case.



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

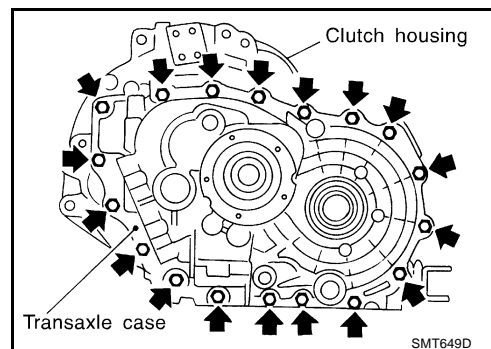


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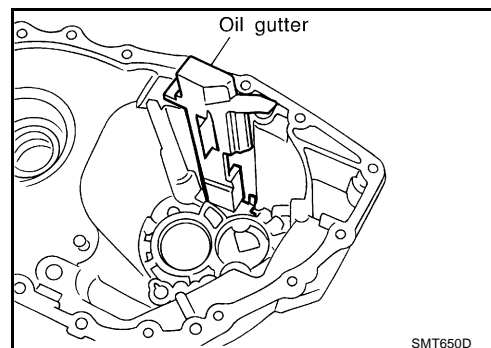
TRANSAXLE ASSEMBLY

[RS5F70A]

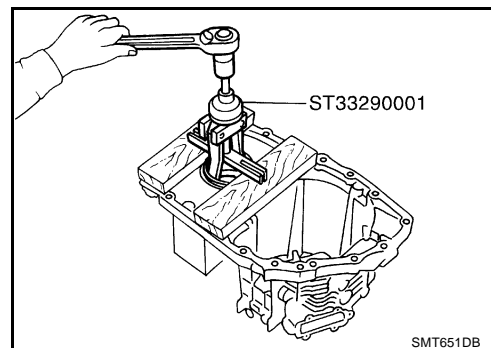
9. Remove mounting bolts.
10. Remove input shaft rear bearing adjusting shim from transaxle case.



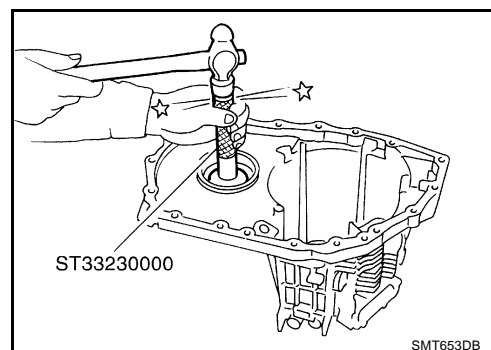
11. Remove oil gutter from case.



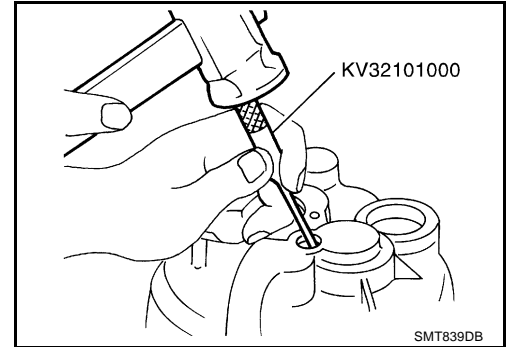
12. Remove differential side bearing outer race and adjusting shim from case.



13. Remove differential oil seal from case.



14. Remove welch plugs from case.



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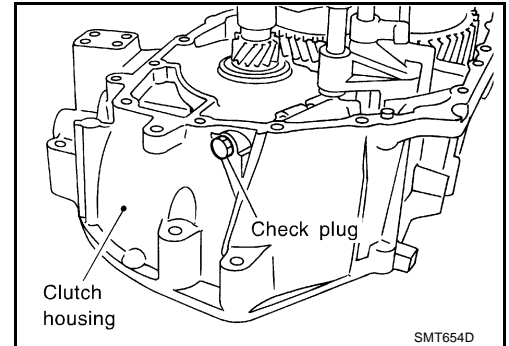
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Clutch Housing

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.



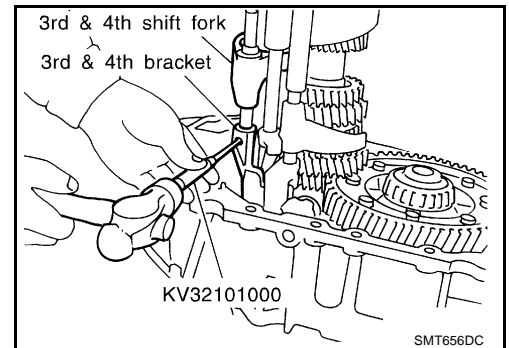
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4. Remove 3rd & 4th bracket retaining pin.

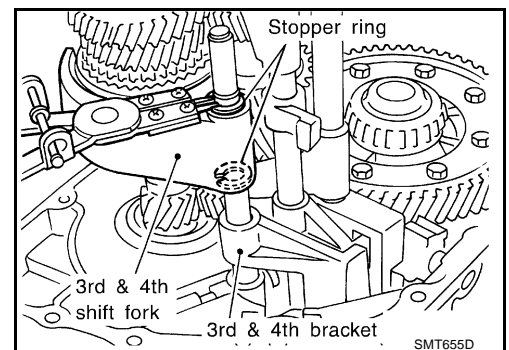


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5. Remove 3rd & 4th shift fork stopper ring.
6. Remove 3rd & 4th fork rod.
7. Remove 3rd & 4th shift fork and bracket.



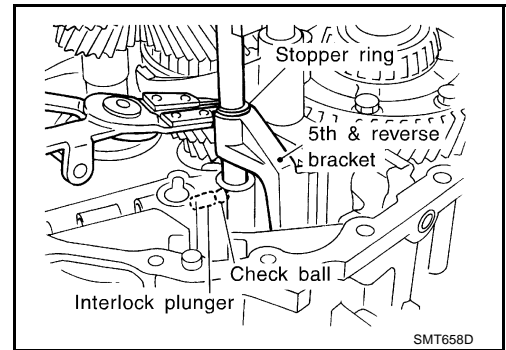
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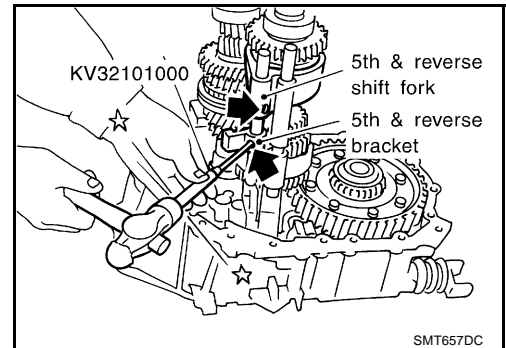
TRANSAXLE ASSEMBLY

[RS5F70A]

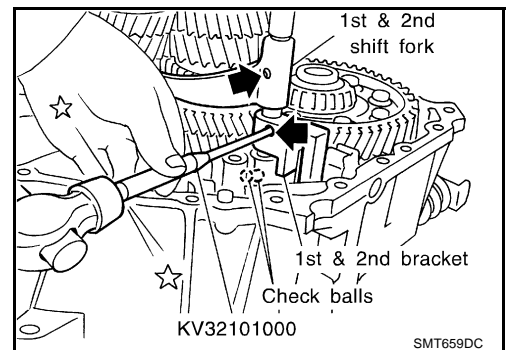
8. Remove interlock plunger and check ball.
9. Remove 5th & reverse bracket stopper ring.



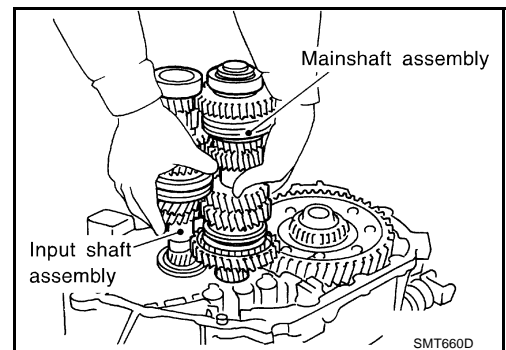
10. Remove retaining pin from 5th & reverse shift fork and reverse switch bracket.
11. Remove 5th & reverse fork rod.
12. Remove interlock pin from 5th & reverse fork rod.
13. Remove reverse switch bracket and 5th & reverse bracket.



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



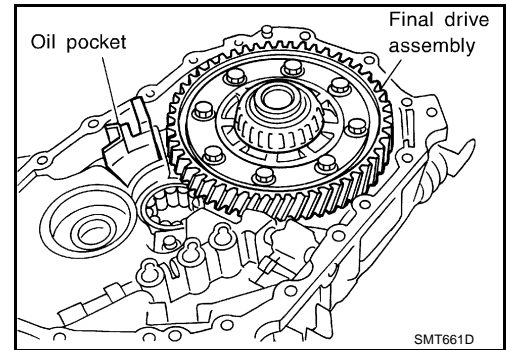
18. Remove both input shaft and mainshaft assemblies from housing.



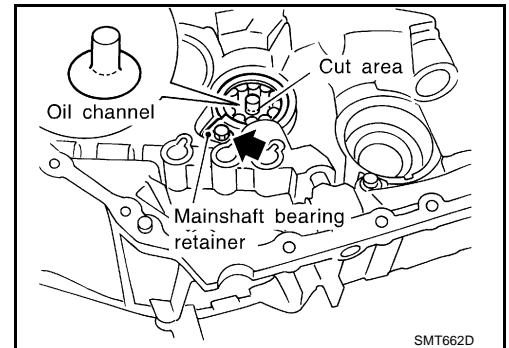
TRANSAXLE ASSEMBLY

[RS5F70A]

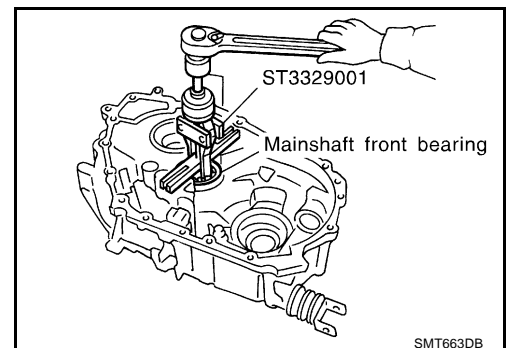
19. Remove final drive assembly from housing.
20. Remove oil pocket from housing.



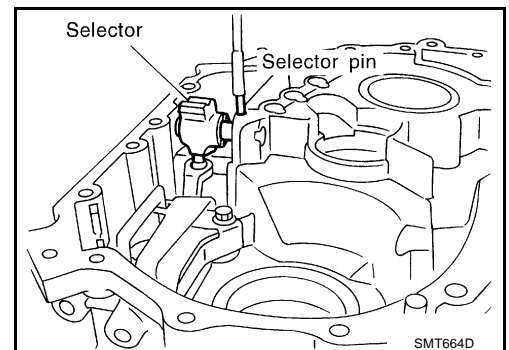
21. Remove mainshaft bearing retainer from housing.
22. Cut off oil channel using a cutter as shown in the figure.



23. Remove mainshaft front bearing from housing.

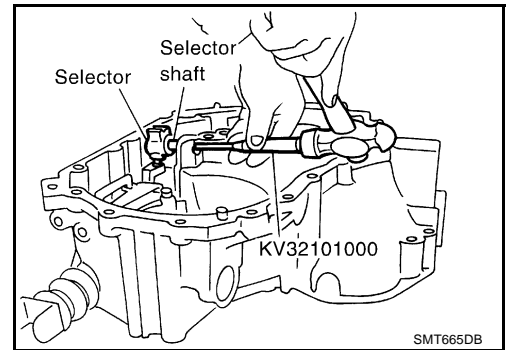


24. Using a magnet or other suitable tool, remove retaining pin from selector shaft.



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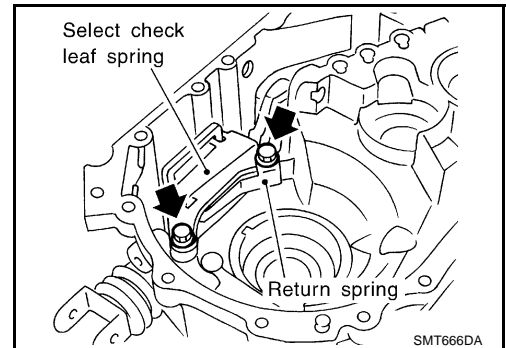
25. Remove selector shaft and plug, then remove selector.



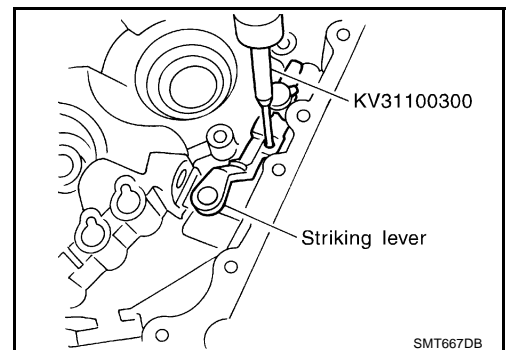
26. Remove reamer bolt, then remove select check leaf spring, return spring, steel ball, reverse gate, selector arm, bearing, and bushing.

CAUTION:

Be careful not to lose the steel ball.



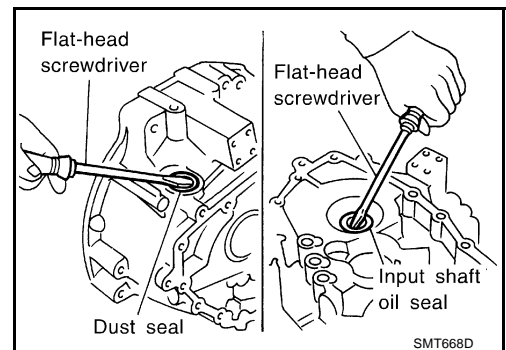
27. Remove retaining pin and plug from striking lever.
28. Remove striking rod, then striking lever from housing.



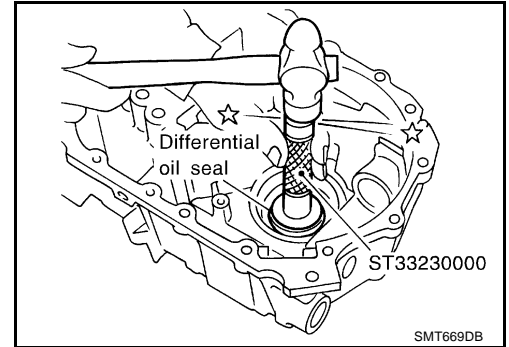
29. Using a flat-head screwdriver or other suitable tool, remove dust seal, input shaft oil seal, and striking rod oil seal from housing.

CAUTION:

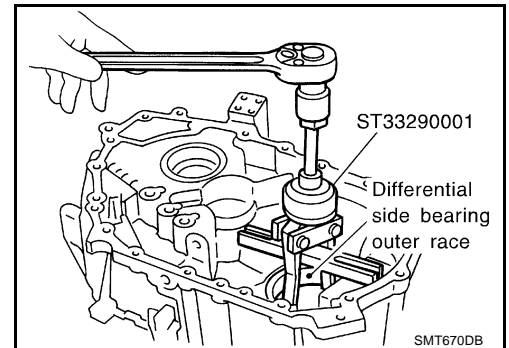
When removing dust and oil seals, be careful not to damage mounting surfaces of dust seal and oil seal.



30. Remove differential oil seal from housing.



31. Remove differential side outer race from housing.



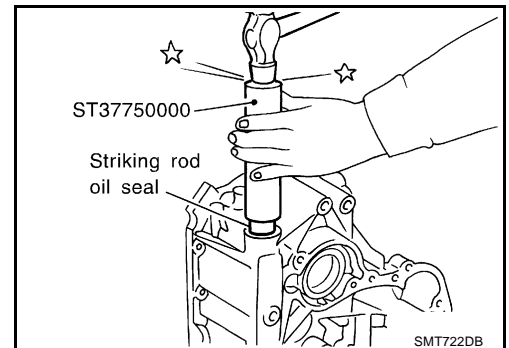
ASSEMBLY

Clutch Housing

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

CAUTION:

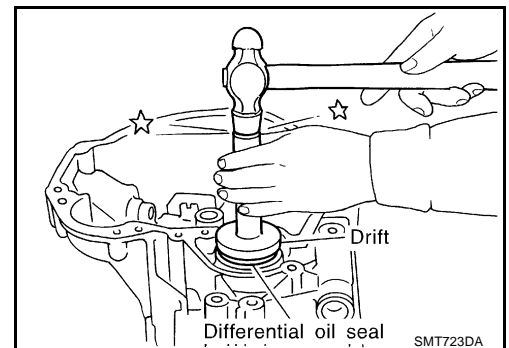
Do not reuse striking rod oil seal.



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

CAUTION:

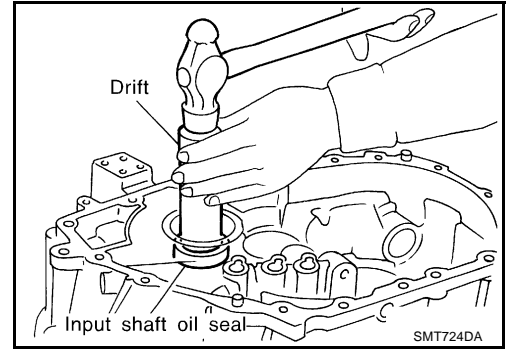
Do not reuse differential oil seal.



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

CAUTION:

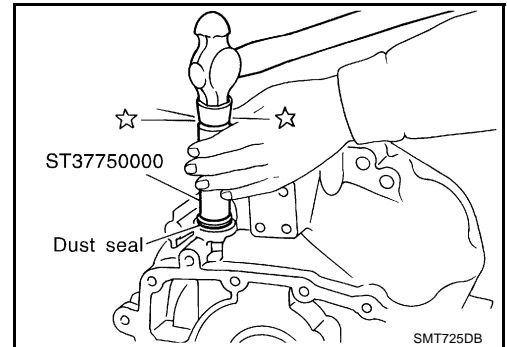
Do not reuse input shaft oil seal.



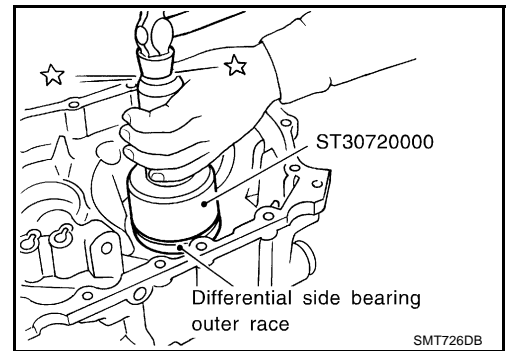
4. Hammer the dust seal into clutch housing as far as it will go.

CAUTION:

Do not reuse dust seal.



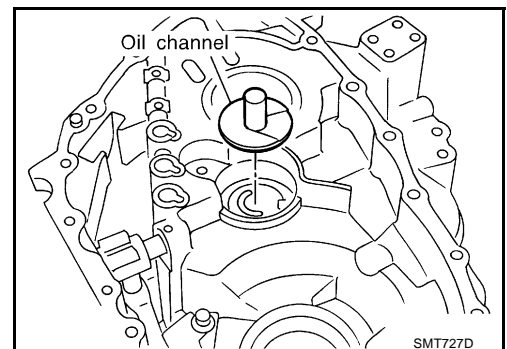
5. Install outer race of differential side bearing.



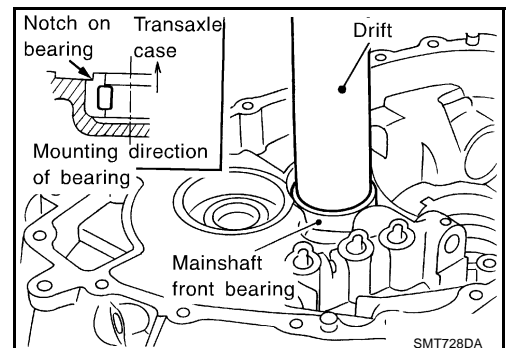
6. Install new oil channel (mainshaft).

CAUTION:

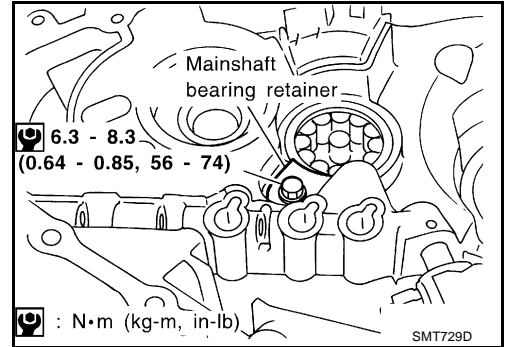
Pay attention to installation direction of oil channel.



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



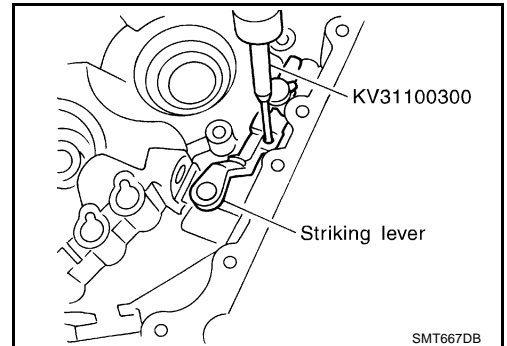
8. Install mainshaft bearing retainer, and tighten bolts with specified torque.



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

CAUTION:

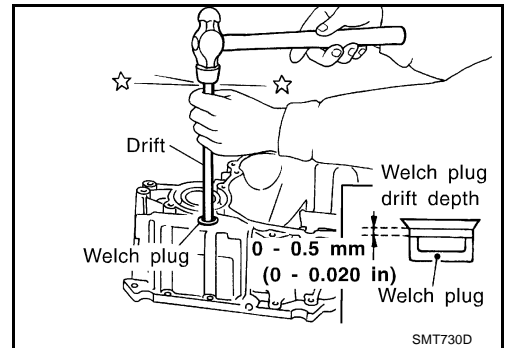
- Before installing striking rod, wrap the end with a vinyl tape or the like to prevent oil seal from being damaged.
- Do not reuse retaining pin.



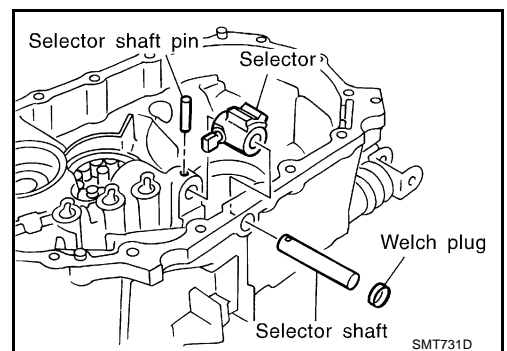
10. Hammer the welch plug (striking lever side) with a general-purpose drift [OD: 12 mm (0.47 in)].

CAUTION:

Do not reuse welch plug.



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



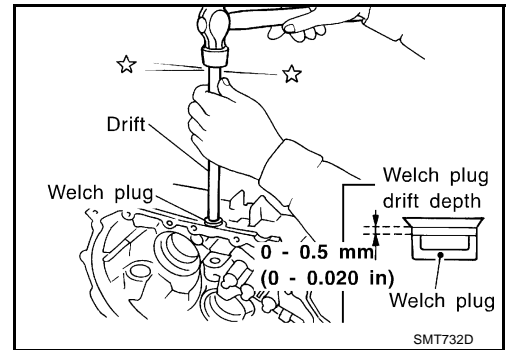
TRANSAXLE ASSEMBLY

[RS5F70A]

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

CAUTION:

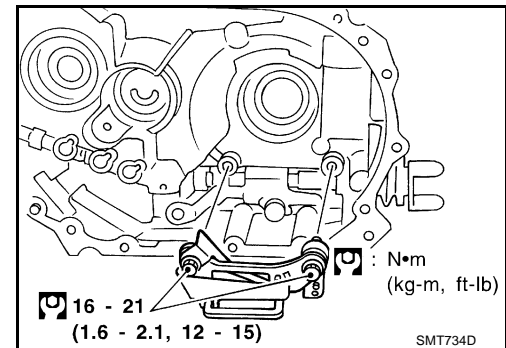
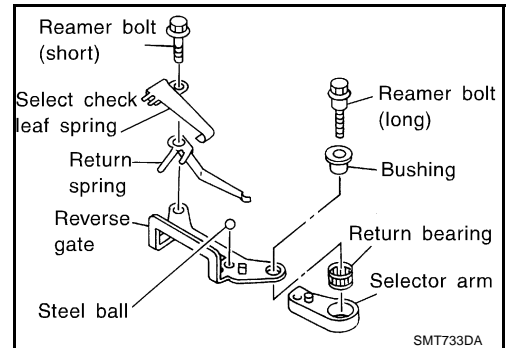
Do not reuse welch plug.



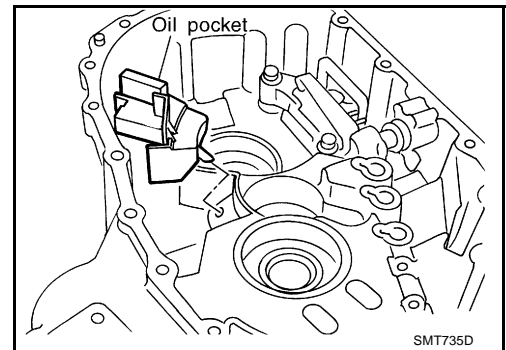
- Install select check leaf spring, return spring, steel ball, reverse gate, selector arm, bushing, and return bearing. Then, tighten two reamer bolts with specified torque.

CAUTION:

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



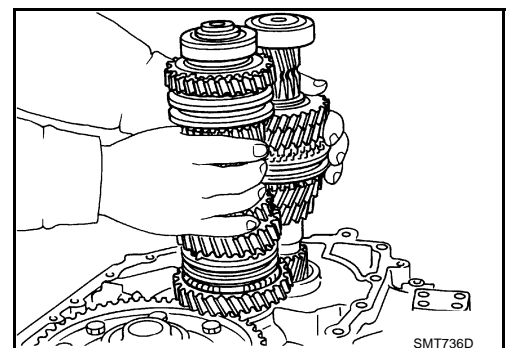
- Install oil pocket.



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

CAUTION:

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

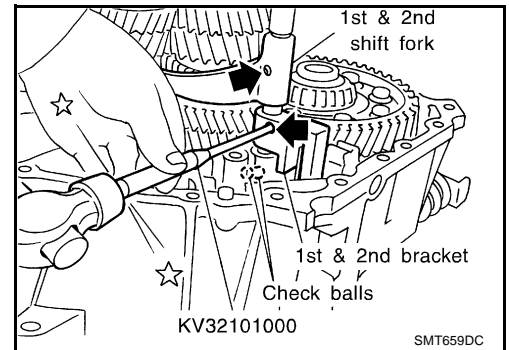


16. Install 5th & reverse shift fork.
17. Install 1st & 2nd shift fork, bracket, and fork rod.
18. Install retaining pin for 1st & 2nd bracket.

CAUTION:

Do not reuse retaining pin.

19. Install two check balls.



20. Install interlock pin into 5th & reverse fork rod.
21. Install reverse switch bracket, 5th & reverse bracket, and fork rod.
22. Install retaining pin for 5th & reverse shift fork and reverse switch bracket.

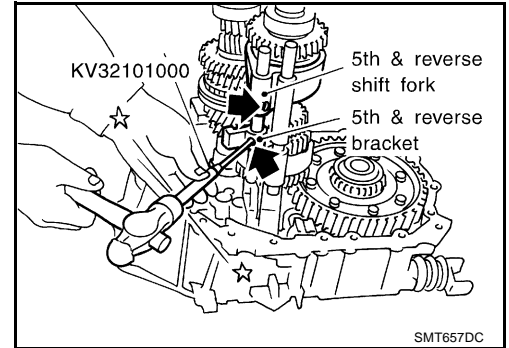
CAUTION:

Do not reuse retaining pin.

23. Install 5th & reverse bracket stopper ring.

CAUTION:

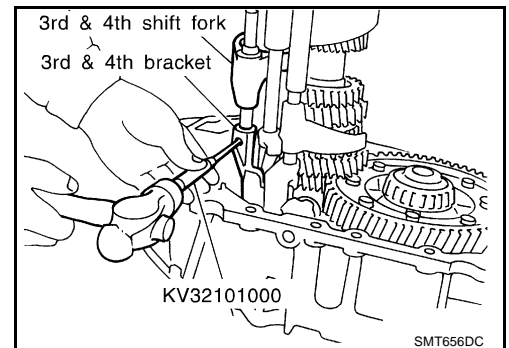
Do not reuse stopper pin.



24. Install check ball and interlock plunger.
25. Install 3rd & 4th shift fork, bracket, and fork rod.
26. Install 3rd & 4th bracket retaining pin.

CAUTION:

Do not reuse retaining pin.



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

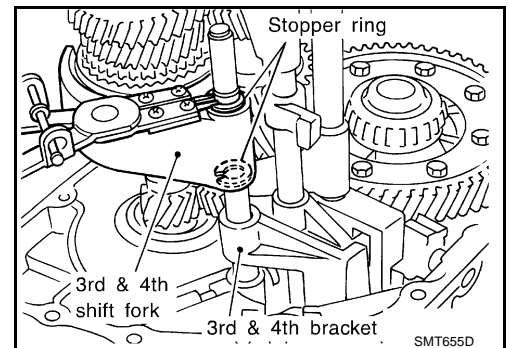
CAUTION:

Do not reuse stopper ring.

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

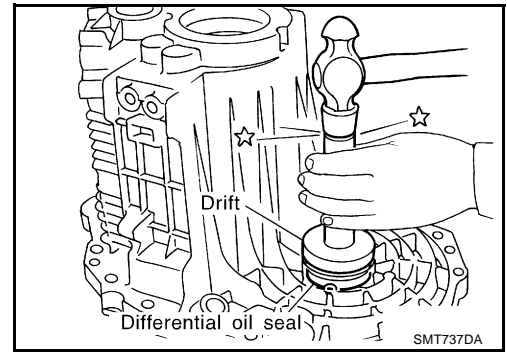
Tightening torque

: Refer to MT-69, "SHIFT CONTROL COMPONENTS" .

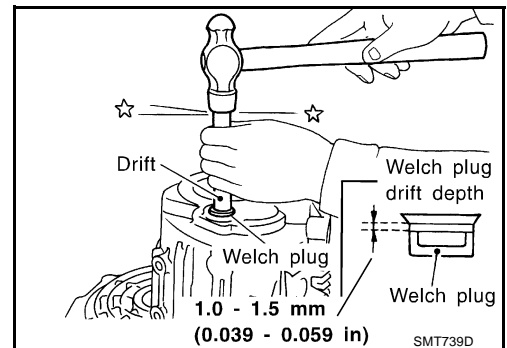


Transaxle Case

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 preload for differential side bearing.

Preload : 0.15 - 0.21 mm (0.0059 - 0.0083 in)

Dimension "N" = (N₁ - N₂) + Preload

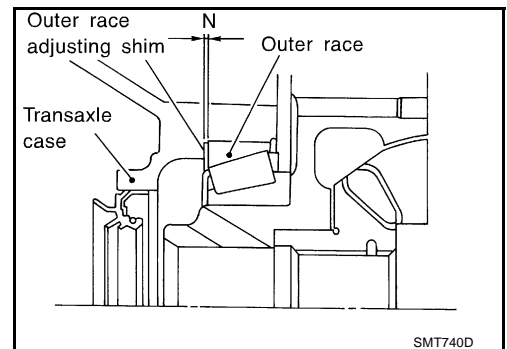
N : Thickness of adjusting shim

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

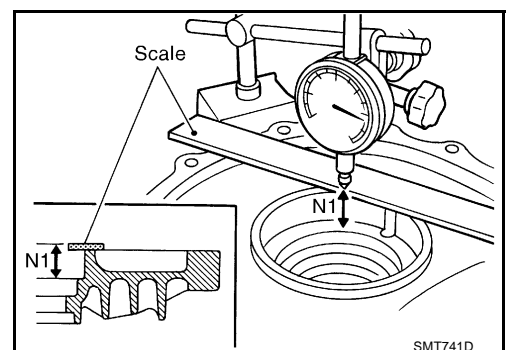
N₂ : Distance between differential side bearing and transaxle case

Differential side bearing adjusting shims:

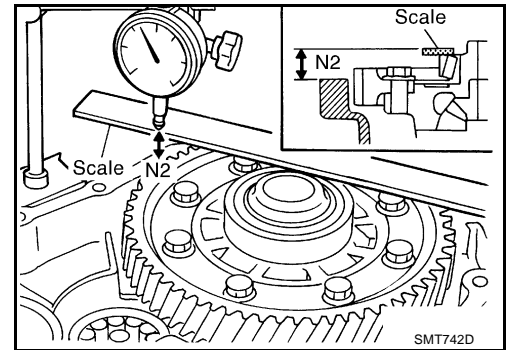
Refer to MT-116, "DIFFERENTIAL SIDE BEARING ADJUSTING SHIMS" .



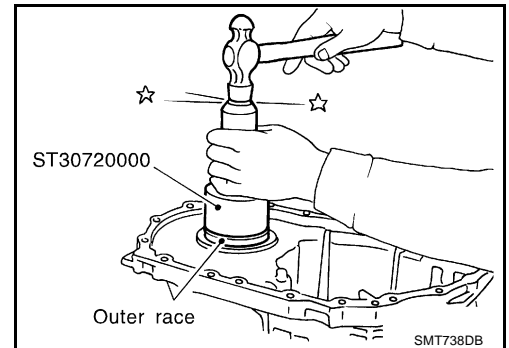
- a. Using dial gauge and scale, measure dimension "N1" between clutch housing case end face and mounting face of adjusting shim.



- 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.

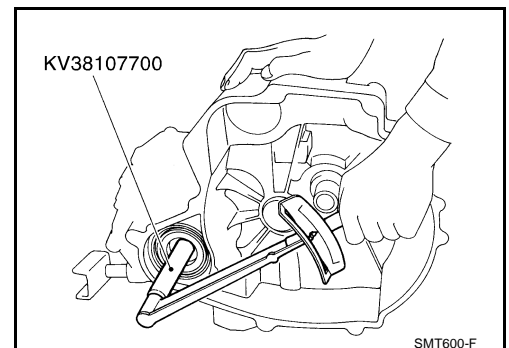


5. Measure turning torque of final drive assembly.

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) + Preload

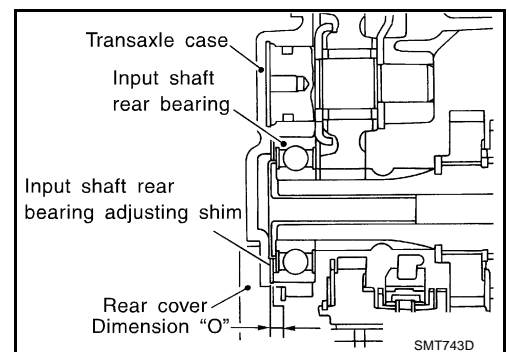
O : Thickness of adjusting shim

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:

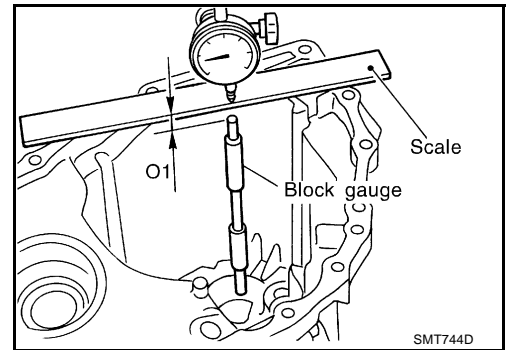
Refer to MT-115, "INPUT SHAFT REAR BEARING ADJUSTING SHIM" .



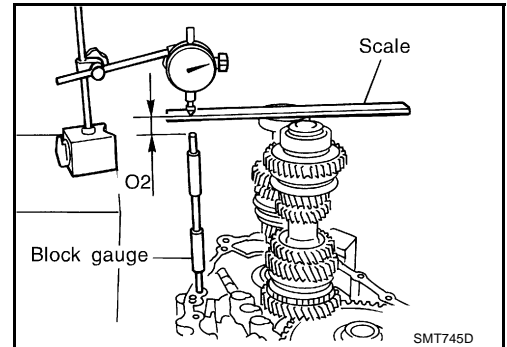
TRANSAXLE ASSEMBLY

[RS5F70A]

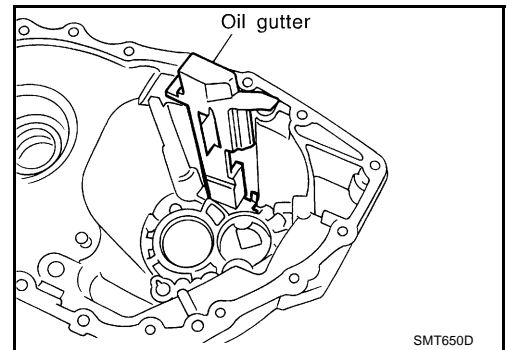
- a. Using block gauge, scale, and dial gauge, measure dimension "O1" between transaxle case end face and mounting face of adjusting shim.



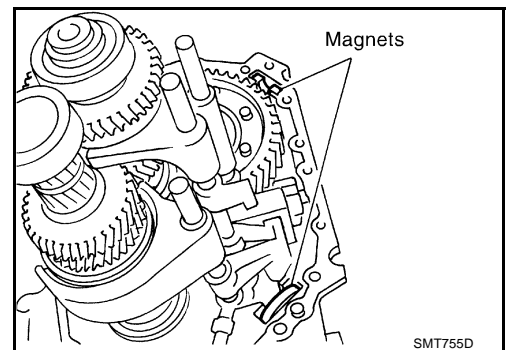
- b. Using gauge block, scale, and dial gauge as shown in the figure, measure dimension "O2" between clutch housing case end face and end face of input shaft rear bearing.
7. Install selected input shaft rear bearing adjusting shim onto input shaft.



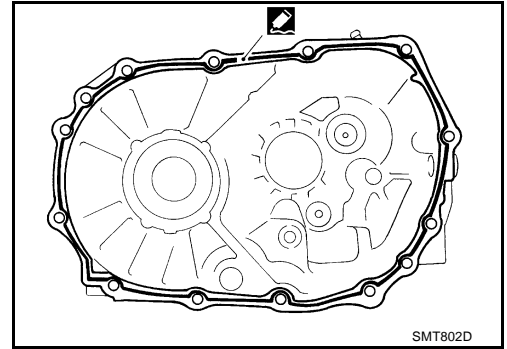
8. Install oil gutter into transaxle case.



9. Install two magnets.



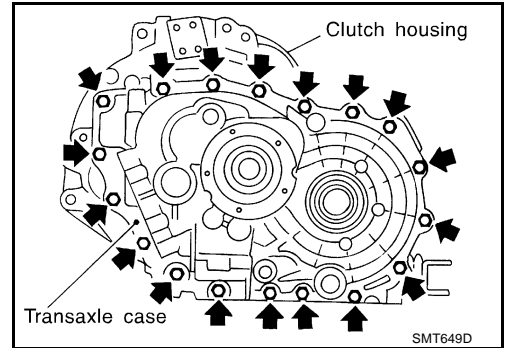
10. Clean mating surfaces of clutch housing and transaxle case. Check for cracks and damage. Then, apply Three Bond TB1215, Loctite Part No. 51813 or equivalent.



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

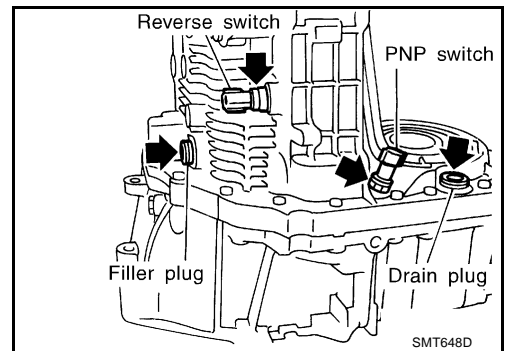
Tightening torque

: Refer to [MT-67, "CASE AND HOUSING COMPONENTS"](#) .

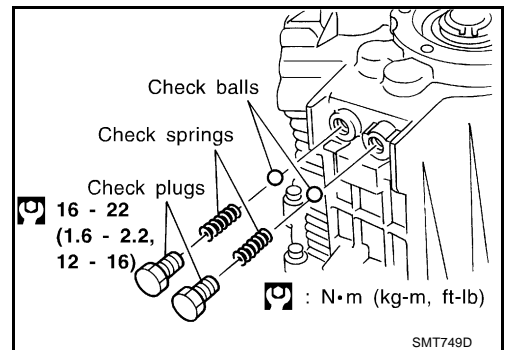


12. Apply Three Bond TB1215, Loctite Part No. 51813 or equivalent to threads of reverse switch, PNP switch, and drain plug, and install them. (Fill the case with oil before installation of filler plug.)
13. Install speedometer pinion assembly.

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

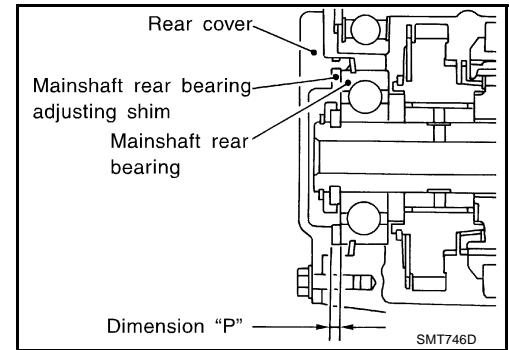
P : Thickness of adjusting shim

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

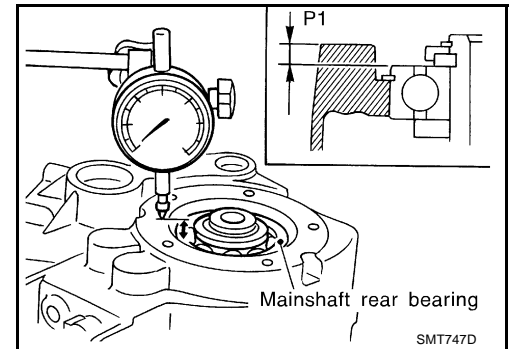
P₂ : Distance between adjusting shim end face of rear cover and transaxle mounting face

Mainshaft rear bearing adjusting shims:

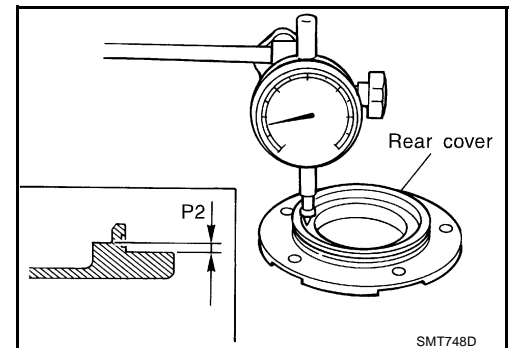
Refer to MT-115, "MAINSHAFT REAR BEARING ADJUSTING SHIM" .



- 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.

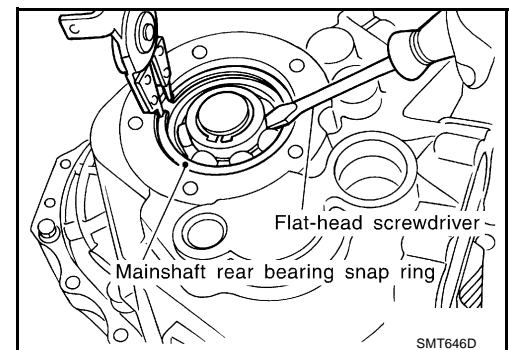


16. Using snap ring pliers as shown in the figure, install snap ring.

CAUTION:

Do not reuse snap ring.

17. Install selected mainshaft adjusting shim.



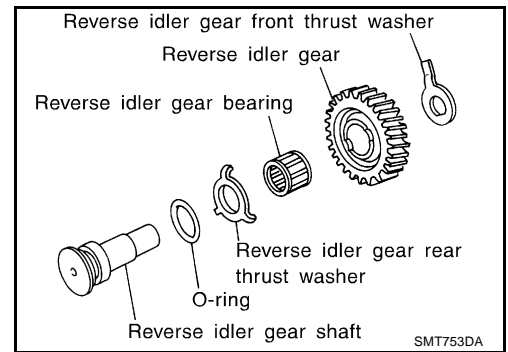
TRANSAXLE ASSEMBLY

[RS5F70A]

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.



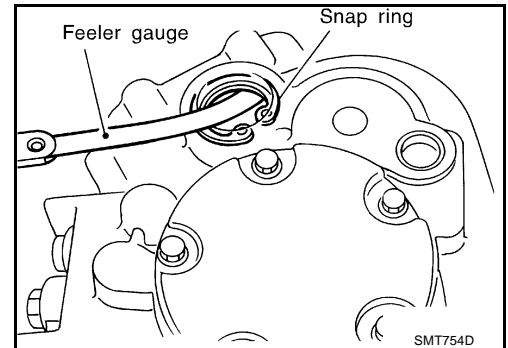
20. Using feeler gauge, measure the end play of snap ring, and select a snap ring suitable to satisfy the following specification.

End play:

0.05 - 0.25 mm (0.0020 - 0.0098 in)

Available snap ring:

Refer to [MT-112, "SNAP RING"](#) .



21. Install selected snap ring.

CAUTION:

Do not reuse snap ring.

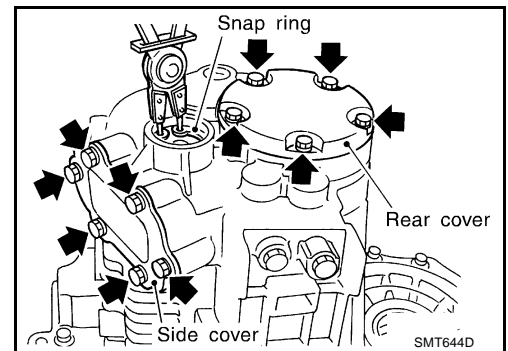
22. Apply gear oil to rear cover O-ring, and install rear cover, side cover gasket, and side cover. Then tighten mounting bolts with specified torque.

Tightening torque

: Refer to [MT-67, "CASE AND HOUSING COMPONENTS"](#) .

CAUTION:

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



INPUT SHAFT AND GEARS

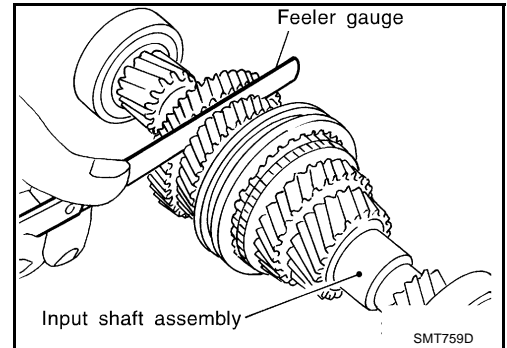
Assembly and Disassembly DISASSEMBLY

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

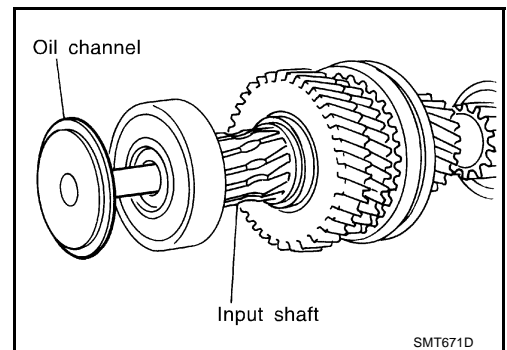
Gear end play

: Refer to [MT-112, "Gear End Play"](#).

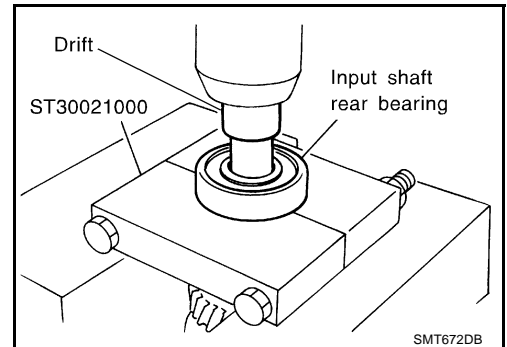
- If end play is not within specification, disassemble and check the parts.



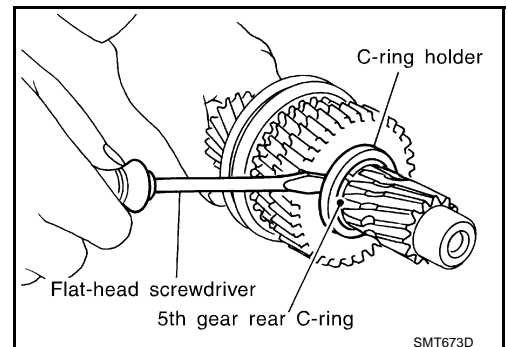
2. Remove oil channel from input shaft rear bearing.



3. Press out input shaft rear bearing.



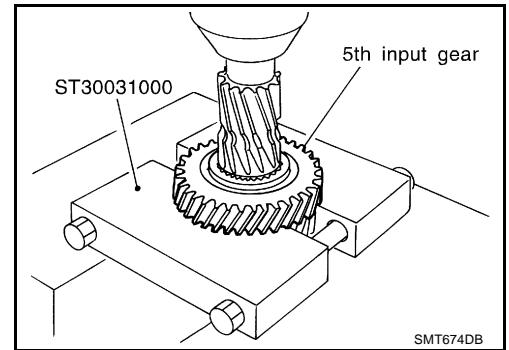
4. Remove C-ring holder.
5. Remove 5th gear rear C-ring.



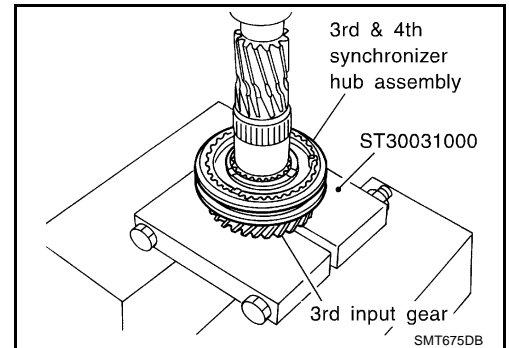
INPUT SHAFT AND GEARS

[RS5F70A]

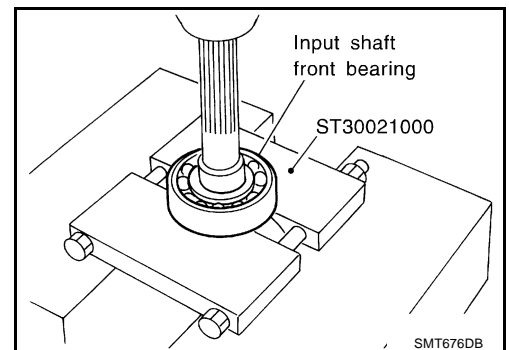
6. Remove 5th input gear from input shaft.
7. Remove 5th gear front C-ring.



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.



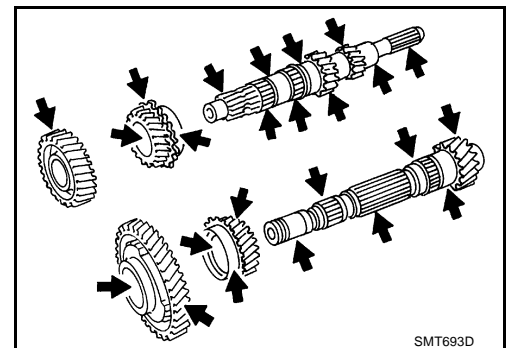
11. Press out input shaft front bearing from input shaft.



INSPECTION AFTER DISASSEMBLY

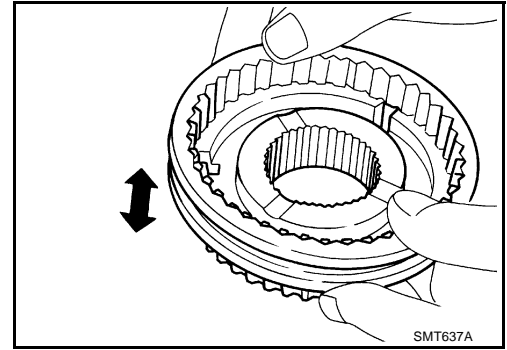
Input Shaft and Gear

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

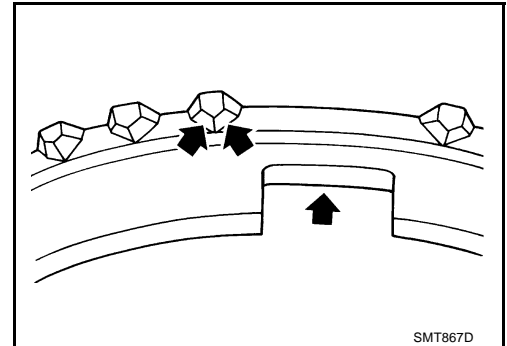


Synchronizer

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



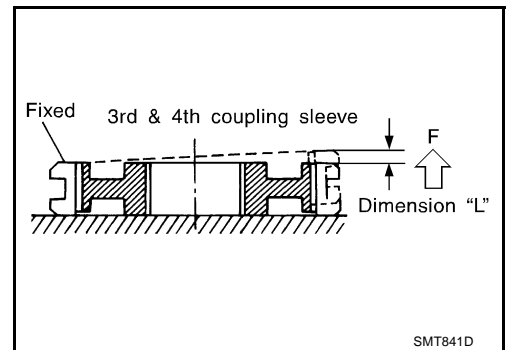
- If any crack, damage, or excessive wear is found on cam face of baulk ring or working face of insert, replace it.



- Measure the movement (play, dimension "L") of 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"**

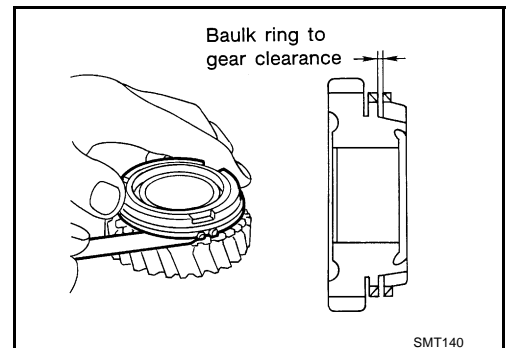
: Refer to MT-112, "1ST, 2ND, 3RD, 4TH, 5TH & REVERSE COUPLING SLEEVE" .



- Measure clearance between baulk ring and gear.

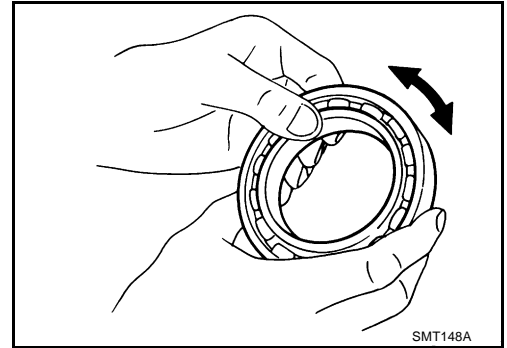
**Clearance between
baulk ring and gear**

: Refer to MT-112, "Clearance Between Baulk Ring and Gear" .



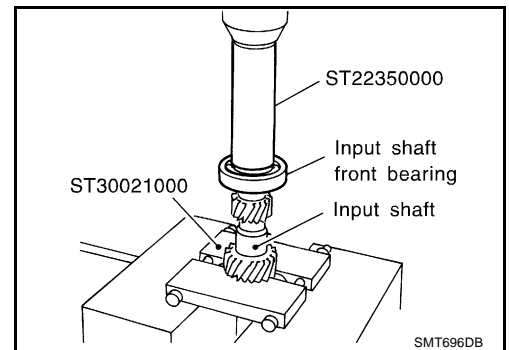
Bearing

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



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.

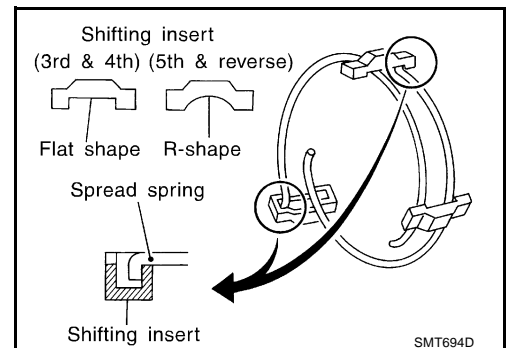


3. Install spread spring, shifting insert, and 3rd & 4th synchronizer hub onto 3rd & 4th coupling sleeve.

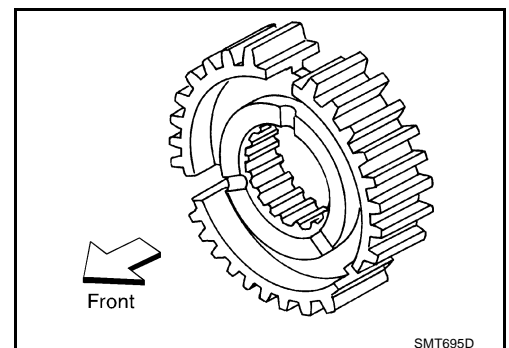
- Pay attention to the shape of spread spring and shifting insert for correct assembly.
Do not install spread spring hook onto the same shifting insert.

CAUTION:

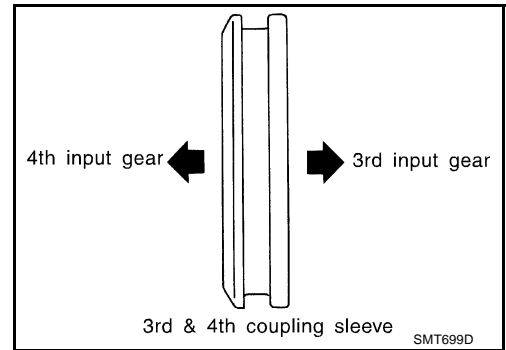
Do not reuse 3rd & 4th synchronizer hub.



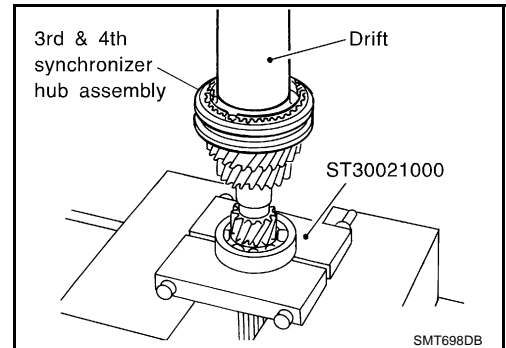
- Install synchronizer hub with its three grooves facing the front side (3rd input gear side).



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



- 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.
- Install 4th gear C-ring onto input shaft.

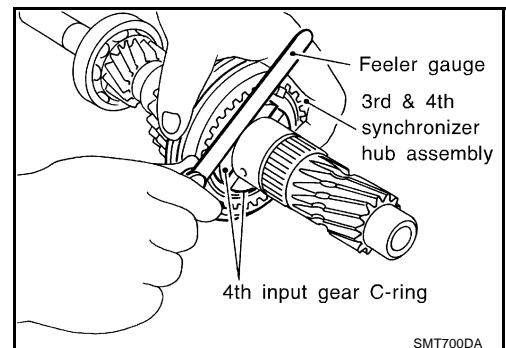


- Measure the end play of 3rd & 4th synchronizer hub, and check if it is within allowable specification below.

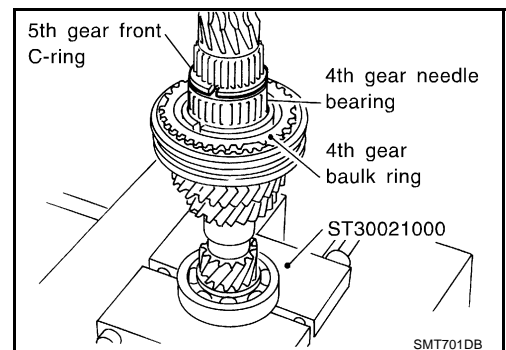
End play : 0 - 0.06 mm (0 - 0.0024 in)

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

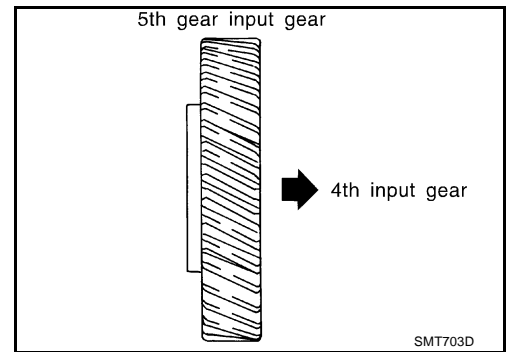
4th input gear C-ring : Refer to MT-113, "4TH INPUT GEAR C-RING" .



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



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

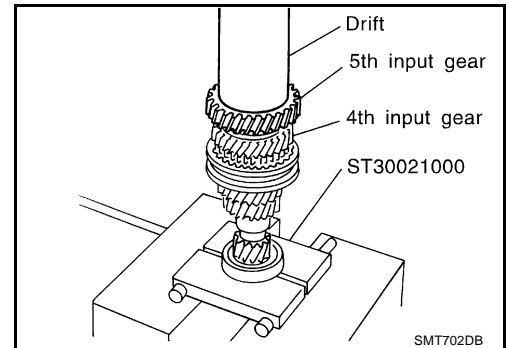


11. Install 5th input gear.

CAUTION:

Do not reuse 5th input gear.

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

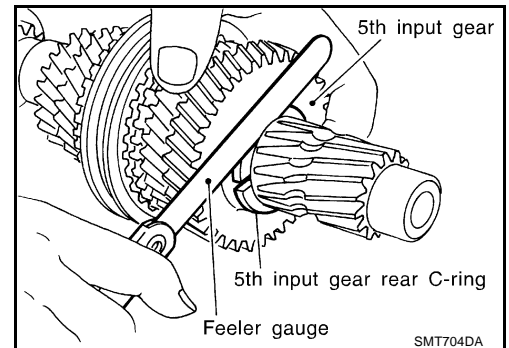


13. Measure the end play of 5th input gear, and check if it is within the allowable specification below.

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 [MT-113, "5TH INPUT GEAR REAR C-RING"](#) .



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

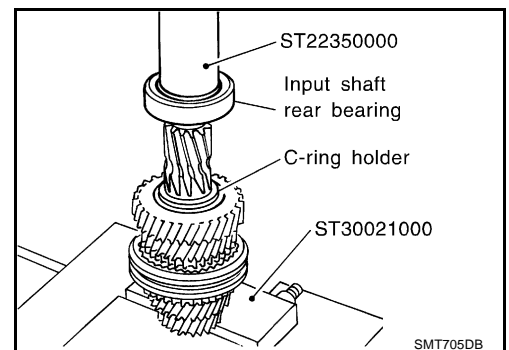
CAUTION:

Do not reuse C-ring holder.

16. Install input shaft rear bearing.

CAUTION:

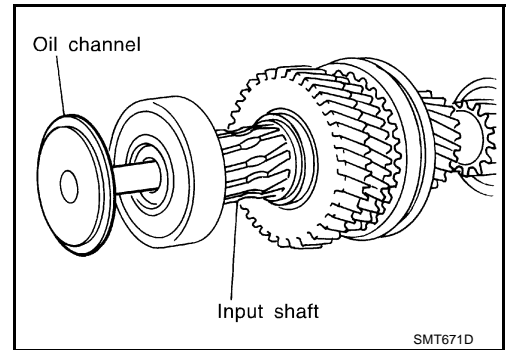
Install input shaft rear bearing with its brown surface facing the input gear side.



INPUT SHAFT AND GEARS

[RS5F70A]

17. Install oil channel onto input shaft.
18. Measure gear end play as a final check. Refer to [MT-88, "DIS-ASSEMBLY"](#).



MAINSHAFT AND GEARS

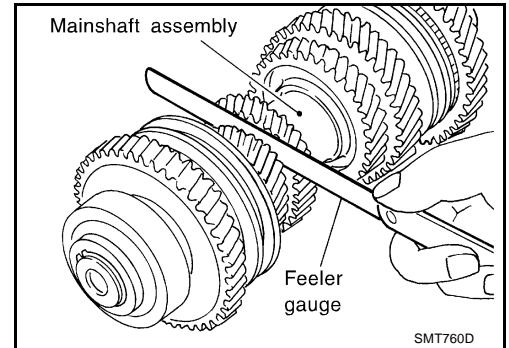
Assembly and Disassembly DISASSEMBLY

1. Before disassembly, measure gear end play.

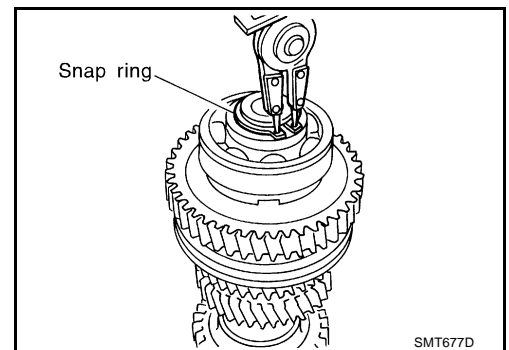
Gear end play

: Refer to [MT-112, "Gear End Play"](#).

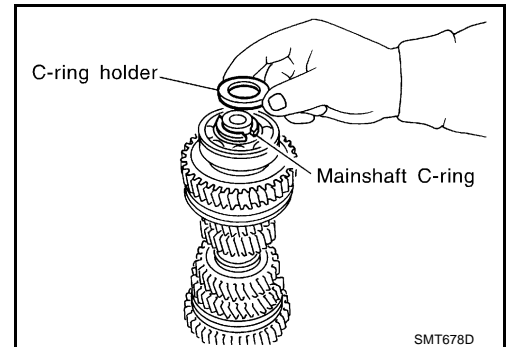
- If end play is not within specification, disassemble and check the parts.



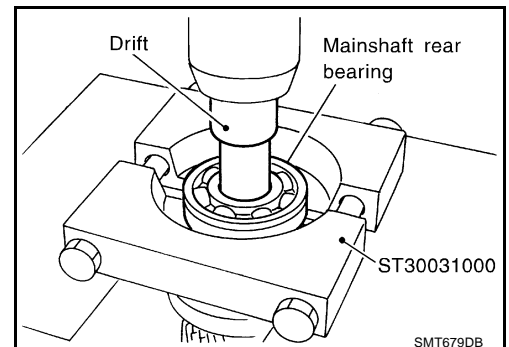
2. Remove snap ring.



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



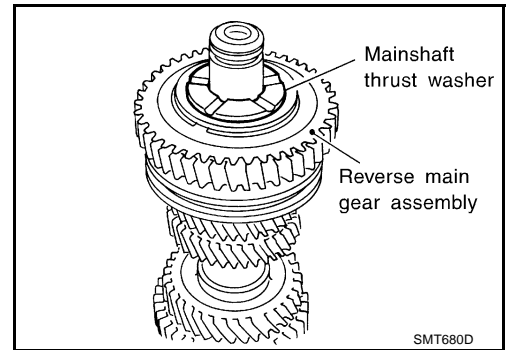
4. Press out mainshaft rear bearing from mainshaft.



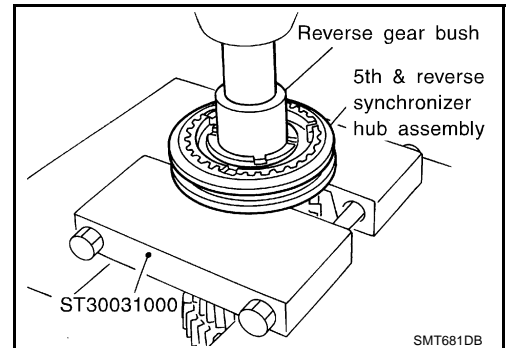
MAINSHAFT AND GEARS

[RS5F70A]

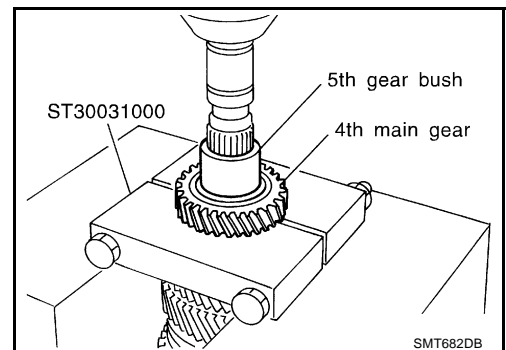
5. Remove mainshaft thrust washer.
6. Remove snap ring from mainshaft. Then, remove reverse main gear assembly, reverse gear needle bearing, and reverse gear baulk ring.



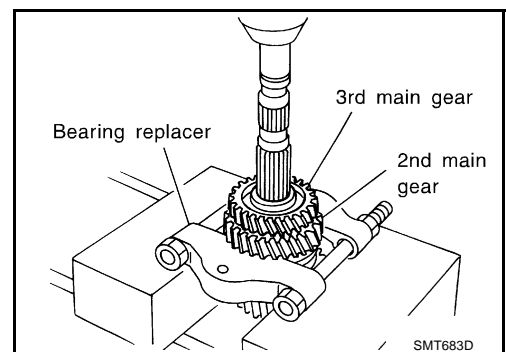
7. Place bearing replacer between 5th & reverse synchronizer hub and 5th main gear, and press out both reverse gear bushing and 5th & reverse synchronizer assembly.
8. Remove 5th main gear, 5th gear baulk ring, and 5th gear needle bearing.



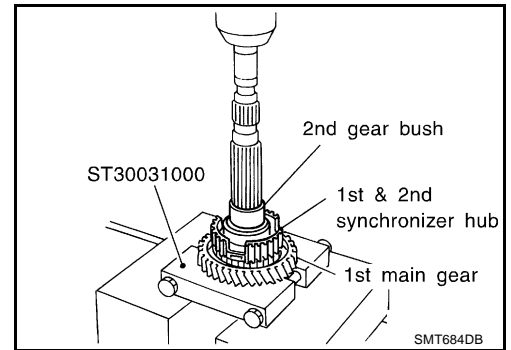
9. Place bearing replacer between 3rd and 4th main gears, and press out both 5th gear bushing and 4th main gear.



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.



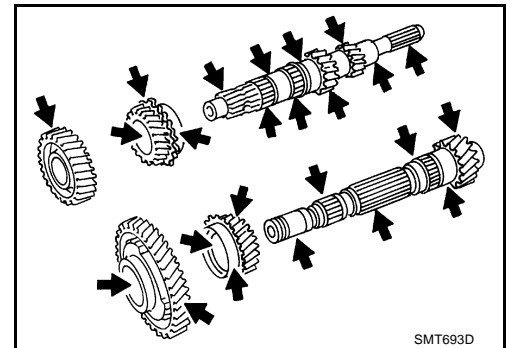
12. Remove 2nd double cone assembly, 2nd gear bushing, and coupling sleeve assembly.
13. Place bearing replacer on 1st gear front side, and press out all of 2nd gear bushing, 1st & 2nd synchronizer hub, 1st main gear, and 1st double cone.
14. Remove 1st gear needle bearing.



INSPECTION AFTER DISASSEMBLY

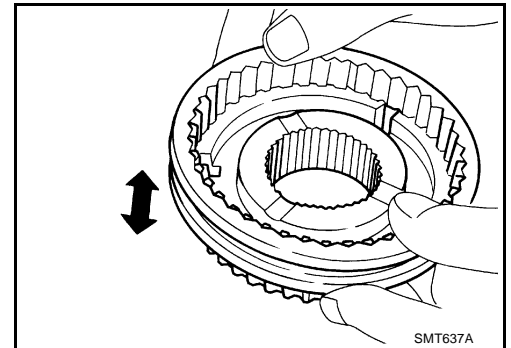
Mainshaft and Gears

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

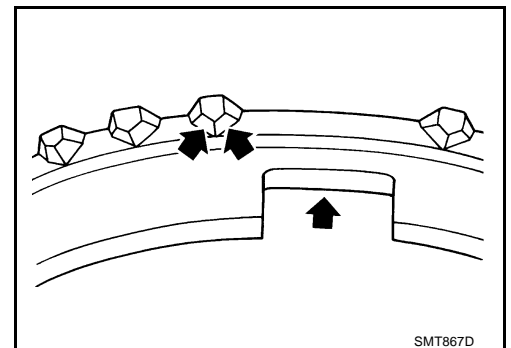


Synchronizer

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



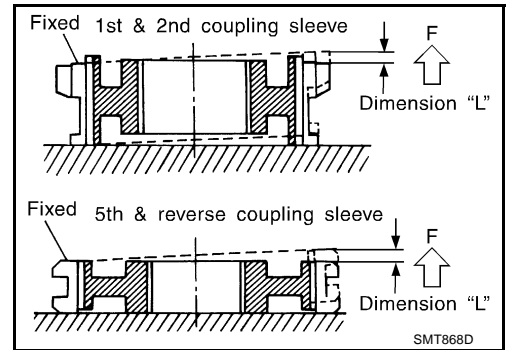
- If any crack, damage, or excessive wear is found on cam face of baulk ring or working face of insert, replace it.



- 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"

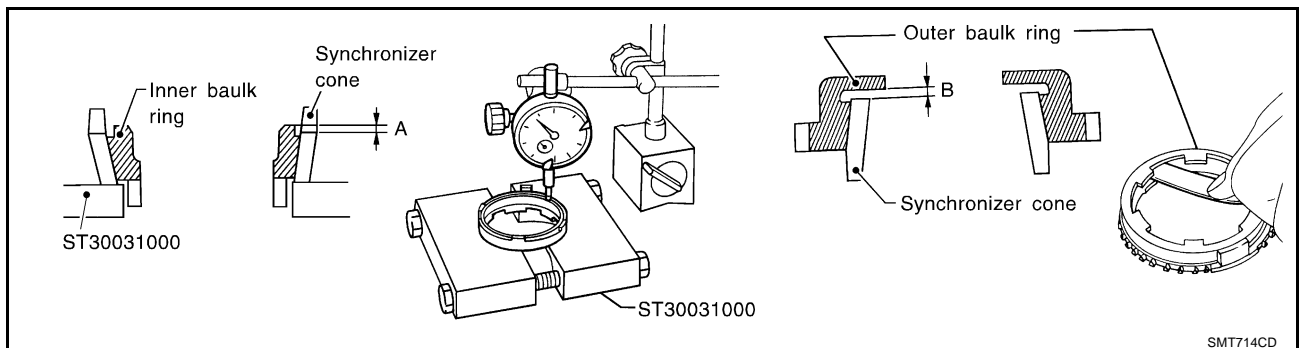
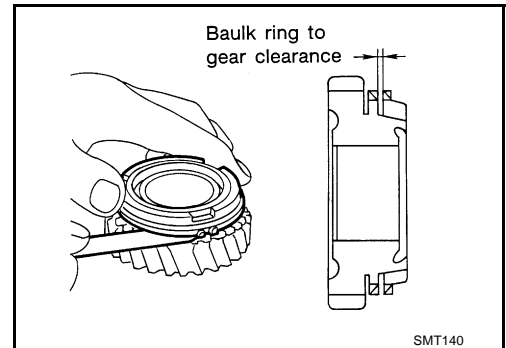
: Refer to MT-112, "1ST, 2ND, 3RD, 4TH, 5TH & REVERSE COUPLING SLEEVE".



- Measure clearance between baulk ring and gear.

Clearance between baulk ring and gear

: Refer to MT-112, "Clearance Between Baulk Ring and Gear".



- Measure wear of 1st and 2nd baulk ring.
 - Place baulk rings in position on synchronizer cone.
 - 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)

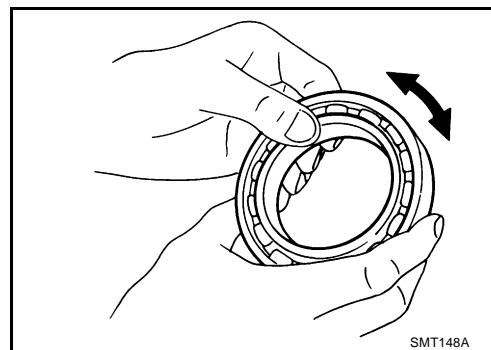
: B 0.6 - 1.1 mm (0.024 - 0.043 in)

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.

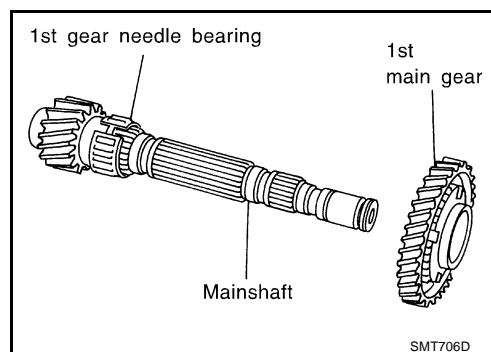
Bearing

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



ASSEMBLY

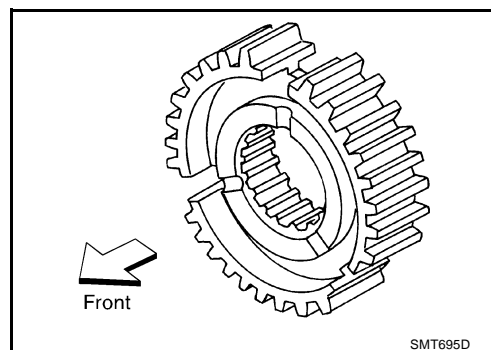
- Install 1st gear needle bearing and 1st main gear onto mainshaft.
- Install 1st double cone assembly onto mainshaft.



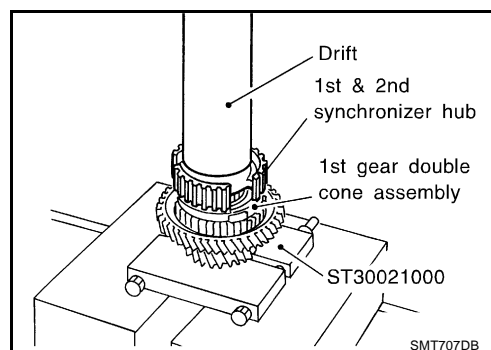
- Install 1st & 2nd synchronizer hub with its three grooves facing the front side (1st main gear side) onto mainshaft.

CAUTION:

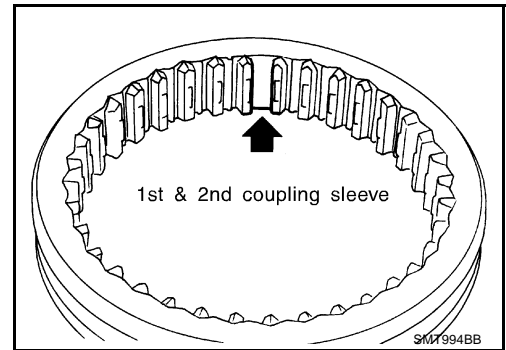
Do not reuse 1st & 2nd synchronizer hub.



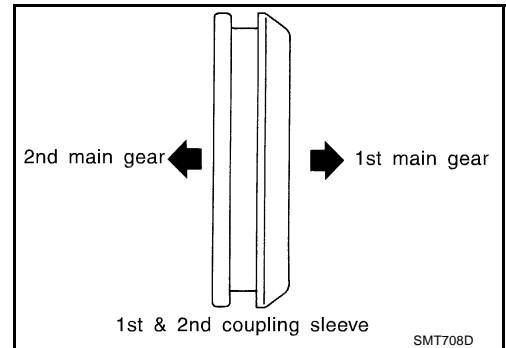
- Install 1st & 2nd synchronizer hub.



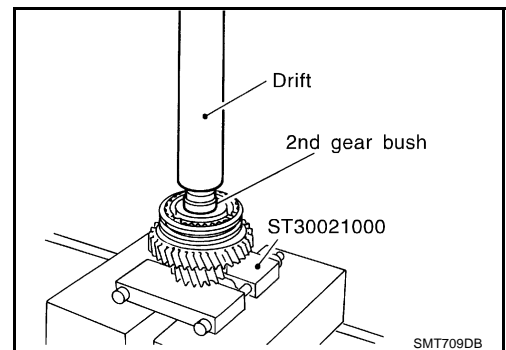
- Install insert spring onto 1st & 2nd coupling sleeve.



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



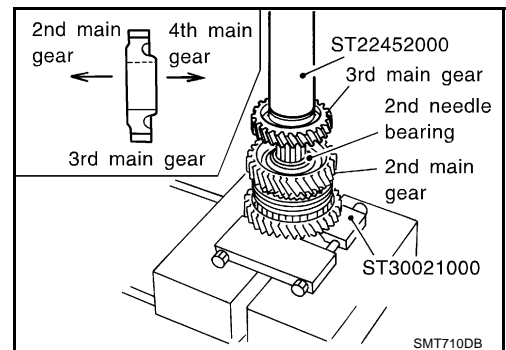
- Install 2nd gear bushing with its flange surface facing 1st & 2nd synchronizer hub side.



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

CAUTION:

Do not reuse 3rd main gear.



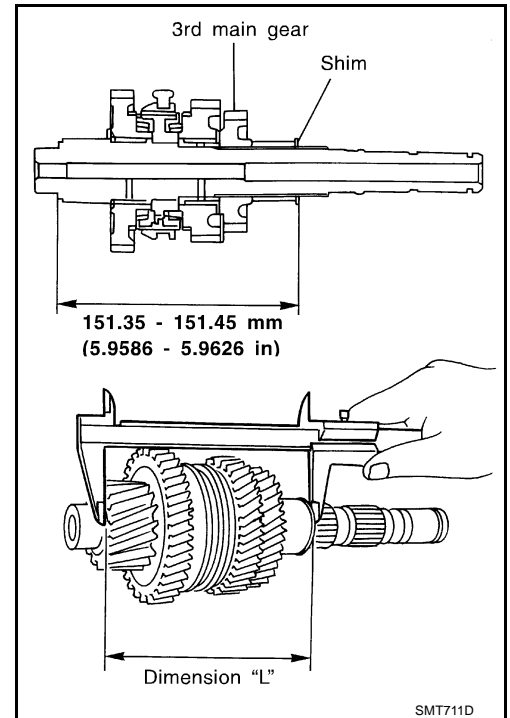
10. Install spacer and mainshaft adjusting shim onto mainshaft.
11. Select a mainshaft adjusting shim suitable to satisfy the following specification of dimension "L" and install it onto mainshaft.

Specification of dimension "L":

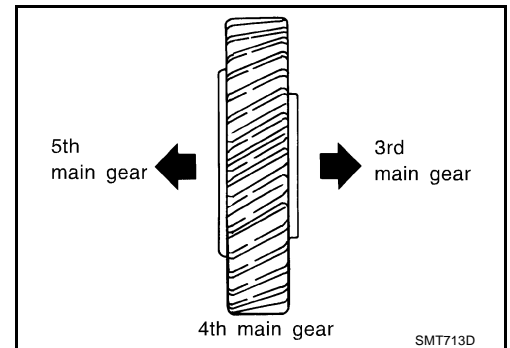
151.35 - 151.45 mm (5.9586 - 5.9626 in)

Mainshaft adjusting shims:

Refer to [MT-114, "MAINSHAFT ADJUSTING SHIM"](#)



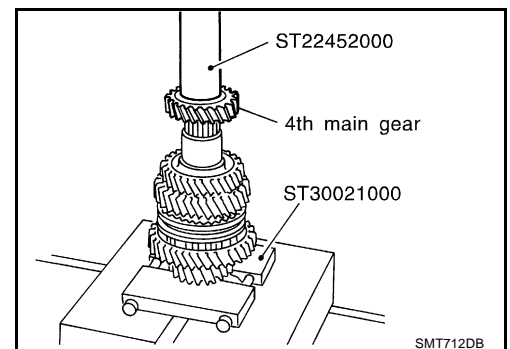
12. Position 4th main gear as shown in the figure, and install it onto mainshaft.



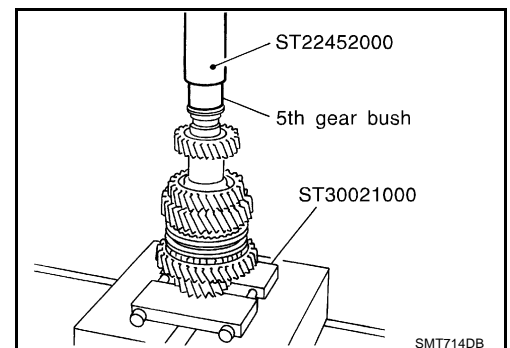
13. Install 4th main gear onto mainshaft.

CAUTION:

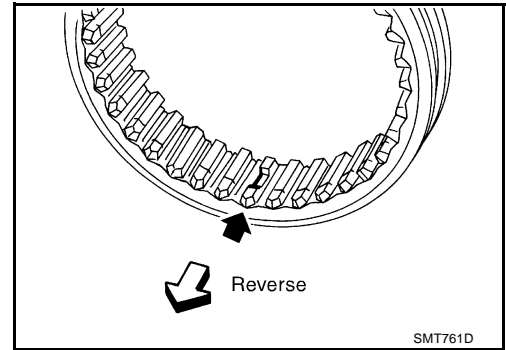
Do not reuse 4th main gear.



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

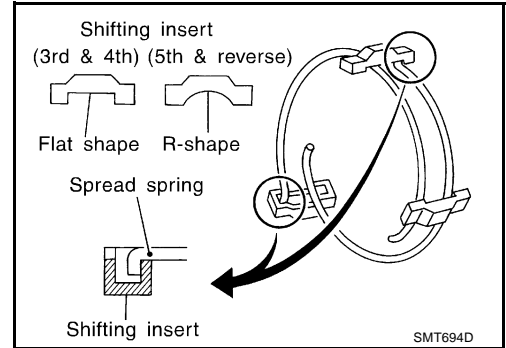


15. Install 5th needle bearing, 5th main gear, and 5th gear baulk ring onto mainshaft.



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

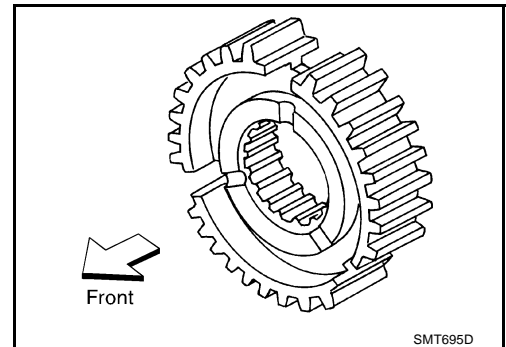
- Pay attention to the shape of spread spring and shifting insert for correct assembly.
Do not install spread spring hook onto the same shifting insert.



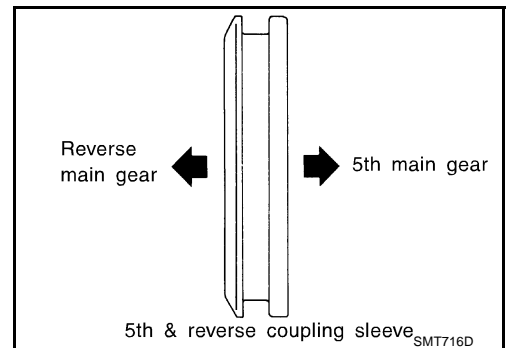
- Install synchronizer hub with its three grooves facing the front side (5th main gear side).

CAUTION:

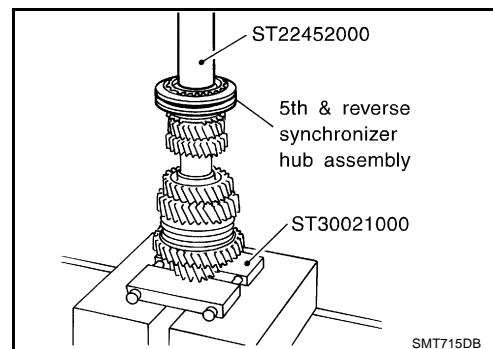
Do not reuse 5th & reverse synchronizer hub.



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



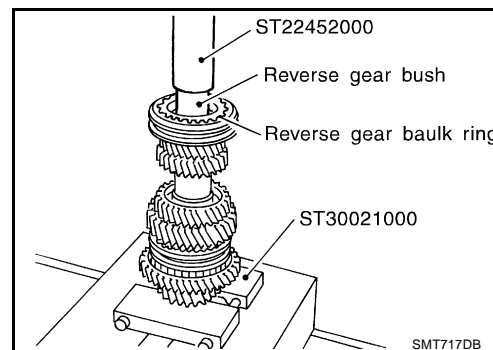
17. Install 5th & reverse synchronizer hub assembly.



18. Install reverse gear baulk ring.

19. Install reverse gear busing.

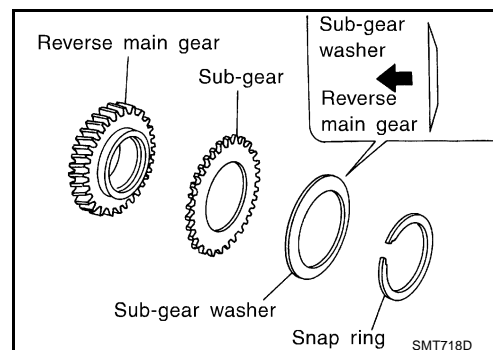
20. Install reverse gear needle bearing.



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.



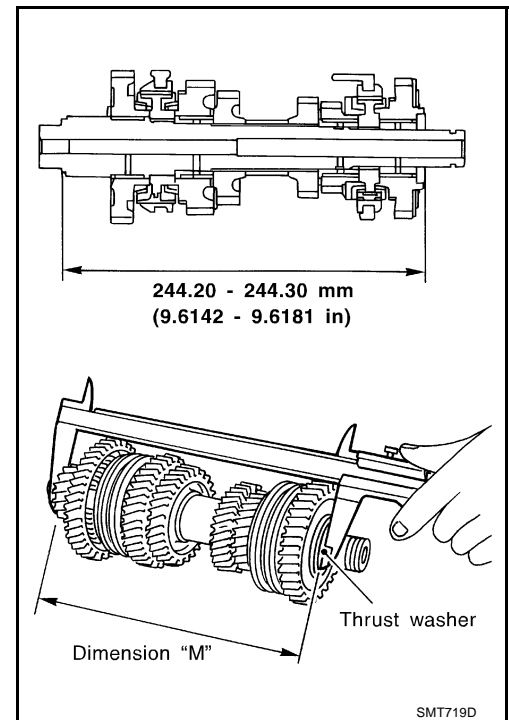
22. Install reverse main gear assembly onto mainshaft.
23. Select a thrust washer suitable to satisfy the following specification of dimension "M" (as shown in the figure), and install it onto mainshaft.

Specification of dimension "M":

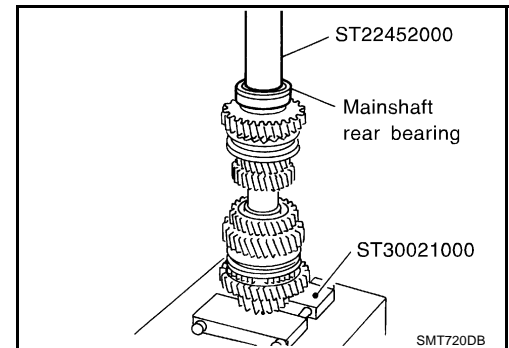
244.20 - 244.30 mm (9.6142 - 9.6181 in)

Available mainshaft thrust washers:

Refer to [MT-114, "MAINSHAFT THRUST WASHER"](#)



24. Install mainshaft rear bearing.



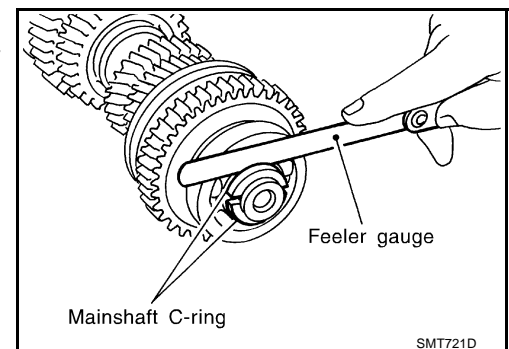
25. Install mainshaft C-ring.
26. Using feeler gauge, measure the end play of mainshaft rear bearing, and check if it satisfies the following specification.

End play:

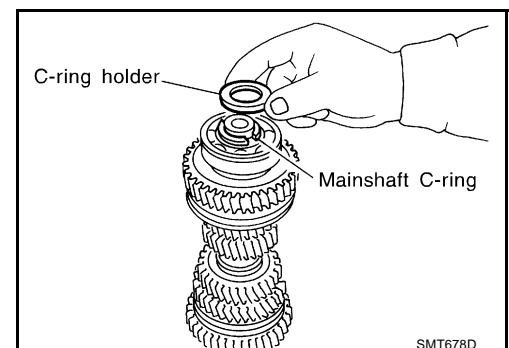
0 - 0.06 mm (0 - 0.0024 in)

Mainshaft C-rings:

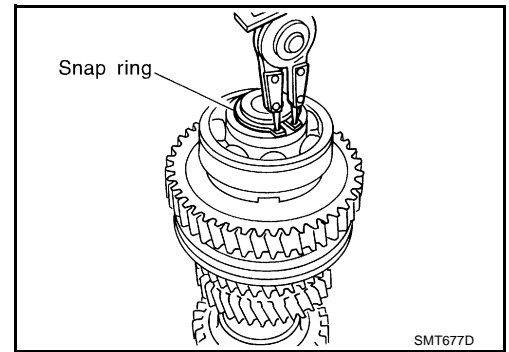
Refer to [MT-113, "MAINSHAFT C-RING"](#)



27. Install C-ring holder.



28. Install snap ring.
29. Measure gear end play as a final check. Refer to [MT-95, "DIS-ASSEMBLY"](#) .



A

B

MT

D

E

F

G

H

I

J

K

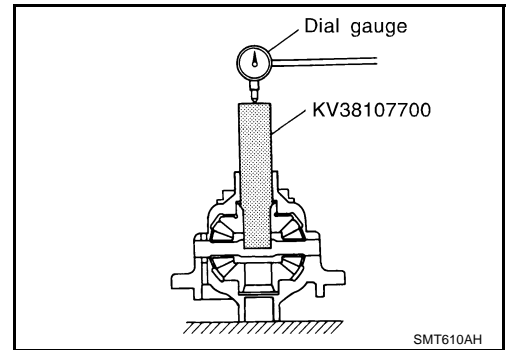
L

M

FINAL DRIVE

Assembly and Disassembly PRE-INSPECTION

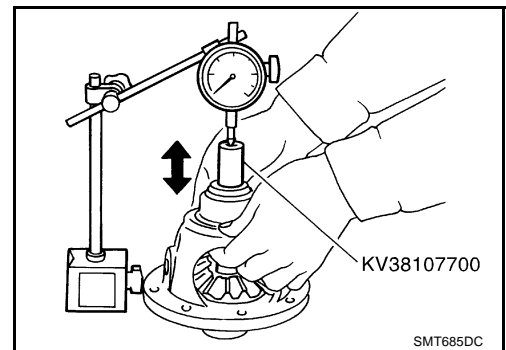
- Check the clearance between side gear and differential case as follows.
1. Clean final drive assembly sufficiently to prevent side gear thrust washer, differential case, side gear, and other parts from sticking by gear oil.



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

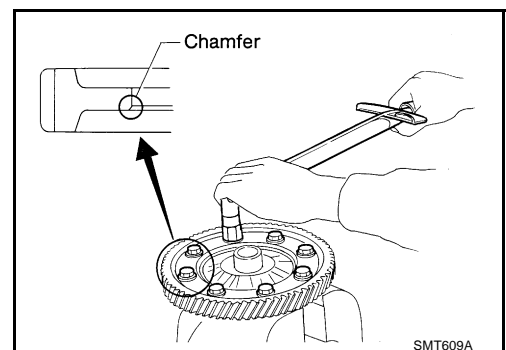
**Clearance between side gear and differential case
: 0.1 - 0.2 mm (0.004 - 0.008 in)**

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

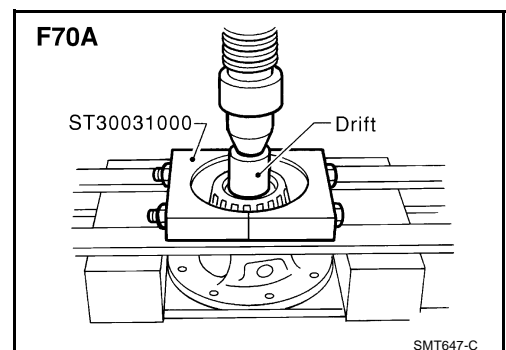


DISASSEMBLY

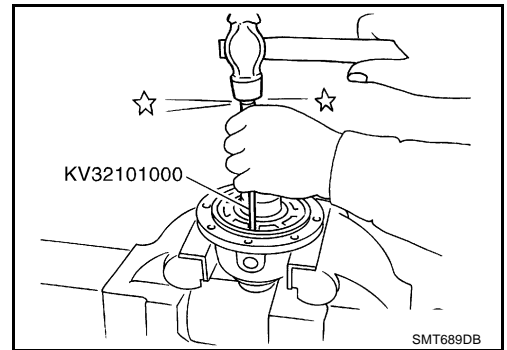
1. Remove mounting bolts. Then, separate the final gear from differential case.
2. Make a notch and remove speedometer drive gear using a scraper or other suitable tool.
 - **Bearing replacer cannot be positioned unless speedometer drive gear is removed.**



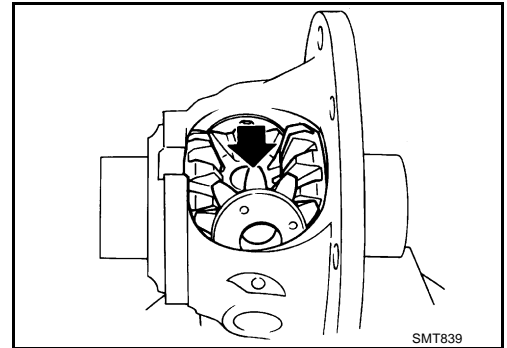
3. Remove differential side bearing of final gear side.
4. Turn differential case upside down, and remove differential side bearing of speedometer drive gear side.
 - **Be careful not to mix up the differential side bearings.**
5. Remove speedometer stopper.



6. Remove lock pins from pinion mate shaft.



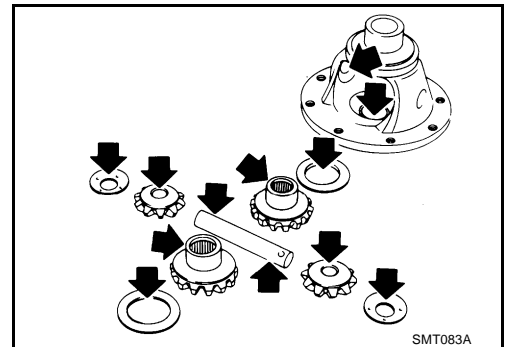
7. Remove pinion mate shaft.
8. Rotate pinion mate gear, and remove pinion mate gear, pinion mate thrust washer, side gear, and side gear thrust washer from differential case.



INSPECTION AFTER DISASSEMBLY

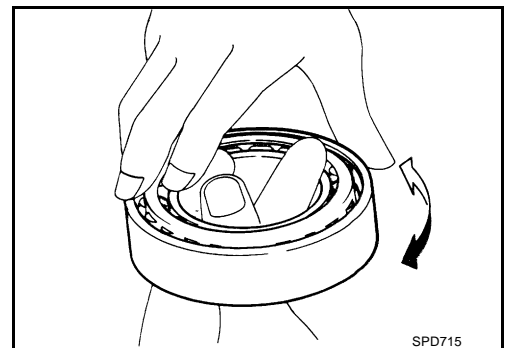
Gear, Washer, Shaft and Case

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



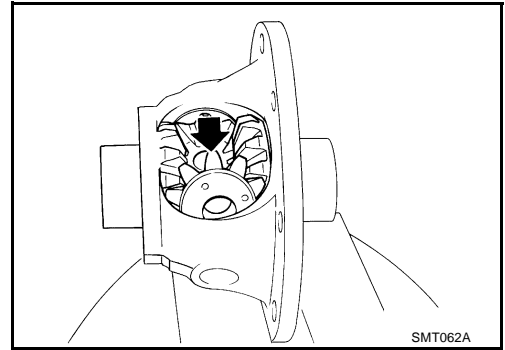
Bearing

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

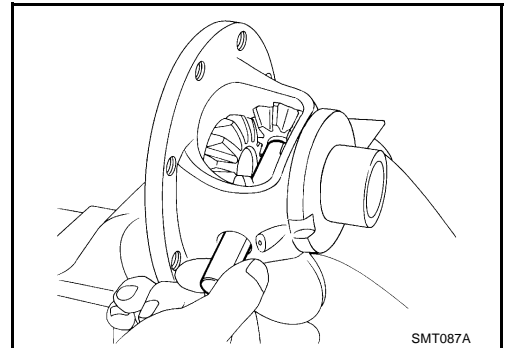


ASSEMBLY

1. 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.



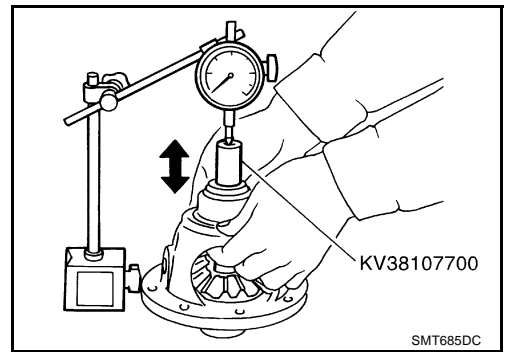
5. Upright the differential case so that its side gear to be measured faces upward.
6. Place preload adapter and dial gauge onto side gear. Move side gear up and down, and measure the clearance.
7. Turn differential case upside down, and measure the clearance between side gear and differential case on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

Clearance of side gear and differential case:

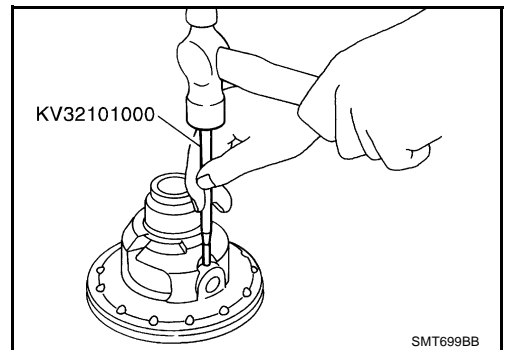
0.1 - 0.2 mm (0.004 - 0.008 in)

Differential side gear thrust washers:

Refer to [MT-114, "DIFFERENTIAL SIDE GEAR THRUST WASHER"](#) .



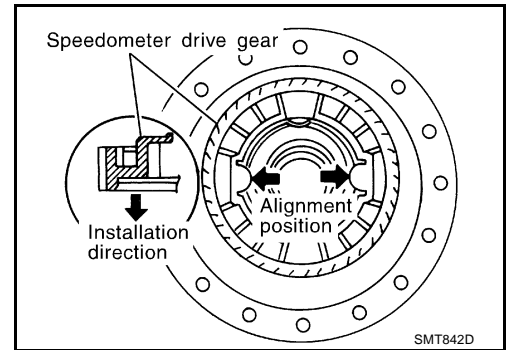
8. Install retaining pin.
 - **Make sure that retaining pin is flush with case.**



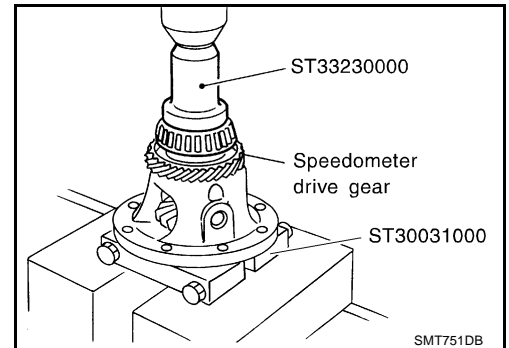
FINAL DRIVE

[RS5F70A]

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



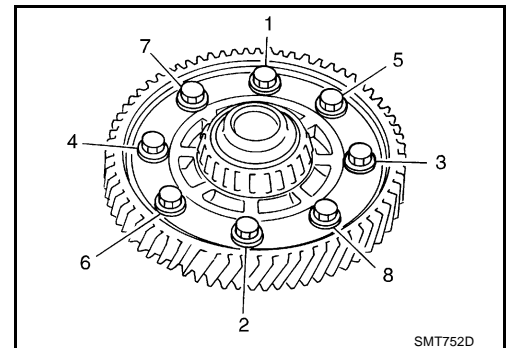
11. Install differential side bearing.
12. Turn differential case upside down, and install another differential side bearing on the other side in the same way.



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-70, "FINAL DRIVE COMPONENTS"](#).

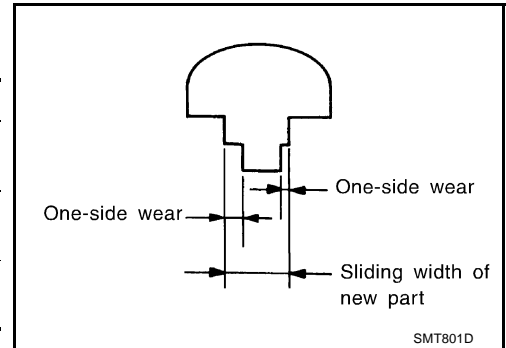


SHIFT CONTROL

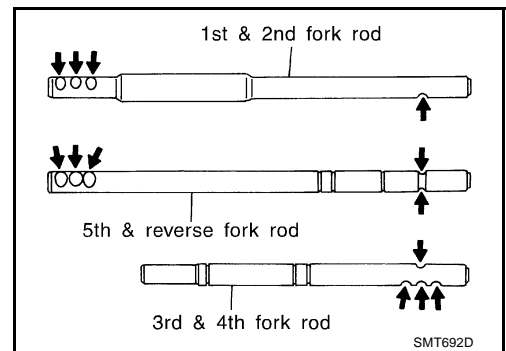
Inspection

- 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 unusual conditions.



SERVICE DATA AND SPECIFICATIONS (SDS)

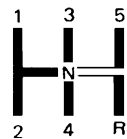
[RS5F70A]

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specification TRANSAXLE

ECS005HV

Engine	QG18DE		
Transaxle model	RS5F70A		
Model code number	AV709		
Number of speed	5		
Synchromesh type	Warner		
Shift pattern			
Gear ratio	1st	3.333	
	2nd	1.955	
	3rd	1.286	
	4th	0.926	
	5th	0.756	
	Reverse	3.214	
Number of teeth	Input gear	1st	15
		2nd	22
		3rd	28
		4th	41
		5th	45
		Reverse	14
	Main gear	1st	50
		2nd	43
		3rd	36
		4th	38
		5th	34
		Reverse	45
	Reverse idler gear		37
Oil capacity ℓ (Imp pt)		2.9 - 3.1 (5-1/4)	
Remarks		1st & 2nd double baulk ring type synchronizer	
		Reverse sub-gear	

FINAL GEAR

Engine	QG18DE		
Transaxle model	RS5F70A		
Model code number	AV709		
Final gear ratio	4.437		
Number of teeth	Final gear/Pinion	71/16	
	Side gear/Pinion mate gear	16/10	

Gear End Play

ECS005HW

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	0.17 - 0.44 (0.0067 - 0.0173)
4th input gear	

Clearance Coupling Sleeve

ECS005HX

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

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

ECS005HY

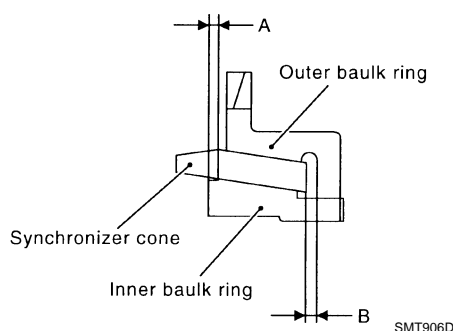
3RD, 4TH, 5TH, REVERSE BAULK RING

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

Unit: mm (in)



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

ECS005HZ

SNAP RING

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

SERVICE DATA AND SPECIFICATIONS (SDS)

[RS5F70A]

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 4TH INPUT GEAR C-RING

ECS005/0

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 parts information.

5TH INPUT GEAR REAR C-RING

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 parts information.

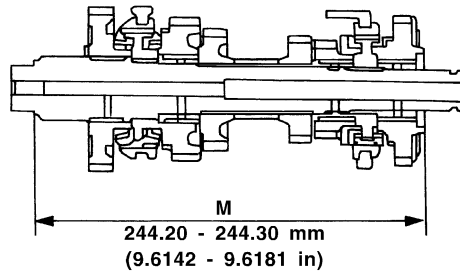
MAINSHAFT C-RING

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.

Available Thrust Washer MAINSHAFT THRUST WASHER

ECS005/1



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 parts information.

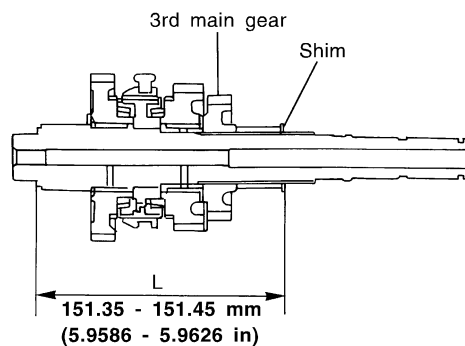
DIFFERENTIAL SIDE GEAR THRUST WASHER

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 parts information.

Available Adjusting Shims MAINSHAFT ADJUSTING SHIM

ECS005/2



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

SERVICE DATA AND SPECIFICATIONS (SDS)

[RS5F70A]

0.80 (0.0315)	32238-6J004
0.88 (0.0346)	32238-6J005

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

INPUT SHAFT REAR BEARING ADJUSTING SHIM

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 parts information.

MAINSHAFT REAR BEARING ADJUSTING SHIM

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

SERVICE DATA AND SPECIFICATIONS (SDS)

[RS5F70A]

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 parts information.

Available Shims BEARING PRELOAD

ECS005/3

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

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 parts information.

PRECAUTIONS

PFP:00001

Caution

ECS006CY

- Do not reuse transaxle oil, once it has been drained.
- Check oil level or replace oil with vehicle on level ground.
- During removal or installation, keep inside of transaxle clear of dust or dirt.
- Check for the correct installation status prior to removal or disassembly. If mating marks are required, be certain they do not interfere with the function of the parts they are applied to.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, observe it.
- Be careful not to damage sliding surfaces and mating surfaces.

A

B

MT

D

E

F

G

H

I

J

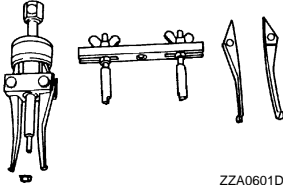
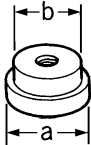
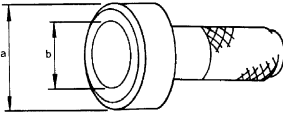
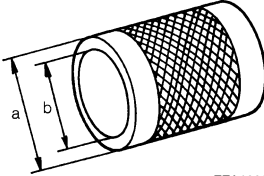
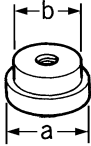
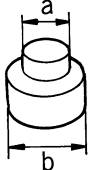
K

L

M

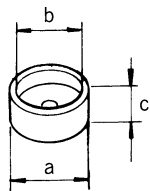
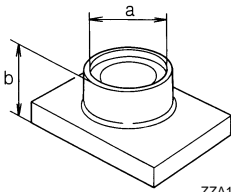
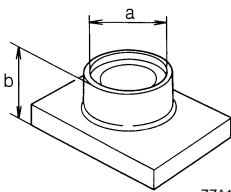
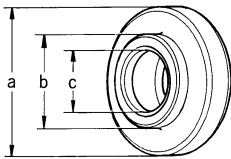
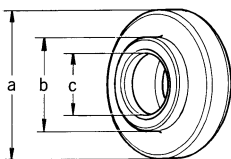
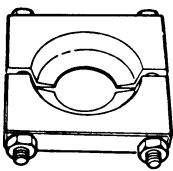
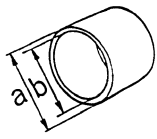
PREPARATION

Special Service Tools

Tool number Tool name		Description
KV381054S0 Puller	 ZZA0601D	<ul style="list-style-type: none"> ● Side bearing outer race removal ● Mainshaft front bearing removal
ST35321000 Drift a: 49 mm (1.93 in) dia. b: 41 mm (1.61 in) dia.	 ZZA1000D	<ul style="list-style-type: none"> ● Input shaft oil seal installation ● Reverse main gear installation ● 1st bushing installation ● 1st-2nd synchronizer hub installation ● 2nd bushing installation ● 3rd main gear installation
ST30720000 Drift a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.	 ZZA0811D	<ul style="list-style-type: none"> ● Differential oil seal installation ● Differential side bearing outer race installation ● Mainshaft rear bearing installation ● Differential side bearing installation
ST33200000 Drift a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia.	 ZZA1002D	<ul style="list-style-type: none"> ● Mainshaft front bearing installation ● 6th bushing installation ● 4th main gear installation ● 5th main gear installation ● 6th main gear installation
ST33061000 Drift a: 38 mm (1.50 in) dia. b: 28.5 mm (1.122 in) dia.	 ZZA1000D	<ul style="list-style-type: none"> ● Bore plug installation ● Differential side bearing removal
ST33052000 Drift a: 22 mm (0.87 in) dia. b: 28 mm (1.10 in) dia.	 ZZA1023D	<ul style="list-style-type: none"> ● Welch plug installation ● Input shaft rear bearing removal ● 5th bushing, thrust washer, 4th input gear, 4th gear bushing, 3rd-4th synchronizer hub and 3rd input gear removal ● Input shaft front bearing installation ● 6th input gear and 6th bushing removal ● Mainshaft rear bearing removal ● 4th main gear and 5th main gear removal ● 6th main gear removal

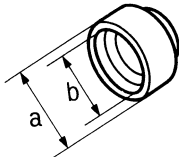
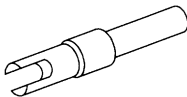
PREPARATION

[RS6F51A]

Tool number Tool name		Description	
KV40105020 Drift a: 39.7 mm (1.563 in) dia. b: 35 mm (1.38 in) dia. c: 15 mm (0.59 in)	 ZZA1133D	<ul style="list-style-type: none"> ● 5th input gear and synchronizer hub removal ● 3rd main gear, 2nd main gear, 2nd bushing, 1st-2nd synchronizer hub, 1st main gear, reverse main gear and 1st bushing removal 	<p>A</p> <p>B</p> <p>MT</p>
KV40105710 Press stand a: 46 mm (1.81 in) dia. b: 41 mm (1.61 in)	 ZZA1058D	<ul style="list-style-type: none"> ● 3rd-4th synchronizer hub installation ● 4th bushing installation ● 5th busing installation ● 5th-6th synchronizer hub installation ● 2nd bushing installation ● 3rd main gear installation 	<p>D</p> <p>E</p>
ST38220000 Press stand a: 63 mm (2.48 in) dia. b: 65 mm (2.56 in)	 ZZA1058D	<ul style="list-style-type: none"> ● Reverse main gear installation ● 1st bushing installation ● 1st-2nd synchronizer hub installation 	<p>F</p> <p>G</p>
ST30032000 Drift a: 80 mm (3.15 in) dia. b: 38 mm (1.50 in) dia. c: 31 mm (1.22 in) dia.	 ZZA0978D	<ul style="list-style-type: none"> ● Input shaft front bearing installation 	<p>H</p> <p>I</p> <p>J</p>
ST30901000 Drift a: 79 mm (3.11 in) dia. b: 45 mm (1.77 in) dia. c: 35.2 mm (1.386 in) dia.	 ZZA0978D	<ul style="list-style-type: none"> ● Input shaft rear bearing installation ● 4th main gear installation ● 5th main gear installation ● 6th main gear installation ● Mainshaft rear bearing installation 	<p>K</p> <p>L</p>
ST30031000 Puller	 ZZA0537D	<ul style="list-style-type: none"> ● Measuring wear of 1st and 2nd baulk ring 	<p>M</p>
KV40101630 Drift a: 68 mm (2.68 in) dia. b: 60 mm (2.36 in) dia.	 ZZA1003D	<ul style="list-style-type: none"> ● Reverse main gear installation 	

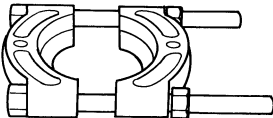
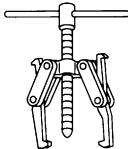

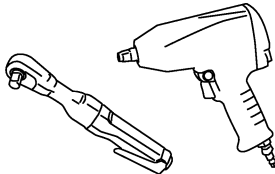
PREPARATION

[RS6F51A]

Tool number Tool name		Description
KV38102510 Drift a: 71 mm (2.80 in) dia. b: 65 mm (2.56 in) dia.	 ZZA0838D	<ul style="list-style-type: none">● 1st bushing installation● 1st-2nd synchronizer hub installation● Differential side bearing installation
KV38105900 Preload adapter	 NT087	<ul style="list-style-type: none">● Checking differential side gear end play

Commercial Service Tools

ECS006D0

Tool name	Description	
Puller	 ZZB0823D	<ul style="list-style-type: none">● Each bearing gear and bushing removal
Puller	 NT077	<ul style="list-style-type: none">● Each bearing gear and bushing removal
Pin punch Tip diameter: 4.5 mm (0.177 in) dia.	 ZZA0815D	<ul style="list-style-type: none">● Each retaining pin removal and installation
Power tool	 PBIC0190E	<ul style="list-style-type: none">● Loosening bolts and nuts

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

[RS6F51A]

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting Chart

ECS006D1

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.

MANUAL TRANSAXLE

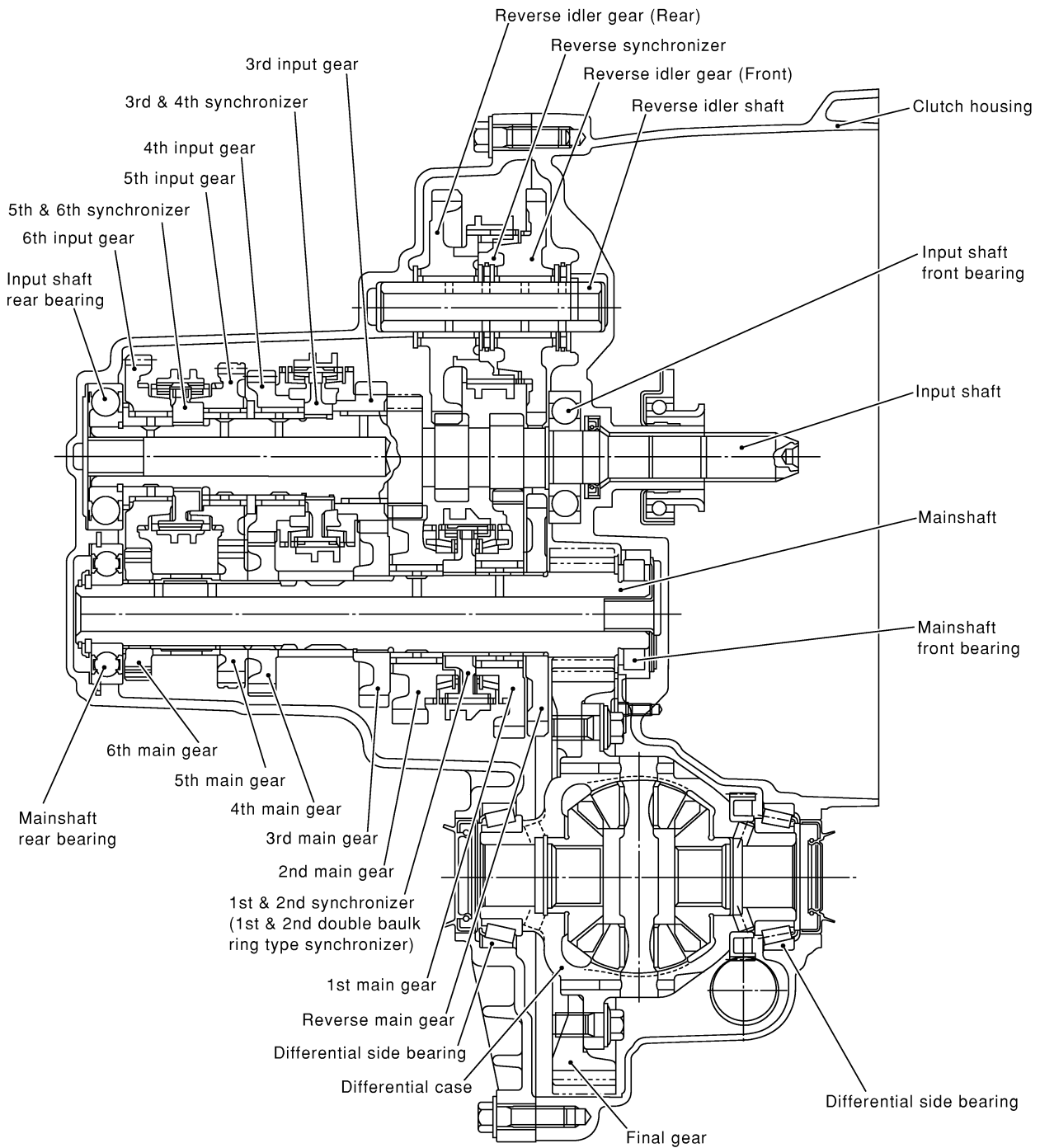
Reference page		MT-124			MT-131		MT-131	MT-131	MT-12Z	MT-134	MT-134	MT-132	MT-132	MT-132	MT-132
SUSPECTED PARTS (Possible cause)		OIL (Oil level is low.)	OIL (Wrong oil.)	OIL (Oil level is high.)	GASKET (Damaged)	OIL SEAL (Worn or damaged)	O-RING (Worn or damaged)	SHIFT CONTROL LINKAGE (Worn)	CHECK PLUG 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				

DESCRIPTION

PFP:00000

Cross-Sectional View

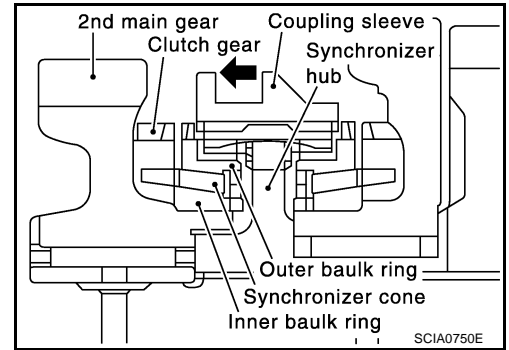
ECS006D2



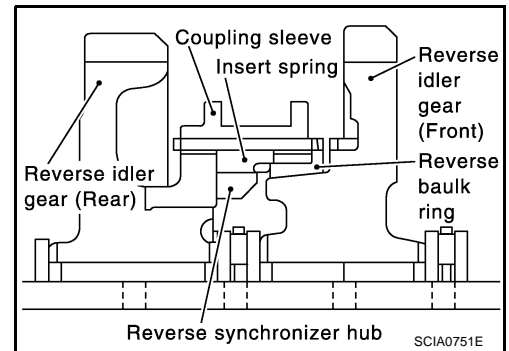
MCIA0009E

DOUBLE-CONE SYNCHRONIZER

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

**REVERSE GEAR NOISE PREVENTION FUNCTION (SYNCHRONIZING METHOD)**

The gear can be matched smoothly in a structure by setting synchronizer hub, coupling sleeve, baulk ring and insert spring to reverse gear, and letting gear be synchronized.



M/T OIL**Changing M/T Oil
DRAINING**

1. Start the engine and let it run to warm up the transaxle.
2. Stop the engine. Remove drain plug and drain oil.
3. Set a gasket on the drain plug and install it to the transaxle.

Drain plug:

: 30 - 39 N·m (3.1 - 4.0 kg-m, 23 - 28 ft-lb)

CAUTION:

Do not reuse gasket.

FILLING

1. Remove filler plug. Fill with new oil until oil level reaches the specified limit near filler plug mounting hole.

Oil grade : Genuine Nissan gear oil, SAE viscosity
75w - 80 or exact equivalent

Capacity (reference) : Approx. 2.3 ℓ (4 Imp pt)

2. After refilling oil, check oil level. Assemble gasket to filler plug, then install it to transaxle body.

Filler plug:

: 30 - 39 N·m (3.1 - 4.0 kg-m, 23 - 28 ft-lb)

CAUTION:

Do not reuse gasket.

**Checking M/T Oil
OIL LEAKAGE AND OIL LEVEL**


- Check that oil is not leaking from transaxle or around it.
- Check oil level from filler plug mounting hole as shown in the figure.

CAUTION:

Never start engine while checking oil level.

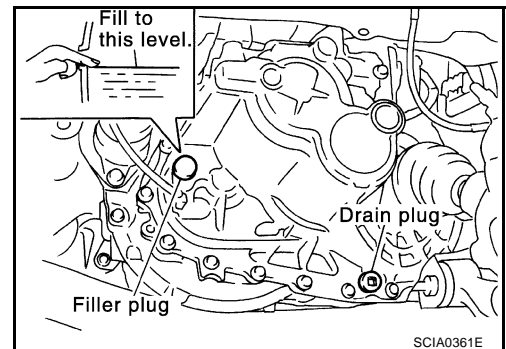
- Set a new gasket on the filler plug and install it on the transaxle.

Filler plug:

: 30 - 39 N·m (3.1 - 4.0 kg-m, 23 - 28 ft-lb)

CAUTION:

Do not reuse gasket.



SIDE OIL SEAL

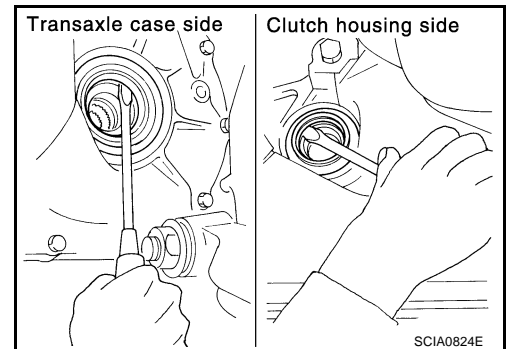
Removal and Installation

REMOVAL

1. Remove the drive shaft from the transaxle. Refer to [FAX-11, "FRONT DRIVE SHAFT"](#) .
2. Remove oil seal with a slotted screwdriver.

CAUTION:

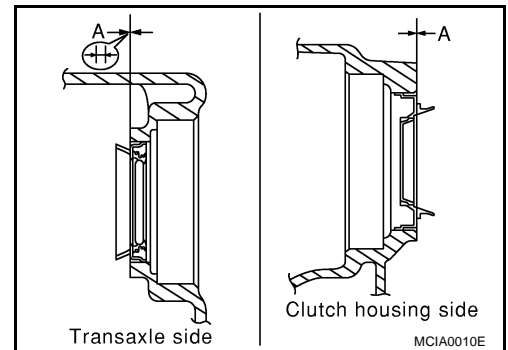
Be careful not to damage the case surface when removing the oil seal.



INSTALLATION

1. Using a drift (special service tool), drive the oil seal straight until it protrudes from the case end equal to dimension A shown in the figure.

Dimension A : Within 0.5 mm of flush with the case.

**Drift to be used:**

Transaxle case side	ST3072 0000
Clutch housing side	

CAUTION:

- When installing oil seals, apply multi-purpose grease to oil seal lips.
 - Do not reuse oil seal.
2. Install all parts in reverse order of removal and check oil level after installation.

POSITION SWITCH

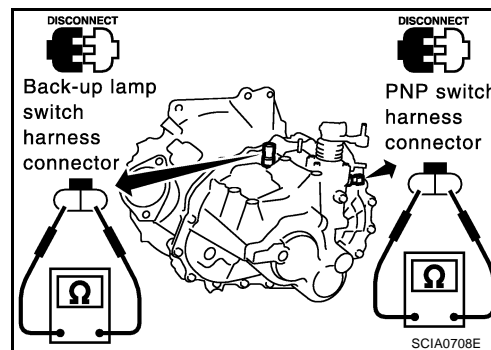
PFP:32005

Checking BACK-UP LAMP SWITCH

ECS006D6

- Check continuity.

Gear position	Continuity
Reverse	Yes
Except reverse	No



PARK/NEUTRAL POSITION SWITCH

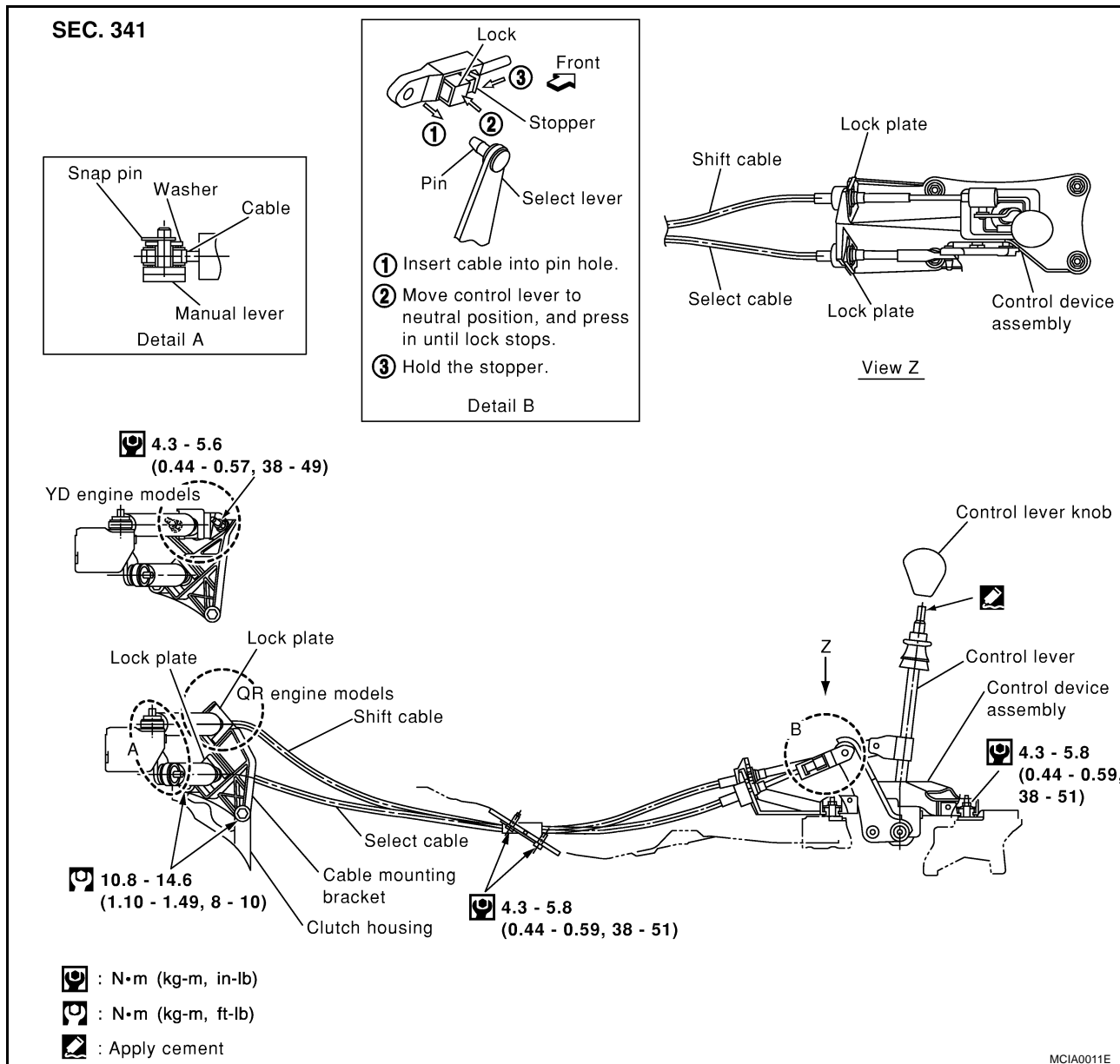
- Check continuity.

Gear position	Continuity
Neutral	Yes
Except neutral	No

CONTROL LINKAGE

Removal and Installation of Control Device and Cable

Refer to the figure for removal and installation procedure.



CAUTION:

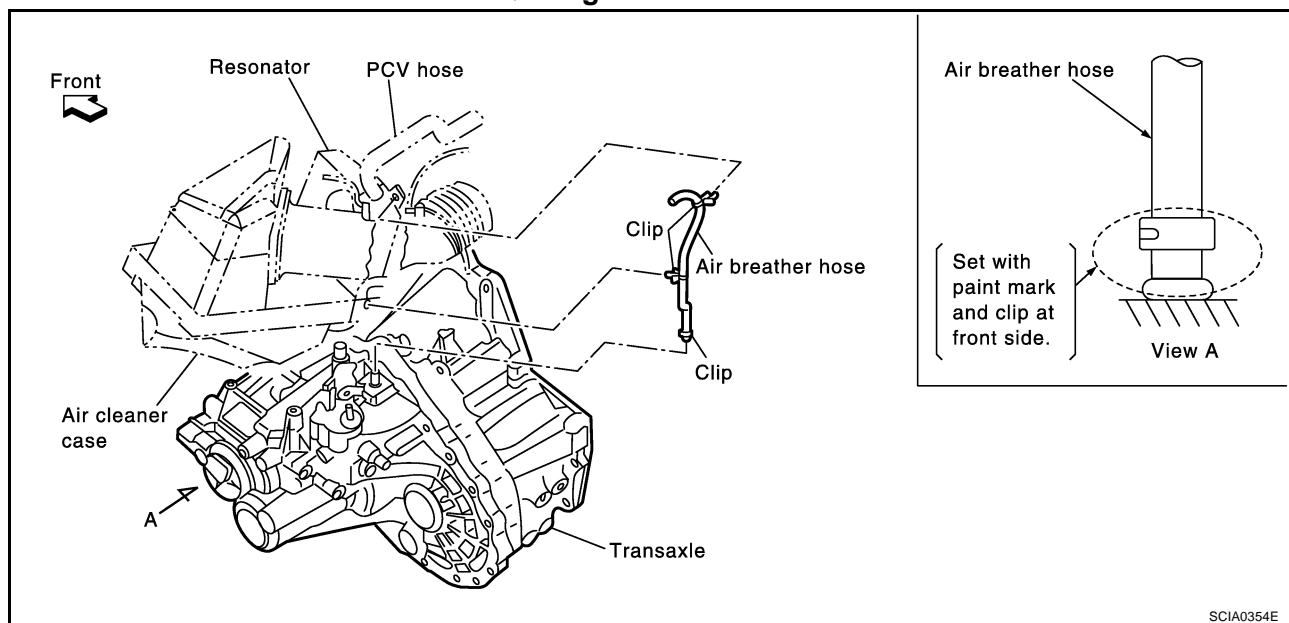
- Keep in mind that the select side lock plate for securing the control cable is different from the one on the shift side.
- After assembly, make sure selector lever automatically returns to Neutral when it is moved to 1st, 2nd, or Reverse.

AIR BREATHER HOSE

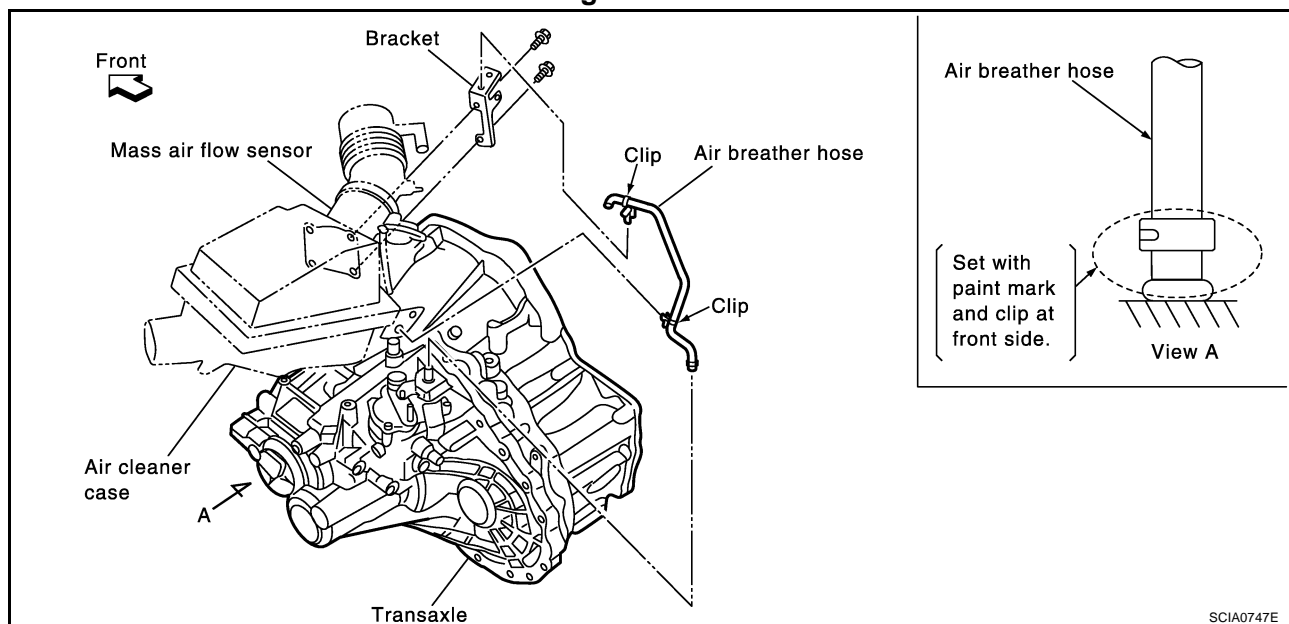
Removal and Installation

Refer to the figure for air breather hose removal and installation information.

QR engine models



YD engine models



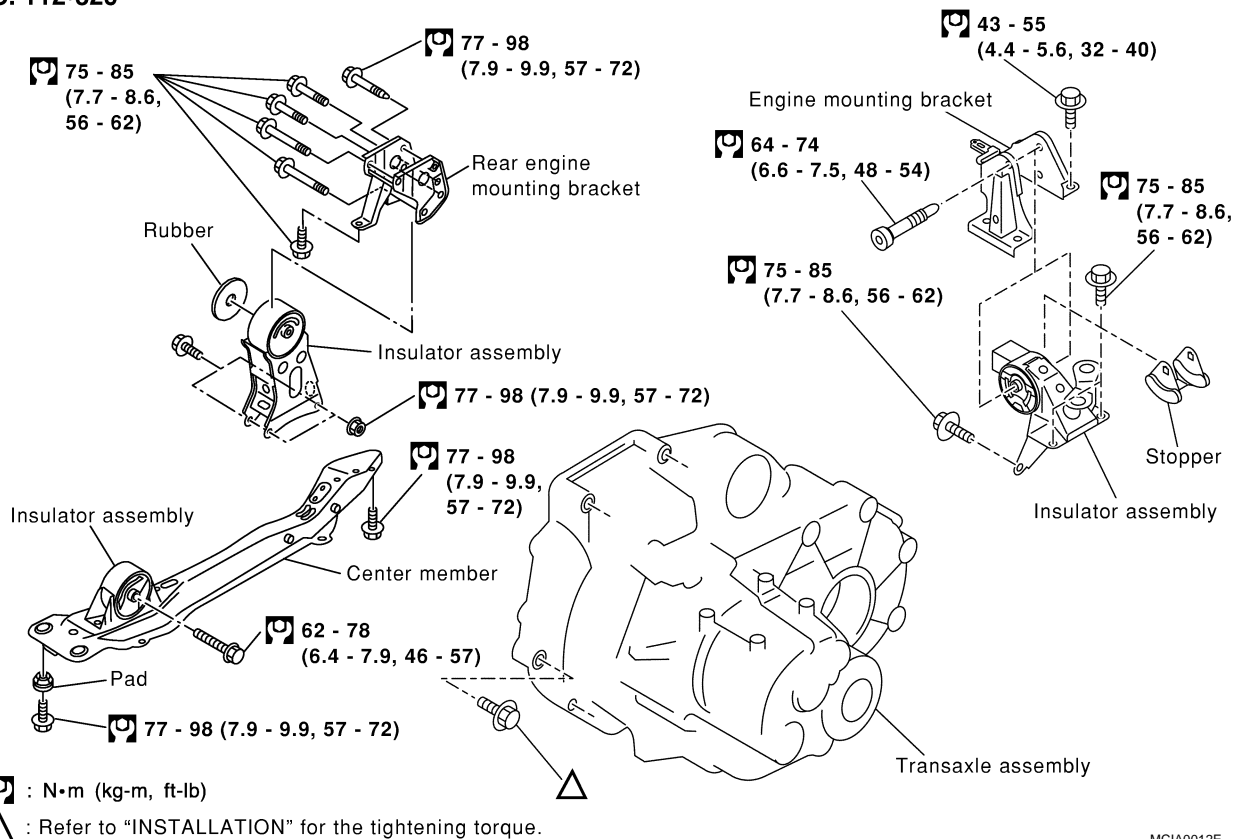
CAUTION:

- Make sure there are no pinched or restricted areas on the air breather hose caused by bending or winding when installing it.
- Be sure to insert hose into the transaxle tube until overlap area reaches the spool.

TRANSAXLE ASSEMBLY

Removal and Installation

SEC. 112-320



REMOVAL

1. Remove air cleaner, air duct, and battery.
2. Remove the air breather hose.
3. Remove clutch operating cylinder.

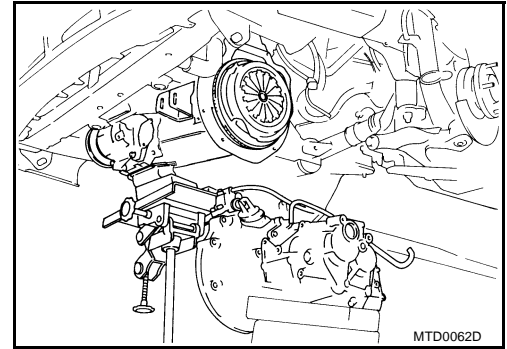
CAUTION:**Do not depress clutch pedal during removal procedure.**

4. Disconnect control cable from transaxle.
5. Drain gear oil from transaxle.
6. Disconnect PNP switch, back-up lamp switch, and ground harness connectors.
7. Remove starter motor.
8. Remove suspension cross bar.
9. Remove exhaust front tube and the drive shaft.
10. Place a jack onto the transaxle.

CAUTION:**When setting jack, be careful not to bring it into contact with the switch.**

11. Remove center member, engine insulator and engine mount bracket.
12. Support engine by placing a jack under oil pan.
13. Remove bolts securing transaxle to engine.

14. Remove transaxle from vehicle.



INSTALLATION

Paying attention to the following items, install in the reverse order of removal.

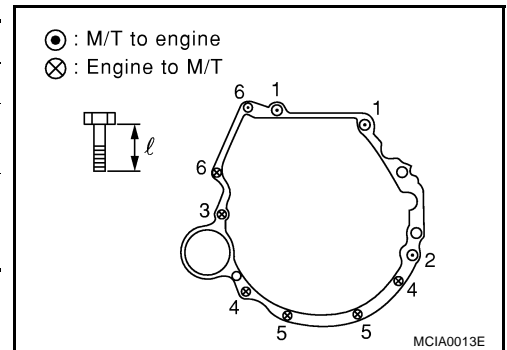
- When installing the transaxle to the engine, tighten to the specified torque.

CAUTION:

When installing transaxle, be careful not to bring transaxle input shaft into contact with the clutch cover.

QR engine models:

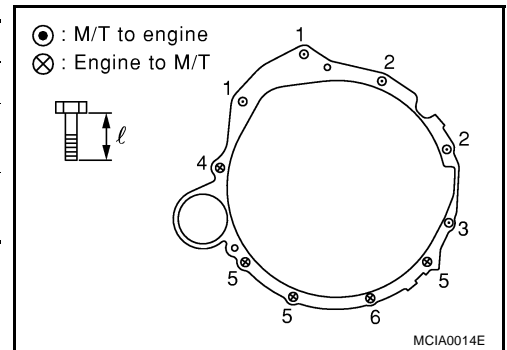
Bolt No.	1	2	3	4	5	6
Quantity	2	1	1	2	2	2
" ℓ " mm (in)	40 (1.57)	75 (2.95)	45 (1.77)	40 (1.57)	30 (1.18)	40 (1.57)
Tightening torque N·m (kg·m, ft·lb)	69.6 - 79.4 (7.1 - 8.1, 52 - 58)			39.2 - 46.1 (4.0 - 4.7, 29 - 34)		30.4 - 40.2 (3.1 - 4.1, 23 - 29)



YD engine models:

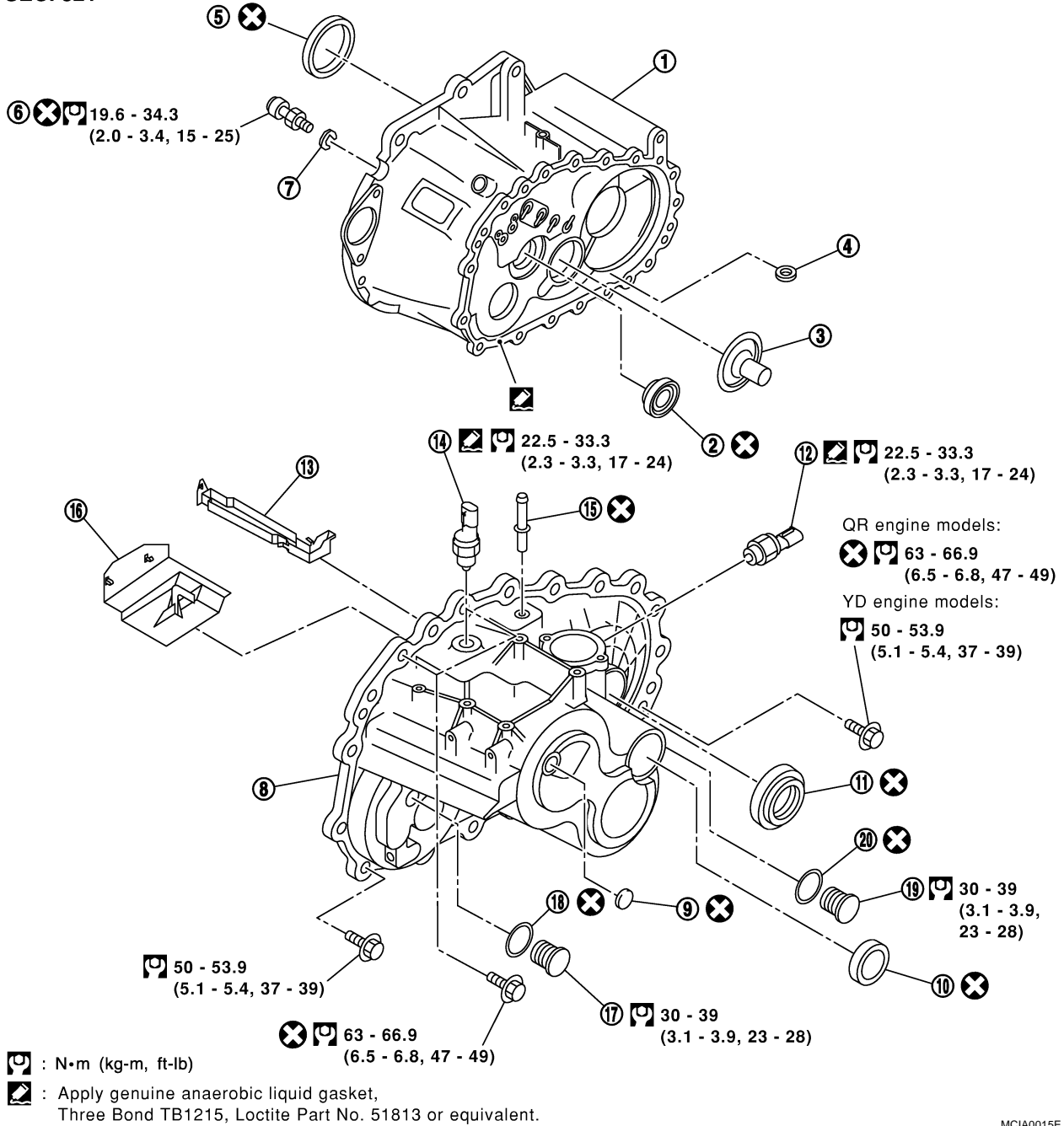
Bolt No.	1	2	3	4	5	6
Quantity	2	2	1	1	3	1
" ℓ " mm (in)	55 (2.17)	70 (2.76)	120 (4.72)	45 (1.77)	40 (1.57)	35 (1.38)
Tightening torque N·m (kg·m, ft·lb)	39 - 49 (4.0 - 5.0, 29 - 36)			31 - 36 (3.1 - 3.7, 23 - 26)		

- After installation, check oil level, and look for leaks and loose mechanisms.



Component Parts CASE AND HOUSING COMPONENTS

SEC. 321

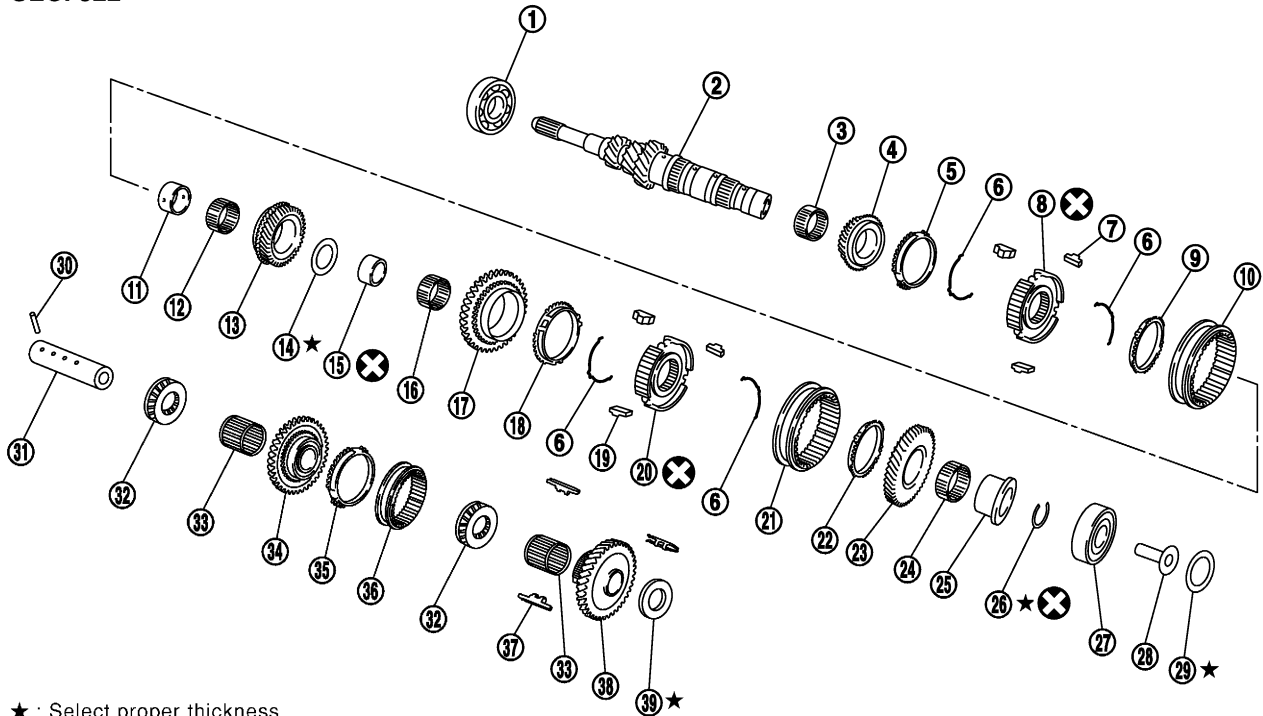


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- | | | |
|-------------------|---------------------------|----------------------------------|
| 1. Clutch housing | 2. Input shaft oil seal | 3. Oil channel |
| 4. Magnet | 5. Differential oil seal | 6. Ball pin |
| 7. Washer | 8. Transaxle case | 9. Welch plug |
| 10. Bore plug | 11. Differential oil seal | 12. Park/Neutral position switch |
| 13. Oil gutter | 14. Back-up lamp switch | 15. Air breather tube |
| 16. Baffle plate | 17. Filler plug | 18. Gasket |
| 19. Drain plug | 20. Gasket | |

GEAR COMPONENTS

SEC. 322



★ : Select proper thickness.

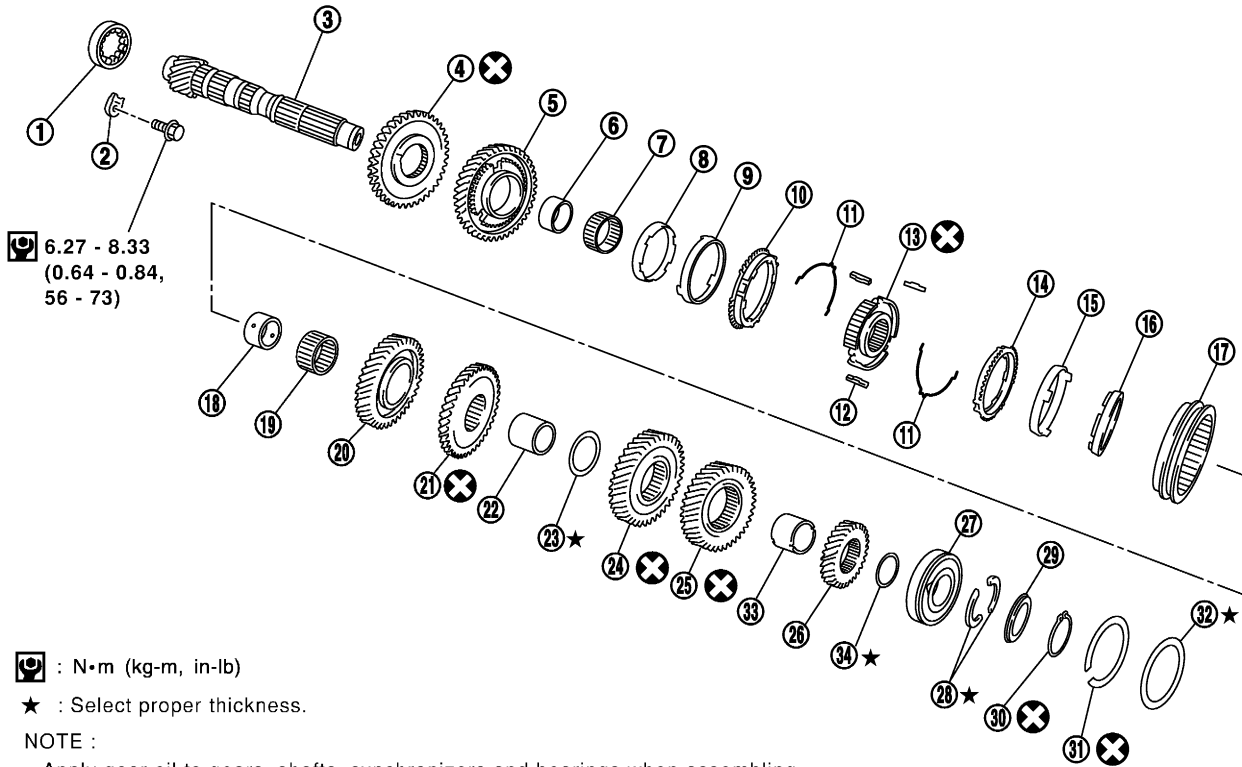
NOTE :

- Apply gear oil to gears, shafts, synchronizers and bearings when assembling.
- Replace (8) and (10), (20) and (21) as a set.

SCIA0956E

- | | | |
|--------------------------------|---|---------------------------------------|
| 1. Input shaft front bearing | 2. Input shaft | 3. Needle bearing |
| 4. 3rd input gear | 5. 3rd baulk ring | 6. Spread spring |
| 7. 3rd & 4th shifting insert | 8. 3rd & 4th synchronizer hub | 9. 4th baulk ring |
| 10. 3rd & 4th coupling sleeve | 11. Bushing | 12. Needle bearing |
| 13. 4th input gear | 14. Thrust washer | 15. Bushing |
| 16. Needle bearing | 17. 5th input gear | 18. 5th baulk ring |
| 19. 5th & 6th shifting insert | 20. 5th & 6th synchronizer hub | 21. 5th & 6th coupling sleeve |
| 22. 6th baulk ring | 23. 6th input gear | 24. Needle bearing |
| 25. Bushing | 26. Snap ring | 27. Input shaft rear bearing |
| 28. Oil channel | 29. Input shaft rear bearing adjusting shim | 30. Retaining pin |
| 31. Reverse idler shaft | 32. Thrust bearing | 33. Needle bearing |
| 34. Reverse idler gear (Front) | 35. Reverse baulk ring | 36. Reverse coupling sleeve |
| 37. Insert spring | 38. Reverse idler gear (Rear) | 39. Reverse idler gear adjusting shim |

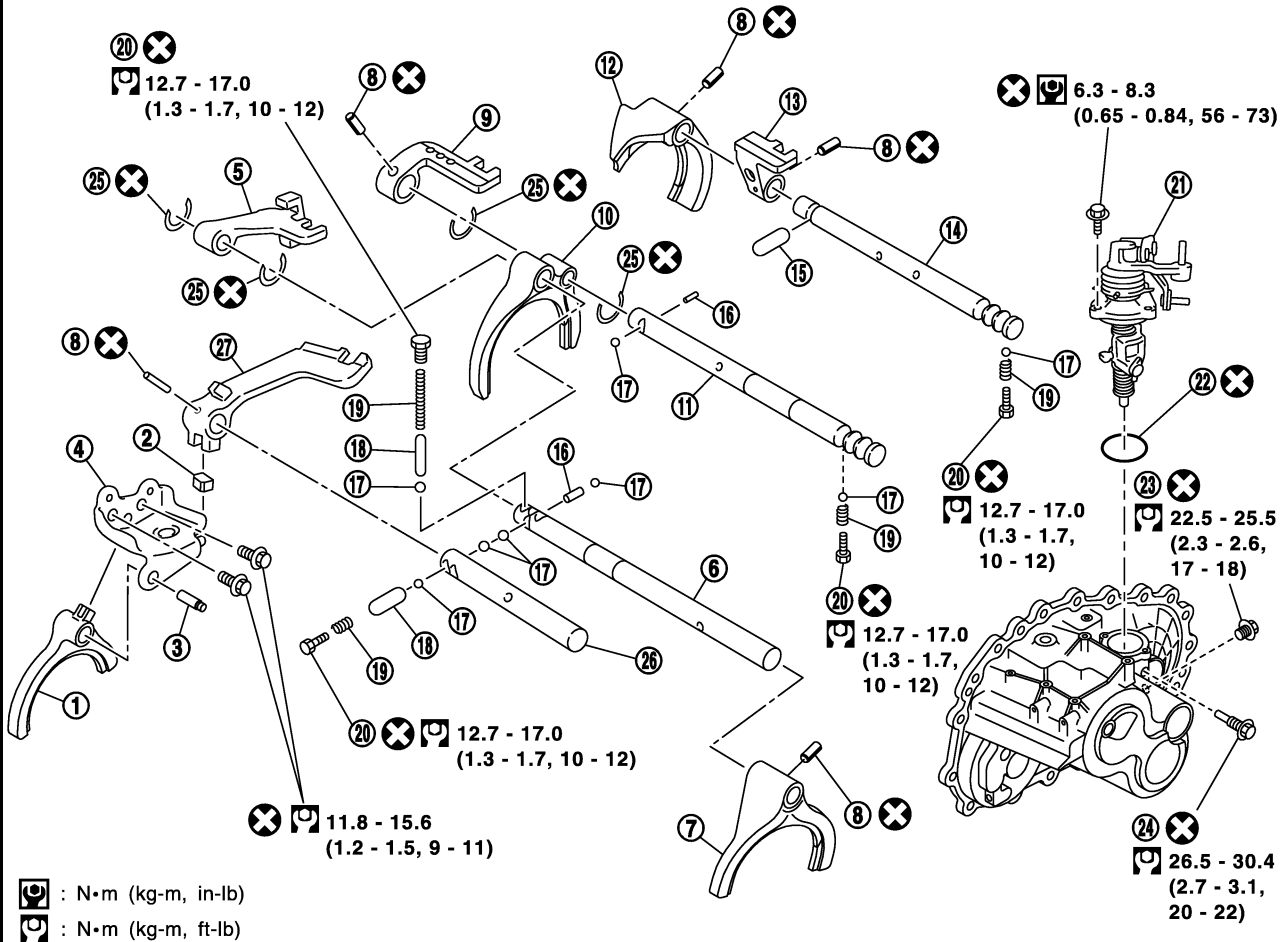
SEC. 322



- | | | |
|--------------------------------|---|--------------------------------|
| 1. Mainshaft front bearing | 2. Mainshaft bearing retainer | 3. Mainshaft |
| 4. Reverse main gear | 5. 1st main gear | 6. Bushing |
| 7. Needle bearing | 8. 1st inner baulk ring | 9. 1st gear synchronizer cone |
| 10. 1st outer baulk ring | 11. Spread spring | 12. 1st & 2nd shifting insert |
| 13. 1st & 2nd synchronizer hub | 14. 2nd outer baulk ring | 15. 2nd gear synchronizer cone |
| 16. 2nd inner baulk ring | 17. 1st & 2nd coupling sleeve | 18. Bushing |
| 19. Needle bearing | 20. 2nd main gear | 21. 3rd main gear |
| 22. 3rd & 4th mainshaft spacer | 23. 4th main adjusting shim | 24. 4th main gear |
| 25. 5th main gear | 26. 6th main gear | 27. Mainshaft rear bearing |
| 28. Mainshaft C ring | 29. C ring holder | 30. Snap ring |
| 31. Snap ring | 32. Mainshaft rear bearing adjusting shim | 33. 5th & 6th mainshaft spacer |
| 34. 6th main adjusting shim | | |

SHIFT CONTROL COMPONENTS

SEC. 328

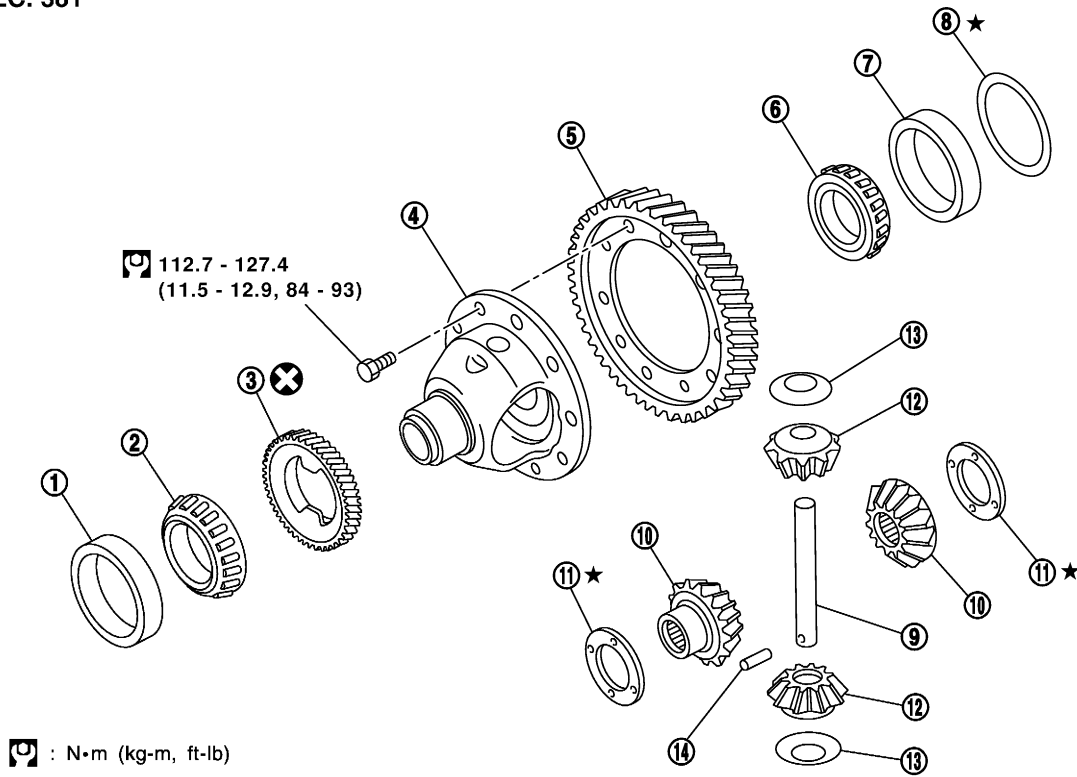


SCIA0958E

- | | | |
|---------------------------|------------------------------|--------------------------|
| 1. Reverse shift fork | 2. Shifter cap | 3. Reverse fork rod |
| 4. Reverse lever assembly | 5. 5th & 6th bracket | 6. 5th & 6th fork rod |
| 7. 5th & 6th shift fork | 8. Retaining pin | 9. 3rd & 4th bracket |
| 10. 3rd & 4th shift fork | 11. 3rd & 4th fork rod | 12. 1st & 2nd shift fork |
| 13. 1st & 2nd bracket | 14. 1st & 2nd fork rod | 15. Shift check sleeve |
| 16. Inter lock pin | 17. Check ball | 18. Shift check sleeve |
| 19. Check spring | 20. Check plug | 21. Control assembly |
| 22. O ring | 23. Shift check | 24. Stopper bolt |
| 25. Stopper ring | 26. Reverse bracket fork rod | 27. Reverse bracket |

FINAL DRIVE COMPONENTS

SEC. 381



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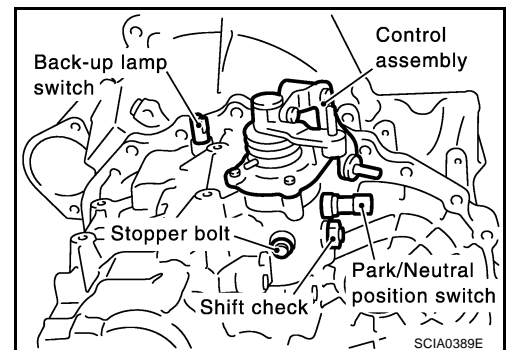
- | | | |
|---|---|------------------------------|
| 1. Differential side bearing outer race | 2. Differential side bearing | 3. Speedometer drive gear |
| 4. Differential case | 5. Final gear | 6. Differential side bearing |
| 7. Differential side bearing outer race | 8. Differential side bearing adjusting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

Disassembly and Assembly

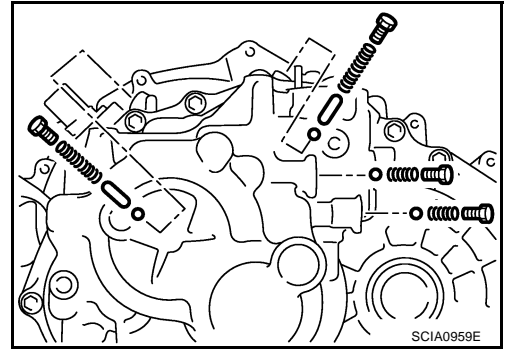
DISASSEMBLY

1. Remove drain plug and filler plug.
2. Remove park/neutral position switch and back-up lamp switch.
3. After removing shift check and stopper bolt, remove control assembly.

ECS006DB



4. Remove check plugs (4 pieces), check springs (4 pieces), check balls (4 pieces) and shift check sleeve (2 pieces).

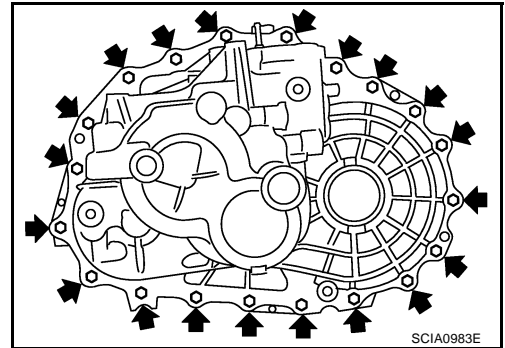


5. Remove transaxle case fixing bolts.
6. Remove bore plug.

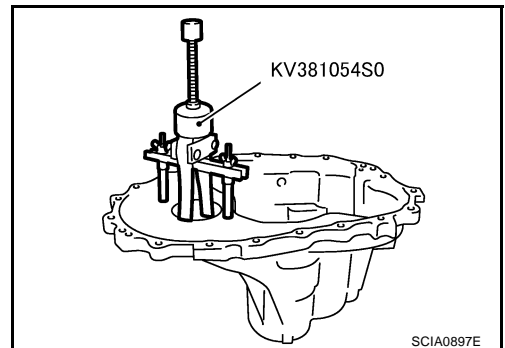
CAUTION:

Be careful not to damage transaxle case.

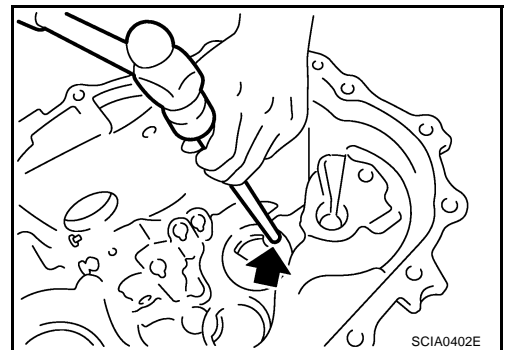
7. While spreading the snap ring of mainshaft rear bearing located at bore plug hole, remove transaxle case.
8. Remove oil gutter, baffle plate.
9. Remove snap ring, mainshaft rear bearing adjusting shim and input shaft rear bearing adjusting shim from transaxle case.



10. Remove differential side bearing outer race (transaxle case side) and then adjusting shim.



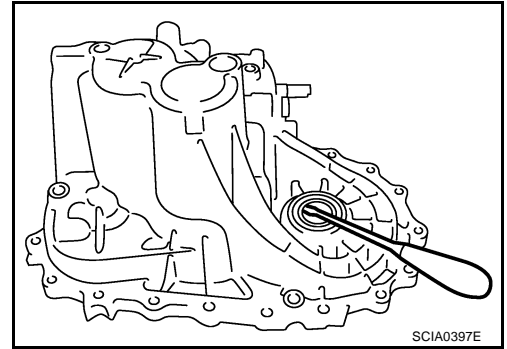
11. Remove welch plug.



TRANSAXLE ASSEMBLY

[RS6F51A]

12. Remove differential oil seal (transaxle case side).
13. Remove magnet from clutch housing.

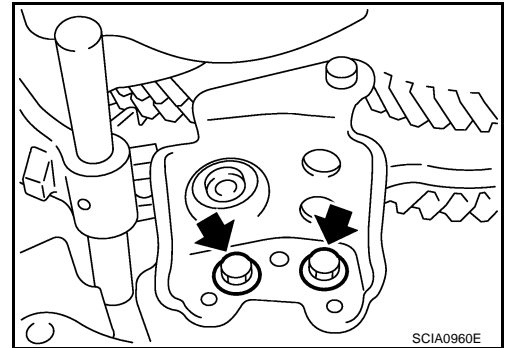


14. With shift lever in 5th position, remove bracket bolts from reverse lever assembly. Lift reverse lever assembly to remove.

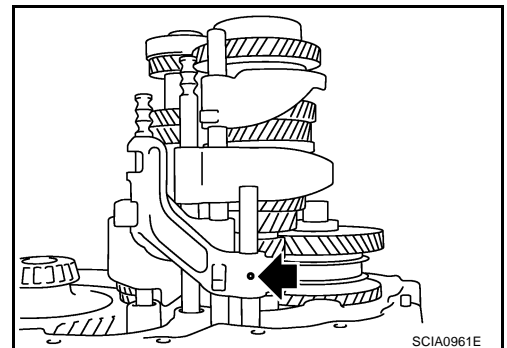
CAUTION:

Be careful not to lose shifter cap.

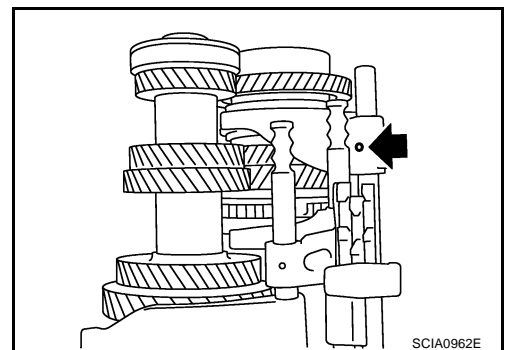
15. Pull out reverse fork rod then remove reverse shift fork.



16. Remove retaining pin of reverse bracket.
17. Pull out reverse bracket and reverse bracket fork rod.
18. Remove check ball (2 pieces) and inter lock pin.



19. Shift 3rd & 4th fork rod to 3rd position. Remove retaining pin of 5th & 6th shift fork using pin punch.

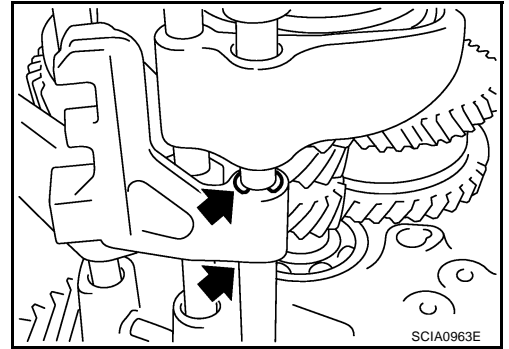


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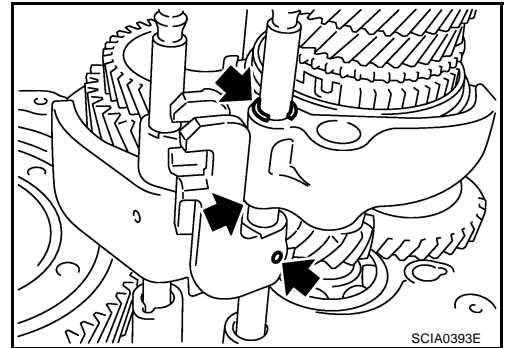
TRANSAXLE ASSEMBLY

[RS6F51A]

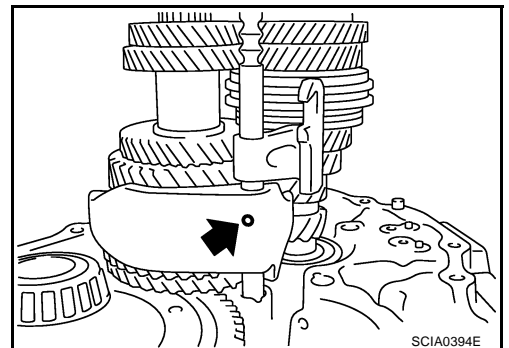
20. Remove stopper rings for 5th & 6th bracket.
21. Pull out 5th & 6th fork rod and remove 5th & 6th shift fork and 5th & 6th bracket.
22. Remove check balls (2 pieces) and inter lock pin.



23. Remove retaining pin of 3rd & 4th bracket using pin punch.
24. Remove stopper rings for 3rd & 4th shift fork.
25. Pull out 3rd & 4th fork rod and remove 3rd & 4th shift fork and bracket.
26. Remove shift check sleeve from clutch housing.

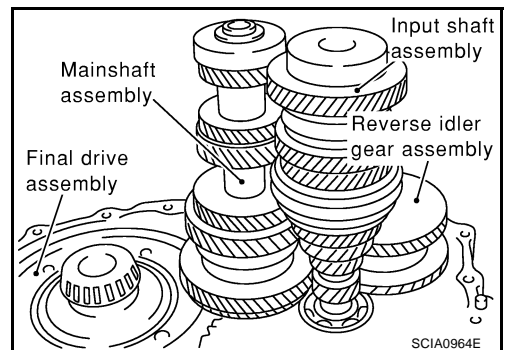


27. Remove retaining pin of 1st & 2nd shift fork using pin punch.
28. Pull out 1st & 2nd fork rod with bracket.
29. Remove 1st & 2nd shift fork.
30. Remove retaining pin of 1st & 2nd bracket using pin punch and separate fork rod and bracket.



31. Remove gear components from clutch housing in the following procedure.
 - a. While tapping input shaft with plastic hammer, remove input shaft assembly, mainshaft assembly and reverse idler gear assembly as a set.

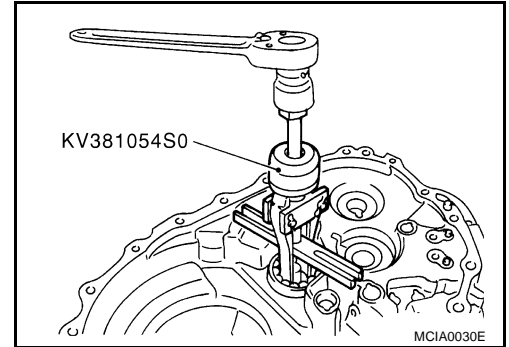
CAUTION:
Always withdraw mainshaft straight out. Failure to do so can damage resin oil channel on clutch housing side.
 - b. Remove final drive assembly.



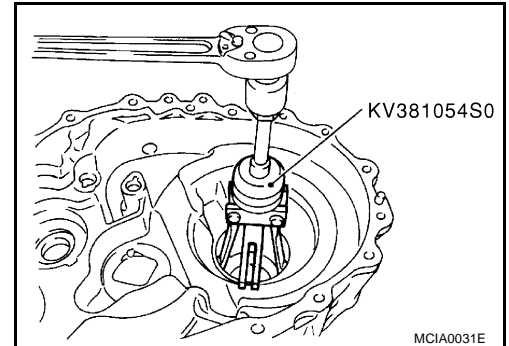
TRANSAXLE ASSEMBLY

[RS6F51A]

32. Remove mainshaft bearing retainer and then mainshaft front bearing.
33. Remove oil channel on mainshaft side.
34. Remove differential oil seal (clutch housing side).

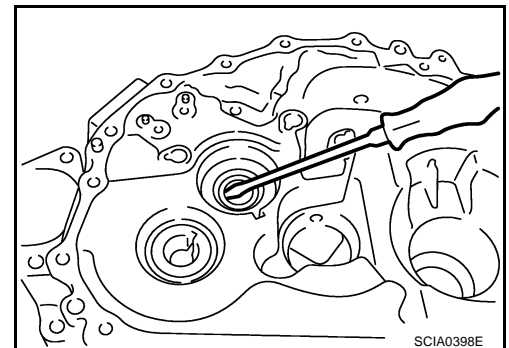


35. Remove differential side bearing outer race (clutch housing side).



36. Remove input shaft oil seal.

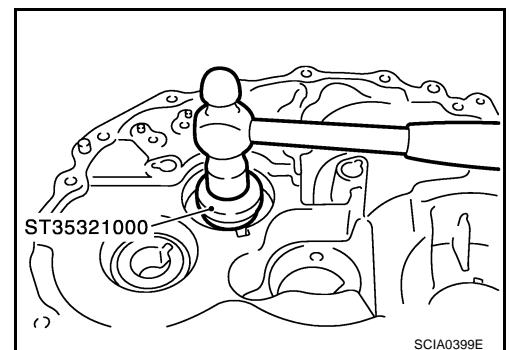
CAUTION:
Be careful not to damage clutch housing.



ASSEMBLY

1. Using a drift, install input shaft oil seal from clutch housing end of side to the depth of 1.8 to 2.8 mm (0.071 to 0.110 in).

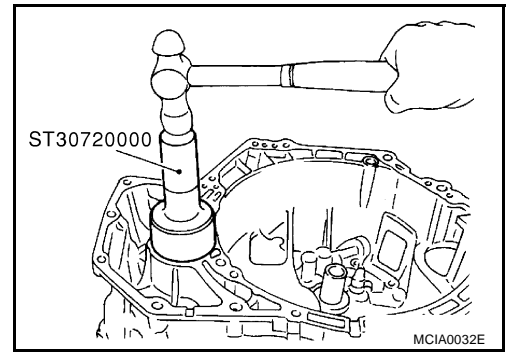
CAUTION:
Do not reuse oil seal.



2. Using a drift, install differential oil seal until the face is flush with clutch housing.

CAUTION:

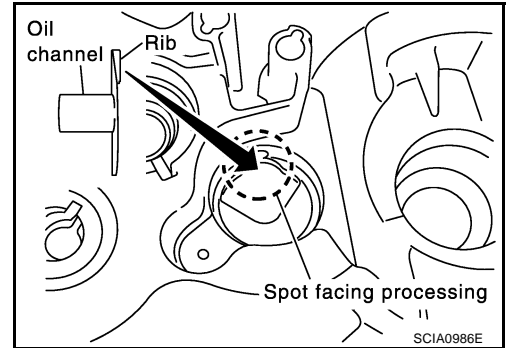
Do not reuse oil seal.



3. Install oil channel on mainshaft side.

CAUTION:

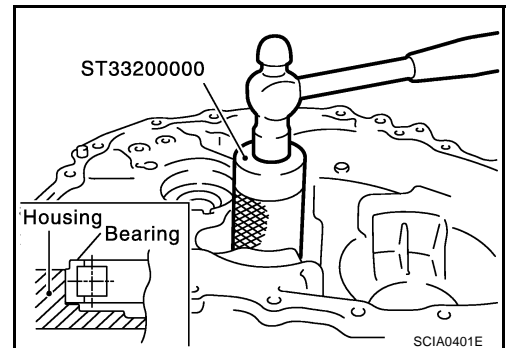
Be careful with orientation of installation.



4. Using a drift, install mainshaft front bearing.

CAUTION:

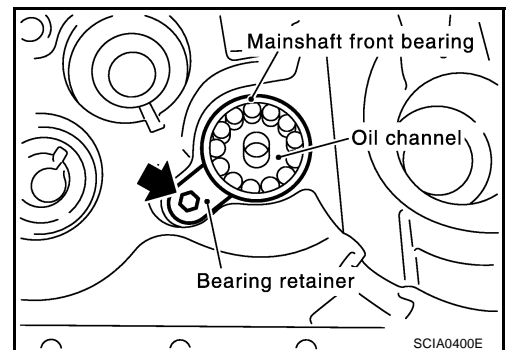
Be careful with orientation of installation.



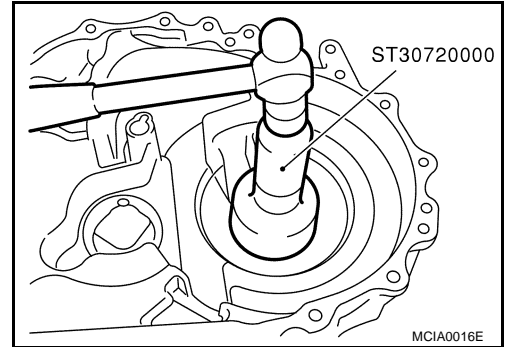
5. Install bearing retainer.

CAUTION:

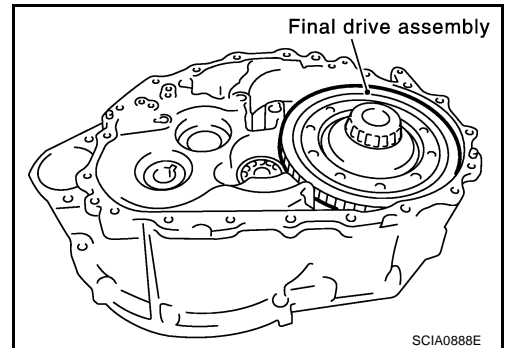
Install with punched surface facing up.



6. Install differential side bearing outer race.



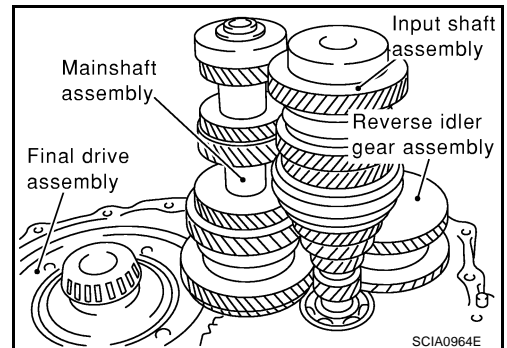
7. Install final drive assembly into clutch housing.



8. Install input shaft assembly, mainshaft assembly, and reverse idler gear assembly into clutch housing.

CAUTION:

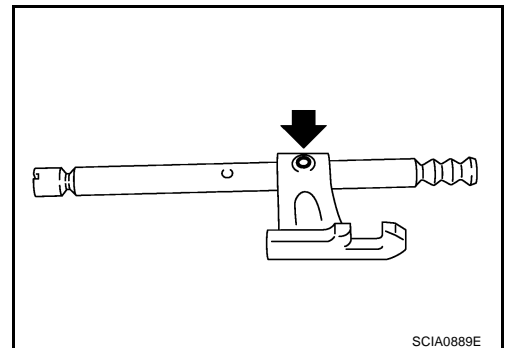
Be sure not to damage input shaft oil seal.



9. Install 1st-2nd fork rod bracket onto 1st-2nd fork rod, and then install retaining pin.

CAUTION:

Do not reuse retaining pin.

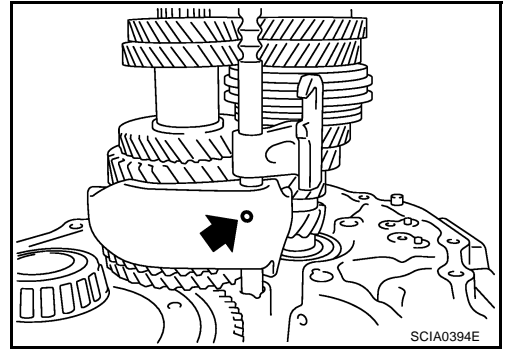


10. Install 1st-2nd fork rod and 1st-2nd shift fork, and then install retaining pin.

CAUTION:

Do not reuse retaining pin.

11. Install shift check sleeve.



12. Install 3rd-4th bracket, 3rd-4th shift fork, and 3rd-4th fork rod with inter lock pin.

13. Install stopper ring onto 3rd-4th shift fork.

CAUTION:

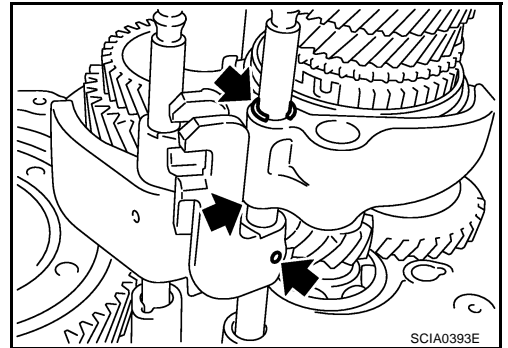
Do not reuse stopper ring.

14. Install retaining pin onto 3rd-4th bracket.

CAUTION:

Do not reuse retaining pin.

15. Install 2 check balls.

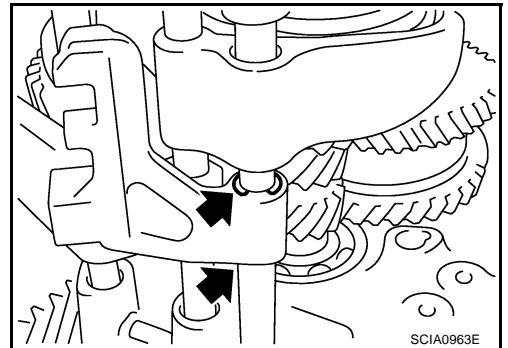


16. Install 5th-6th bracket, 5th-6th shift fork, and 5th-6th fork rod with interlock pin.

17. Install stopper ring onto 5th-6th bracket.

CAUTION:

Do not reuse stopper ring.



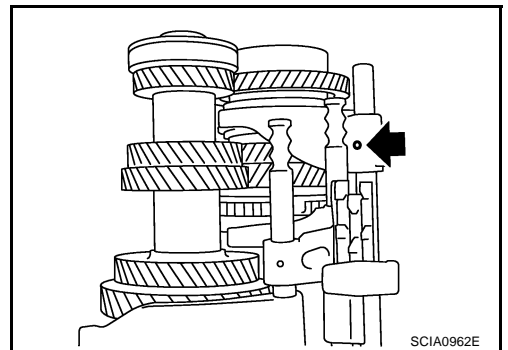
18. Install retaining pin onto 5th-6th shift fork.

CAUTION:

Do not reuse retaining pin.

19. Install 2 check balls.

20. Install reverse bracket fork rod and reverse lever bracket.



21. Install retaining pin onto reverse bracket.

CAUTION:

Do not reuse retaining pin.

22. Install reverse shift fork and reverse fork rod.
23. Install reverse lever assembly following procedures below.
a. Install shifter cap onto reverse lever assembly cam, and then install them onto reverse shift fork.

CAUTION:

Do not drop shifter cap.

- b. While lifting reverse shift fork, align cam with reverse bracket.

- c. Tighten mounting bolts to specified torque, and then install reverse lever assembly.

24. Install the magnet onto clutch housing.

25. Using a drift, install differential oil seal until it is flush with end face of transaxle case.

CAUTION:

Do not reuse oil seal.

26. Install selected input shaft adjusting shim onto input shaft.

- For selection of adjusting shims: Refer to [MT-146, "INPUTSHAFT END PLAY"](#) .

27. Install baffle plate and oil gutter.

28. Install transaxle case following procedures below.

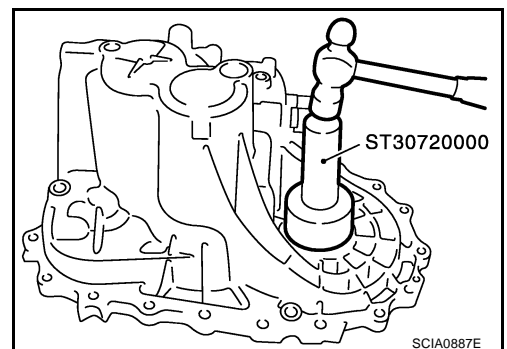
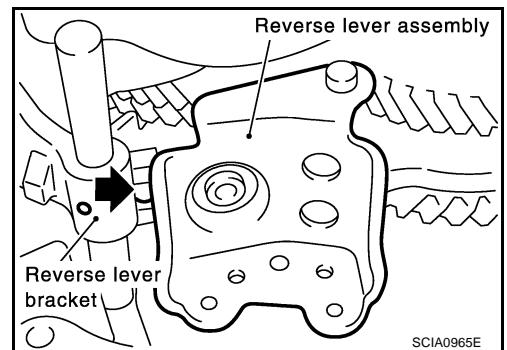
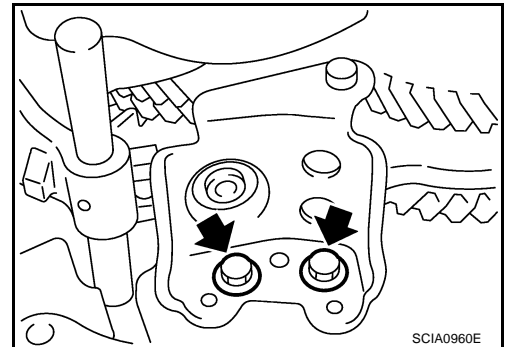
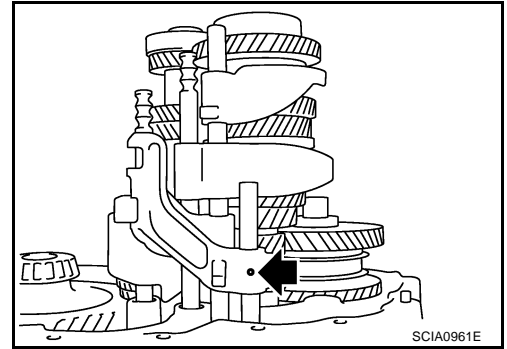
- a. Install selected mainshaft rear bearing adjusting shim into transaxle case.

- For selection of adjusting shims: Refer to [MT-148, "MAINSHAFT END PLAY"](#) .

- b. Temporarily install snap ring of mainshaft rear bearing into transaxle case.

CAUTION:

Do not reuse the snap ring.



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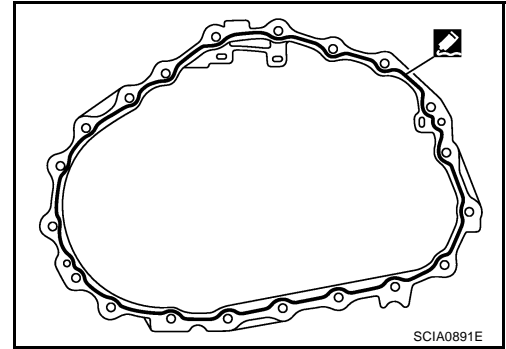
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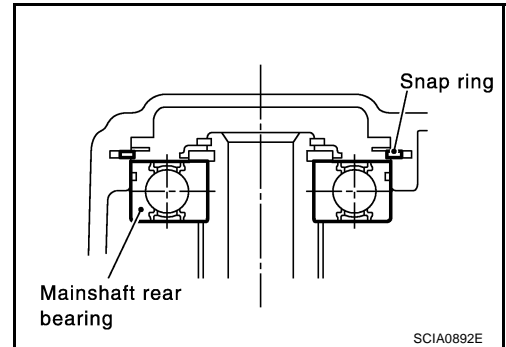
- c. Apply recommended sealant to mating surfaces of transaxle case and clutch housing.

CAUTION:

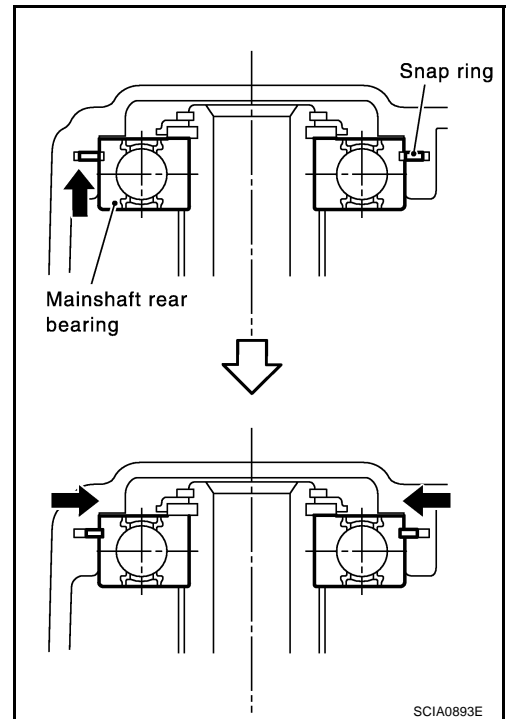
Remove old sealant adhering to mounting surfaces. Also remove any moisture, oil, or foreign material adhering to application and mounting surfaces.



- d. With snap ring of mainshaft rear bearing temporarily installed, place transaxle case over clutch housing.



- e. Through bore plug mounting hole, with snap ring stretched, and lift up mainshaft assembly from the control assembly mounting hole.
- f. Securely install snap ring onto mainshaft rear bearing.



- g. Tighten mounting bolts.

Bolt A:

: 50.0 - 53.9 N·m (5.1 - 5.4 kg-m, 37 - 39 ft-lb)

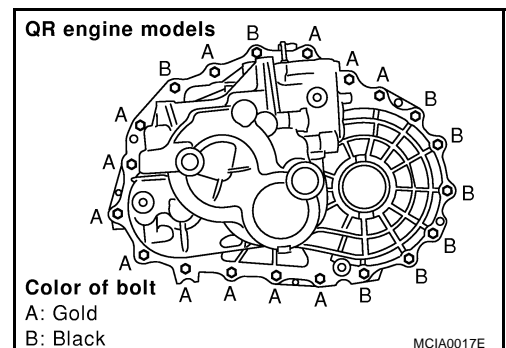
Bolt B:

: 63.0 - 66.9 N·m (6.5 - 6.8 kg-m, 47 - 49 ft-lb)

CAUTION:

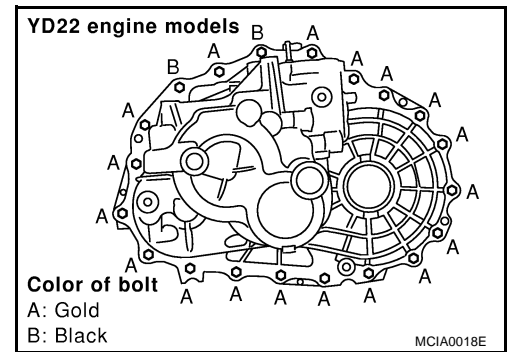
Always replace bolts B as they are self-sealing bolts.

- h. Install control assembly.

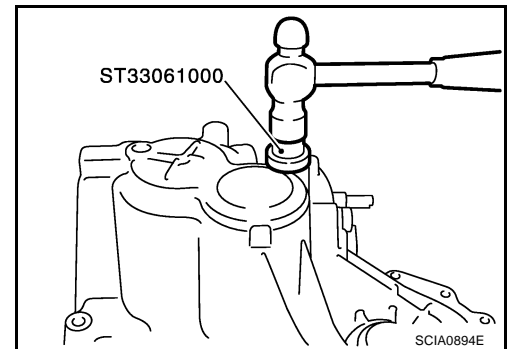


CAUTION:**Do not reuse the O-ring.**

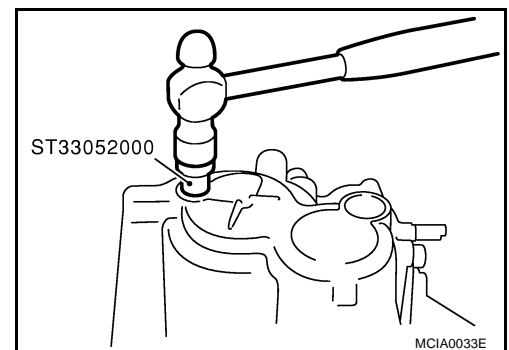
- i. Install shift check and stopper bolt.

CAUTION:**Do not reuse shift check and stopper bolt.**

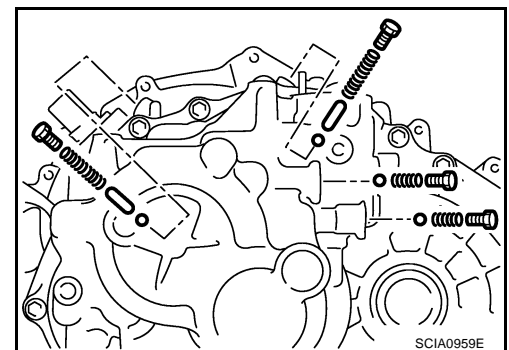
29. Using a drift, install bore plug.

CAUTION:**Do not reuse bore plug.**

30. Using a drift, install welch plug.

CAUTION:**Do not reuse welch plug.**

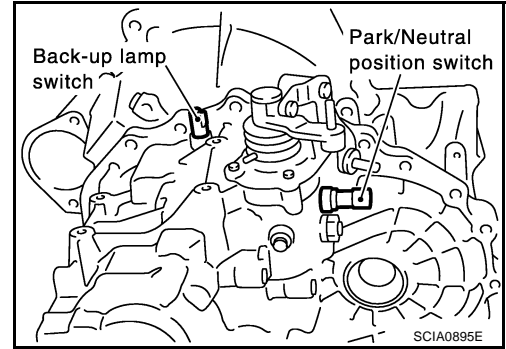
31. Install 2 shift check sleeves, 4 check balls, 4 check springs, and 4 check ball plugs.

CAUTION:**Do not reuse check ball plug.**

32. Apply recommended sealant to threads of neutral switch and reverse lamp switch. Then install them into transaxle case.
33. Install gaskets onto drain plug and filler plug, and then install them into transaxle case.

CAUTION:

- Do not reuse gasket.
- After oil is filled, tighten plug to specified torque.



ECS006DC

Adjustment INPUTSHAFT END PLAY

- When adjusting input shaft end play, select adjusting shim for input shaft bearing. To select adjusting shim, measure clearance between transaxle case and input shaft rear bearing.
- Calculate dimension "O" (thickness of adjusting shim) using the following procedure to satisfy specification of end play for input shaft rear bearing.

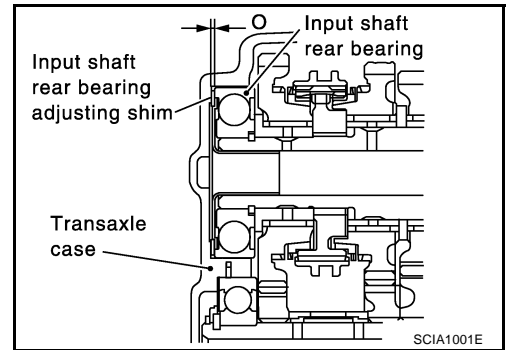
End play : 0 - 0.06 mm (0 - 0.0024 in)

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



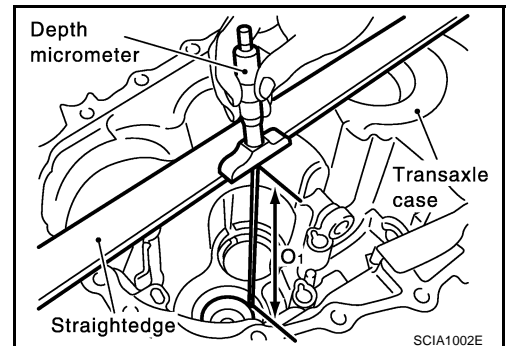
Adjusting Shim

Shim thickness	Part number	Shim thickness	Part number	Shim thickness	Part number
0.40 mm (0.0157 in)	32225 8H500	0.88 mm (0.0346 in)	32225 8H512	1.36 mm (0.0535 in)	32225 8H524
0.44 mm (0.0173 in)	32225 8H501	0.92 mm (0.0362 in)	32225 8H513	1.40 mm (0.0551 in)	32225 8H560
0.48 mm (0.0189 in)	32225 8H502	0.96 mm (0.0378 in)	32225 8H514	1.44 mm (0.0567 in)	32225 8H561
0.52 mm (0.0205 in)	32225 8H503	1.00 mm (0.0394 in)	32225 8H515	1.48 mm (0.0583 in)	32225 8H562
0.56 mm (0.0220 in)	32225 8H504	1.04 mm (0.0409 in)	32225 8H516	1.52 mm (0.0598 in)	32225 8H563
0.60 mm (0.0236 in)	32225 8H505	1.08 mm (0.0425 in)	32225 8H517	1.56 mm (0.0614 in)	32225 8H564
0.64 mm (0.0252 in)	32225 8H506	1.12 mm (0.0441 in)	32225 8H518	1.60 mm (0.0630 in)	32225 8H565
0.68 mm (0.0268 in)	32225 8H507	1.16 mm (0.0457 in)	32225 8H519	1.64 mm (0.0646 in)	32225 8H566
0.72 mm (0.0283 in)	32225 8H508	1.20 mm (0.0472 in)	32225 8H520		
0.76 mm (0.0299 in)	32225 8H509	1.24 mm (0.0488 in)	32225 8H521		
0.80 mm (0.0315 in)	32225 8H510	1.28 mm (0.0504 in)	32225 8H522		
0.84 mm (0.0331 in)	32225 8H511	1.32 mm (0.0520 in)	32225 8H523		

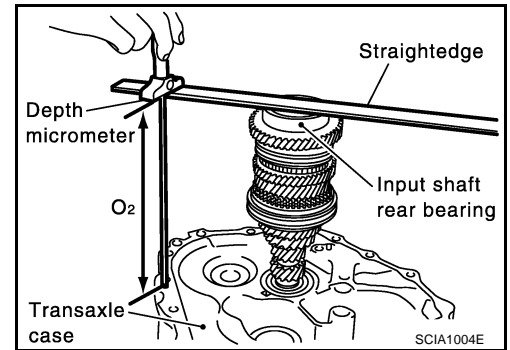
CAUTION:

Only 1 adjusting shim can be selected.

1. Using depth micrometer and straight edge, measure dimension "O₁" between transaxle case end face and mounting face of adjusting shim.



- Using depth micrometer and straight edge as shown in the figure, measure dimension "O₂" between clutch housing case end face and end face of input shaft rear bearing.
- Install selected input shaft rear bearing adjusting shim onto input shaft.



DIFFERENTIAL SIDE BEARING PRELOAD

- When adjusting differential side bearing preload, select adjusting shim for differential side bearing. To select adjusting shim, measure clearance "L" between transaxle case and differential side bearing outer race.
- Calculate dimension "L" (thickness of adjusting shim) using the following procedure to satisfy specification of preload for differential side bearing.

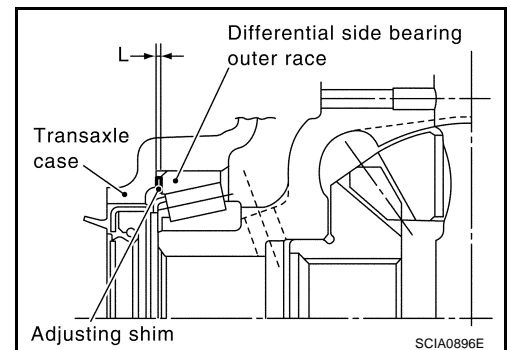
Preload : 0.15 - 0.21 mm (0.0059 - 0.0083 in)

Dimension "L" = (L₁ - L₂) + Preload

L : Thickness of adjusting shim

L₁ : Distance between clutch housing case end face and mounting face of adjusting shim

L₂ : Distance between differential side bearing and transaxle case



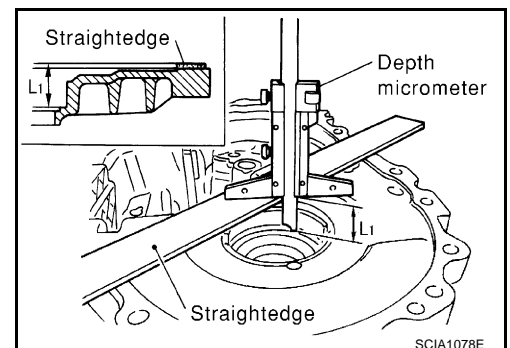
Adjusting Shim

Shim thickness	Part number
0.48 mm (0.0189 in)	31438 80X00
0.52 mm (0.0205 in)	31438 80X01
0.56 mm (0.0220 in)	31438 80X02
0.60 mm (0.0236 in)	31438 80X03
0.64 mm (0.0252 in)	31438 80X04
0.68 mm (0.0268 in)	31438 80X05
0.72 mm (0.0283 in)	31438 80X06
0.76 mm (0.0299 in)	31438 80X07
0.80 mm (0.0315 in)	31438 80X08
0.84 mm (0.0331 in)	31438 80X09
0.88 mm (0.0346 in)	31438 80X10
0.92 mm (0.0362 in)	31438 80X11

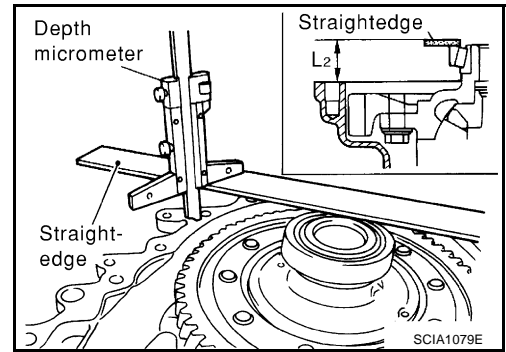
CAUTION:

Up to 2 adjusting shims can be selected.

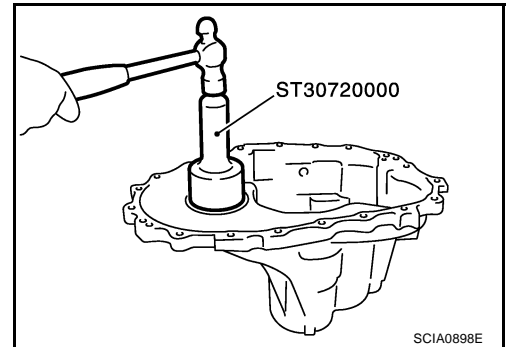
- Using depth micrometer and straightedge, measure dimension "L₁" between clutch housing case end face and mounting face of adjusting shim.
- Install outer race onto differential side bearing on final gear side. Holding lightly the outer race horizontally by hand, rotate final gear five times or more (for smooth movement of bearing roller).



- Using depth micrometer and straightedge as shown in the figure, measure dimension "L2" between differential side bearing outer race and transaxle case end face.



- Install selected adjusting shim and then differential side bearing outer race.



MAINSHAFT END PLAY

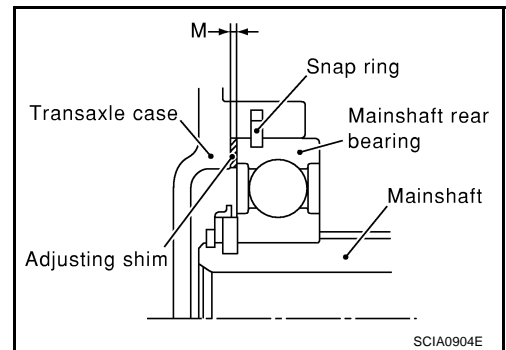
- When adjusting mainshaft end play, select adjusting shim for mainshaft rear bearing. To select adjusting shim, measure clearance "M" between transaxle case and mainshaft rear bearing.
- Calculate dimension "P" (thickness of adjusting shim) using the following procedure to satisfy specification of end play for mainshaft rear bearing.

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

Dimension "P" = "M" + End play

P : Thickness of adjusting shim

M : Distance between mainshaft rear bearing and transaxle case



Adjusting Shim

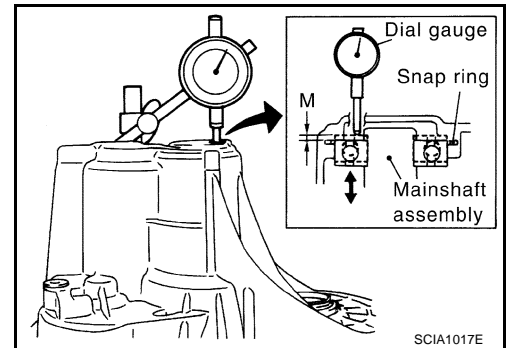
Shim thickness	Part number
0.44 mm (0.0173 in)	32238 8H510
0.48 mm (0.0189 in)	32238 8H511
0.52 mm (0.0205 in)	32238 8H512
0.56 mm (0.0220 in)	32238 8H513
0.60 mm (0.0236 in)	32238 8H514
0.64 mm (0.0252 in)	32238 8H515
0.68 mm (0.0268 in)	32238 8H516
0.72 mm (0.0283 in)	32238 8H517
0.76 mm (0.0299 in)	32238 8H518
0.80 mm (0.0315 in)	32238 8H519
0.84 mm (0.0331 in)	32238 8H520
0.88 mm (0.0346 in)	32238 8H521
0.92 mm (0.0362 in)	32238 8H522
0.96 mm (0.0378 in)	32238 8H523
1.00 mm (0.0394 in)	32238 8H524
1.04 mm (0.0409 in)	32238 8H560
1.08 mm (0.0425 in)	32238 8H561

CAUTION:

Only 1 adjusting shim can be selected.

- Install mainshaft assembly to clutch housing.

2. Install snap ring to transaxle case.
3. Install transaxle case to clutch housing, and temporarily assemble them with fixing bolts. Install temporarily snap ring to mainshaft rear bearing.
4. Install dial gauge to snap ring access hole, and expand snap ring. Lift mainshaft assembly through control assembly installation hole, and push it against transaxle case. This state shall be defined as base. Moving distance of mainshaft assembly, with snap ring fit on main bearing, becomes "M".



REVERSE IDLER GEAR END PLAY

- When adjusting reverse idler gear end play, select adjusting shim for reverse idler gear. To select adjusting shim, measure clearance between transaxle case and reverse idler gear.
- Calculate dimension "Q" (thickness of adjusting shim) using the following procedure to satisfy specification of end play for reverse idler gear.

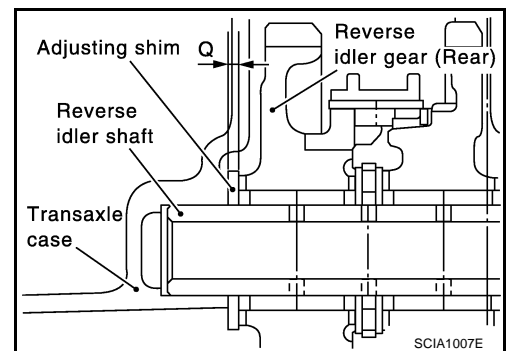
End play : 0.04 - 0.10 mm (0.0016 - 0.0039 in)

Dimension "Q" = (Q₁ - Q₂) + End play

Q : Thickness of adjusting shim

Q₁ : Distance between transaxle case end face and mounting face of adjusting shim

Q₂ : Distance between clutch housing case end face and end face of reverse idler gear



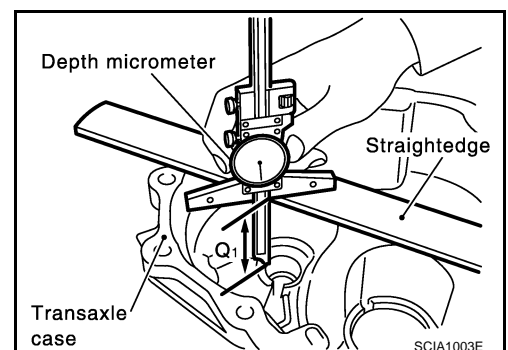
Adjusting Shim

Shim thickness	Part number	Shim thickness	Part number
1.76 mm (0.0693 in)	32237 8H800	2.20 mm (0.0866 in)	32237 8H811
1.80 mm (0.0709 in)	32237 8H801	2.24 mm (0.0882 in)	32237 8H812
1.84 mm (0.0724 in)	32237 8H802	2.28 mm (0.0898 in)	32237 8H813
1.88 mm (0.0740 in)	32237 8H803	2.32 mm (0.0913 in)	32237 8H814
1.92 mm (0.0756 in)	32237 8H804	2.36 mm (0.0929 in)	32237 8H815
1.96 mm (0.0772 in)	32237 8H805	2.40 mm (0.0945 in)	32237 8H816
2.00 mm (0.0787 in)	32237 8H806	2.44 mm (0.0961 in)	32237 8H817
2.04 mm (0.0803 in)	32237 8H807	2.48 mm (0.0976 in)	32237 8H818
2.08 mm (0.0819 in)	32237 8H808	2.52 mm (0.0992 in)	32237 8H819
2.12 mm (0.0835 in)	32237 8H809	2.56 mm (0.1008 in)	32237 8H820
2.16 mm (0.0850 in)	32237 8H810	2.60 mm (0.1024 in)	32237 8H821
		2.64 mm (0.1039 in)	32237 8H822

CAUTION:

Only 1 adjusting shim can be selected.

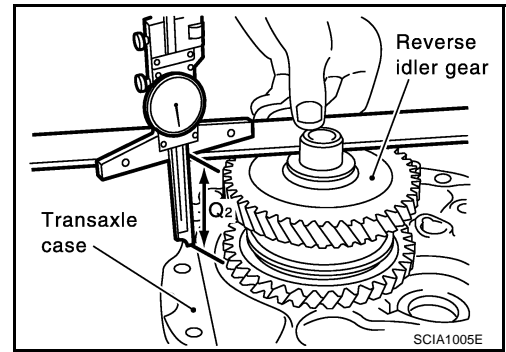
1. Using depth micrometer and straight edge, measure dimension "Q₁" between transaxle case end face and mounting face of adjusting shim.



TRANSAXLE ASSEMBLY

[RS6F51A]

2. Using depth micrometer and straight edge as shown in the figure, measure dimension "Q₂" between clutch housing case end face and end face of reverse idler gear.
3. Install selected reverse idler gear adjusting shim onto reverse idler gear assembly.



INPUT SHAFT AND GEARS

PFP:32200

Assembly and Disassembly DISASSEMBLY

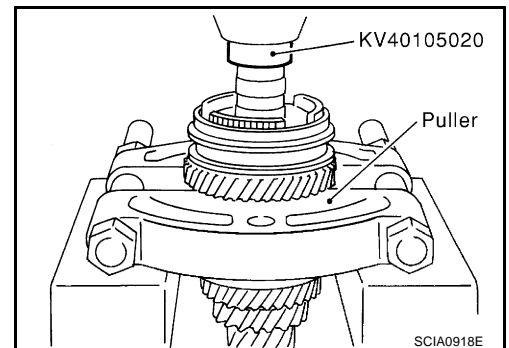
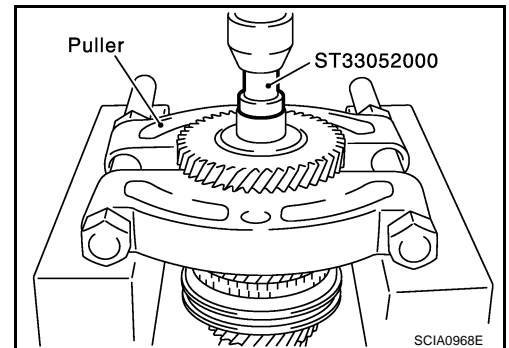
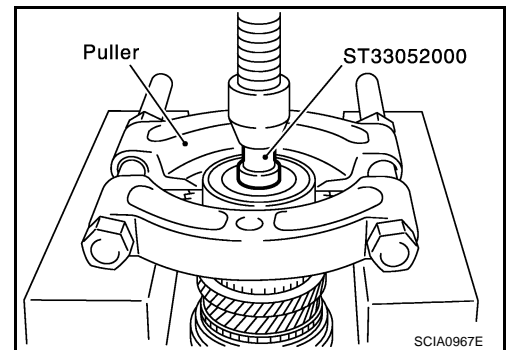
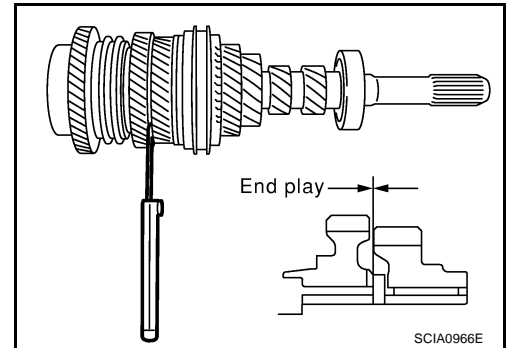
ECS006DD

1. Before disassembling, measure end play for 3rd, 4th, 5th and 6th input gears.

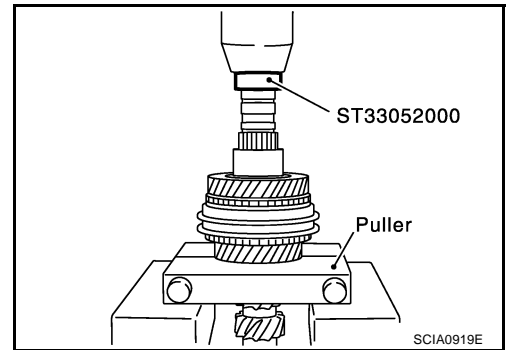
End play standard value

3rd gear	: 0.18 - 0.31 mm (0.0071 - 0.0122 in)
4th gear	: 0.20 - 0.30 mm (0.0079 - 0.0118 in)
5th gear	: 0.06 - 0.16 mm (0.0024 - 0.0063 in)
6th gear	: 0.06 - 0.16 mm (0.0024 - 0.0063 in)

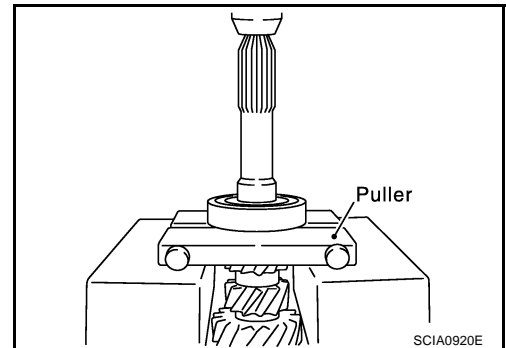
2. Remove oil channel.
3. Remove input shaft rear bearing.
4. Remove the snap ring.
5. Remove 6th input gear, 6th bushing and 6th needle bearing.
6. Remove 6th baulk ring, 5th-6th coupling sleeve and shifting insert.
7. Remove 5th input gear and 5th synchronizer hub assembly simultaneously.
8. Remove 5th needle bearing.



9. Remove 5th bushing, thrust washer, 4th input gear, 4th needle bearing, 4th bushing, 4th baulk ring, 3rd-4th synchronizer hub assembly, 3rd baulk ring and 3rd input gear simultaneously.
10. Remove 3rd needle bearing.



11. Remove input shaft front bearing.

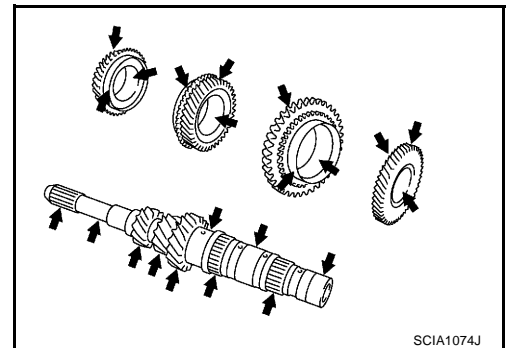


INSPECTION AFTER DISASSEMBLY

Input Shaft and Gear

Check items below. If necessary, replace them with new ones.

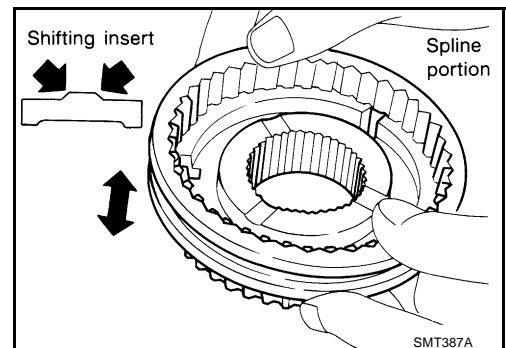
- Damage, peeling, dent, uneven wear, bending, etc. of shaft
- Excessive wear, damage, peeling, etc. of gears



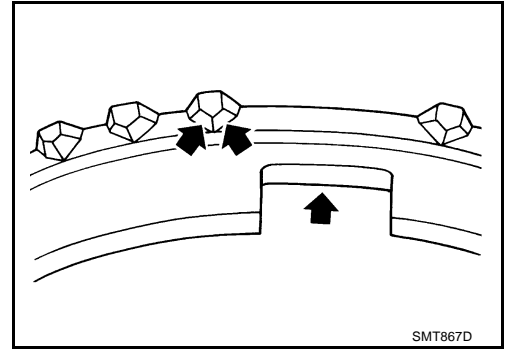
Synchronizer

Check items below. If necessary, replace them with new ones.

- Damage and excessive wear of contact surfaces of coupling sleeve, synchronizer hub, and shifting insert
- Coupling sleeve and synchronizer hub must move smoothly.



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



Baulk ring clearance

- Press baulk ring against cone, and measure clearance between baulk ring and cone. If measurement is below limit, replace it with a new one.

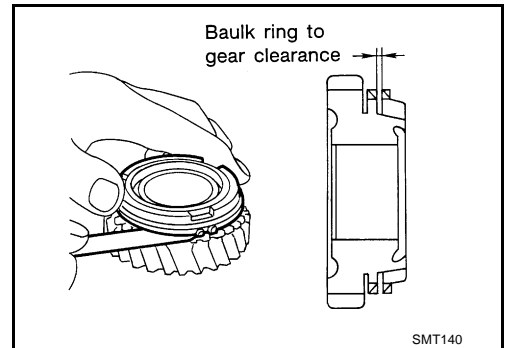
Clearance

Standard

3rd and 4th : 0.9 - 1.45 mm (0.0354 - 0.0571 in)

5th and 6th : 0.95 - 1.4 mm (0.0374 - 0.0551 in)

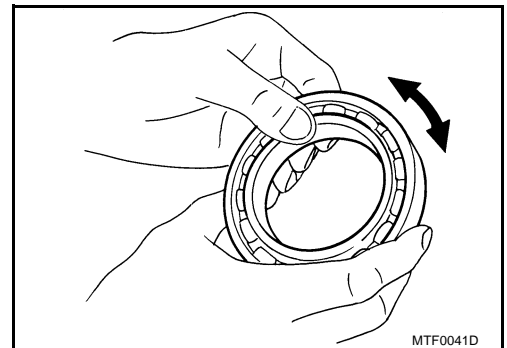
Limit value : 0.7 mm (0.0276 in)



Bearing

Check items below. If necessary, replace them with new ones.

- Damage and rough rotation of bearing

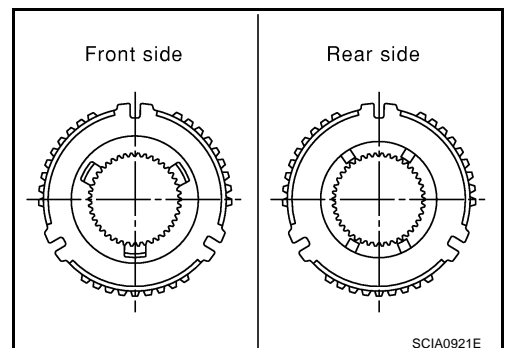


ASSEMBLY

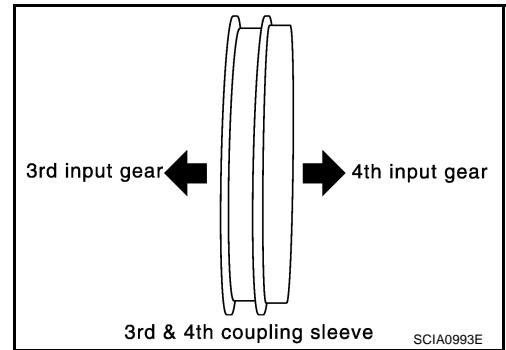
1. Install 3rd needle bearing.
2. Install 3rd input gear and 3rd baulk ring.
3. Install spread spring, shifting insert and 3rd-4th synchronizer hub onto 3rd-4th coupling sleeve.

CAUTION:

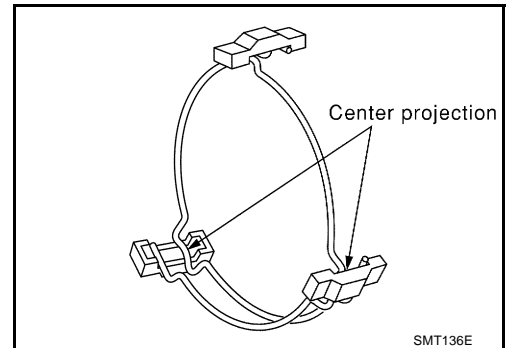
- Be careful with orientation of synchronizer hub.
- Do not reuse 3rd-4th synchronizer hub.



- Be careful with orientation of coupling sleeve.

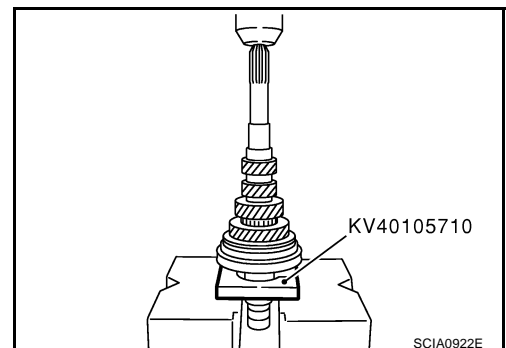


- Be sure not to hook center projection of 2 spread springs on same shifting insert.

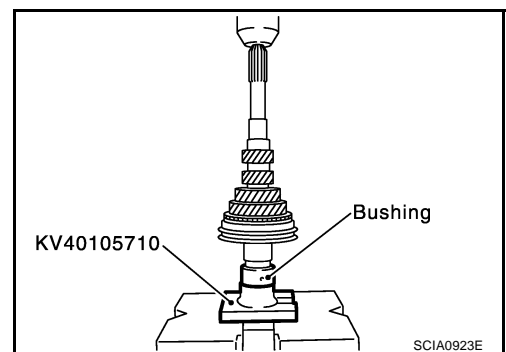


4. Install 3rd-4th synchronizer hub assembly.

CAUTION:
Align grooves of shifting insert and 3rd baulk ring.



5. Install 4th bushing.
6. Install 4th baulk ring.
7. Install 4th input gear and 4th needle bearing.

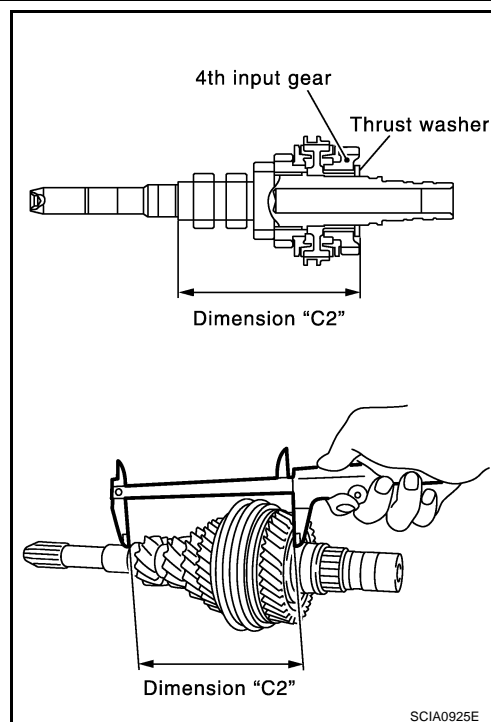


INPUT SHAFT AND GEARS

[RS6F51A]

8. Select thrust washer so that dimension "C2" satisfies standard below. Then install it onto input shaft.

Standard for dimension C2 : 154.7 - 154.8 mm (6.091 - 6.094 in)



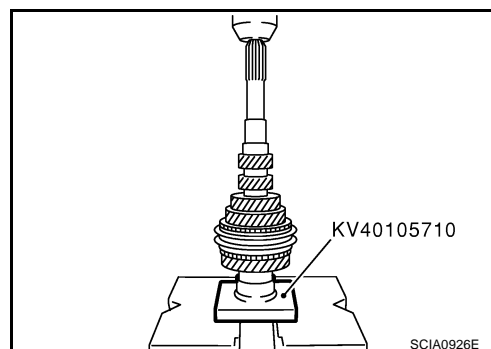
Thrust Washer

Thickness	Part number	Thickness	Part number
3.84 mm (0.1512 in)	32347 8H500	4.02 mm (0.1583 in)	32347 8H503
3.90 mm (0.1535 in)	32347 8H501	4.08 mm (0.1606 in)	32347 8H504
3.96 mm (0.1559 in)	32347 8H502	4.14 mm (0.1630 in)	32347 8H505

CAUTION:

Only one thrust washer can be selected.

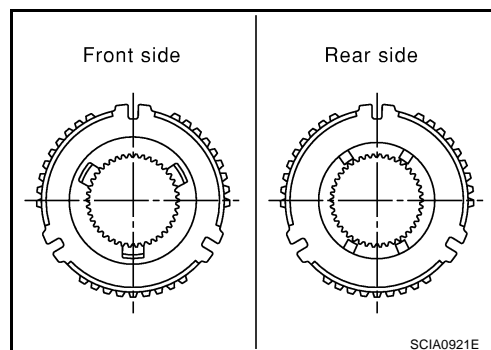
9. Install 5th bushing.
10. Install 5th needle bearing and 5th input gear.
11. Install 5th baulk ring.



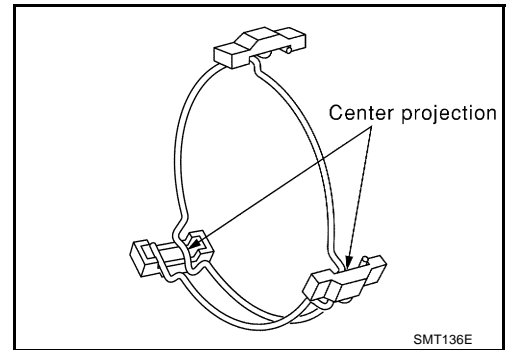
12. Install 5th-6th synchronizer hub, spread spring and shifting insert onto 5th-6th coupling sleeve.

CAUTION:

- Be careful with orientation of synchronizer hub.
- Do not reuse 5th-6th synchronizer hub.



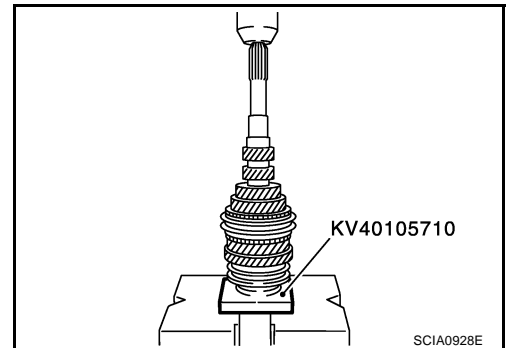
- Be sure not to hook center projection of 2 spread springs on same shifting insert.



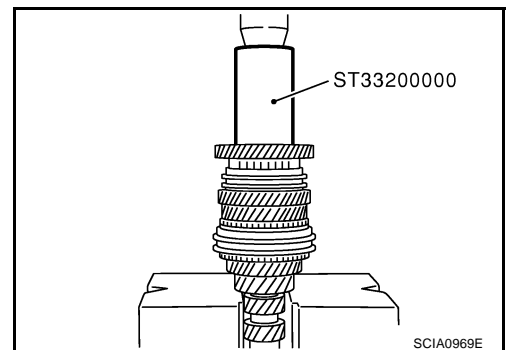
13. Install 5th-6th synchronizer hub assembly.

CAUTION:

Align grooves of 5th-6th shifting insert and 5th-6th baulk ring.



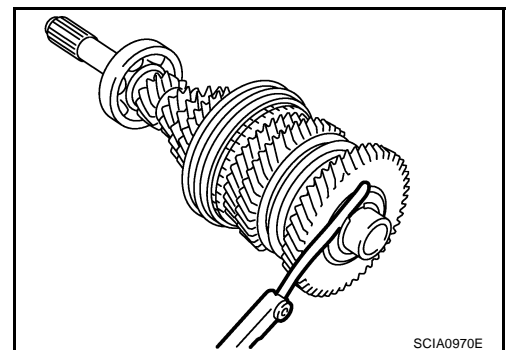
14. Install 6th needle bearing, 6th input gear onto 6th bushing, and then install them onto input shaft.



15. Install snap ring onto input shaft, and check that end play (gap between snap ring and groove) of 6th bushing satisfies standard.

End play standard value : 0 - 0.1 mm (0 - 0.004 in)

- If measurement is outside the standard range, select snap ring.



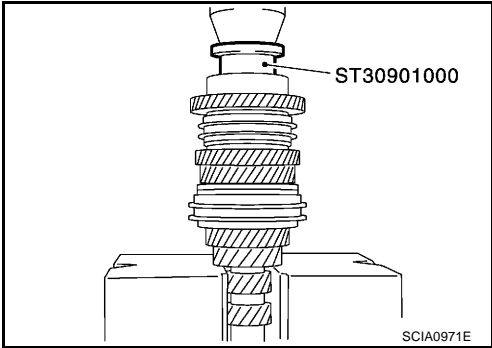
Snap Rings

Thickness	Part number	Thickness	Part number
1.76 mm (0.0693 in)	32204 8H511	2.01 mm (0.0791 in)	32204 8H516
1.81 mm (0.0713 in)	32204 8H512	2.06 mm (0.0811 in)	32204 8H517
1.86 mm (0.0732 in)	32204 8H513	2.11 mm (0.0831 in)	32204 8H518
1.91 mm (0.0752 in)	32204 8H514	2.16 mm (0.0850 in)	32204 8H519
1.96 mm (0.0772 in)	32204 8H515	2.21 mm (0.0870 in)	32204 8H520

16. Install input shaft rear bearing.

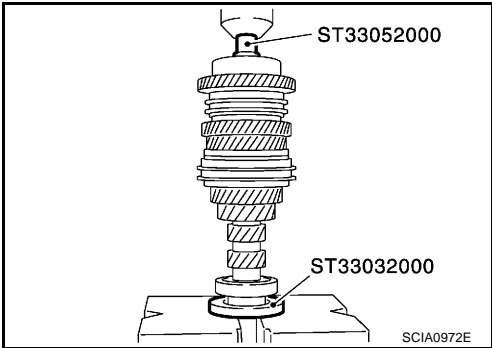
CAUTION:

Install input shaft rear bearing with its brown surface facing the 6th input gear side.



17. Install input shaft front bearing.

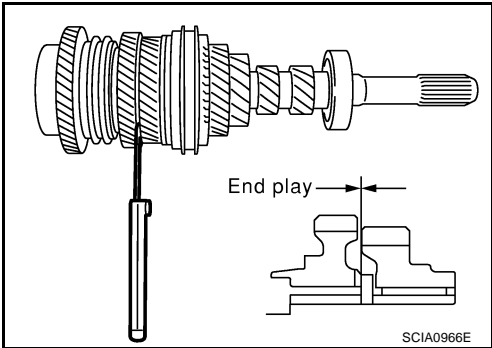
18. Install oil channel onto input shaft.



19. Check end play of 3rd, 4th, 5th and 6th input gears.

End play standard value

- 3rd gear : 0.18 - 0.31 mm (0.0071 - 0.0122 in)
- 4th gear : 0.20 - 0.30 mm (0.0079 - 0.0118 in)
- 5th gear : 0.06 - 0.16 mm (0.0024 - 0.0063 in)
- 6th gear : 0.06 - 0.16 mm (0.0024 - 0.0063 in)



MAINSHAFT AND GEARS

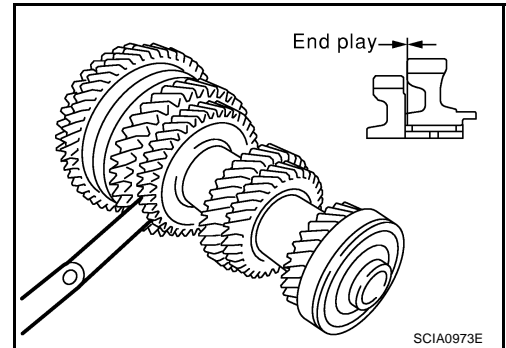
Assembly and Disassembly DISASSEMBLY

1. Before disassembling, measure end play of 1st and 2nd main gears.

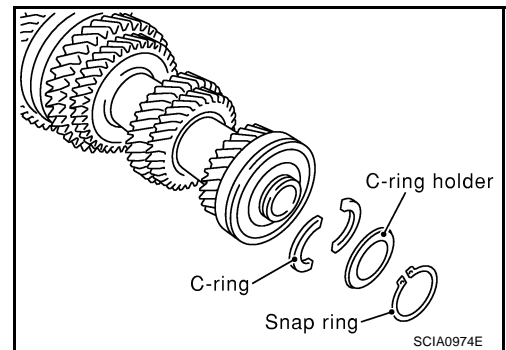
End play standard value

1st gear : 0.20 - 0.30 mm (0.0079 - 0.0118 in)

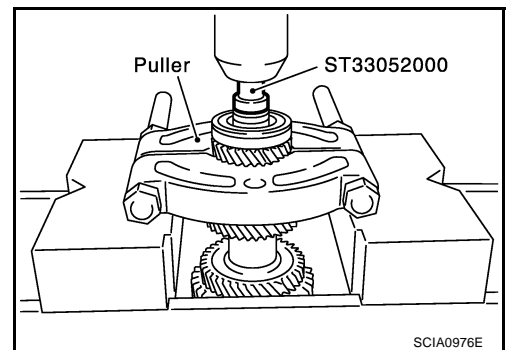
2nd gear : 0.06 - 0.16 mm (0.0024 - 0.0063 in)



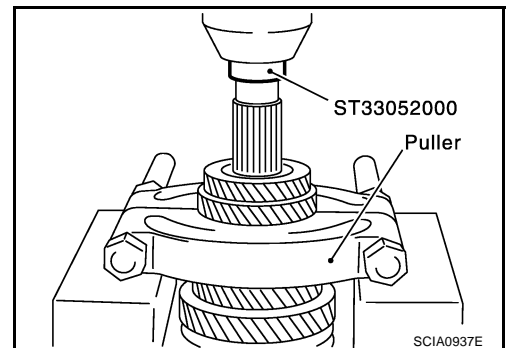
2. Remove the snap ring.
3. Remove C-ring holder, and then mainshaft C-ring.



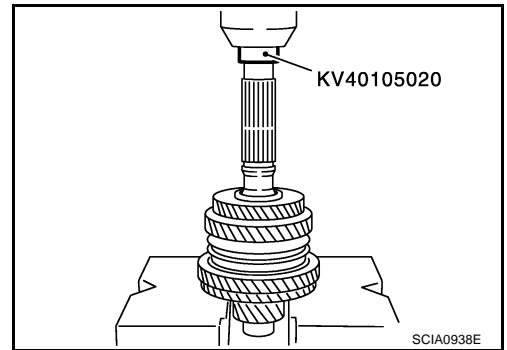
4. Remove mainshaft rear bearing, adjust shim and 6th main gear.
5. Remove 5th-6th mainshaft spacer.



6. Remove 4th main gear and 5th main gear simultaneously.
7. Remove adjusting shim.
8. Remove 3rd & 4th mainshaft spacer.



9. Remove 3rd main gear, 2nd main gear, 2nd gear needle bearing, 2nd bushing, 1st-2nd synchronizer assembly, 1st main gear, reverse main gear, 1st gear needle bearing, and 1st bushing simultaneously.



A

B

MT

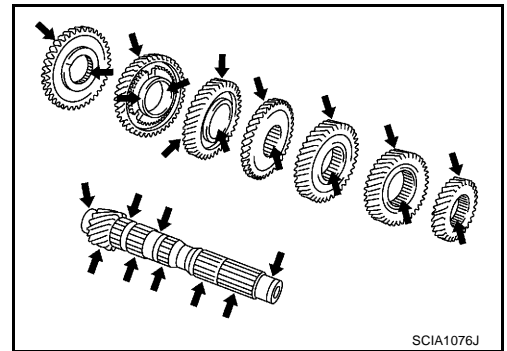
D

INSPECTION AFTER DISASSEMBLY

Mainshaft and Gears

Check items below. If necessary, replace them with new ones.

- Damage, peeling, dent, uneven wear, bending, and other non-standard conditions of the shaft.
- Excessive wear, damage, peeling, and other non-standard conditions of the gears.



E

F

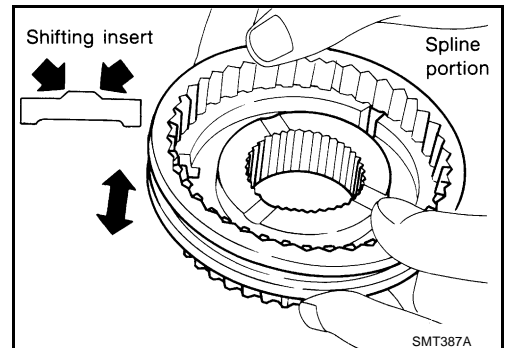
G

H

Synchronizer

Check items below. If necessary, replace them with new ones.

- Damage and unusual wear on contact surfaces of coupling sleeve, synchronizer hub, and shifting insert.
- Coupling sleeve and synchronizer hub must move smoothly.



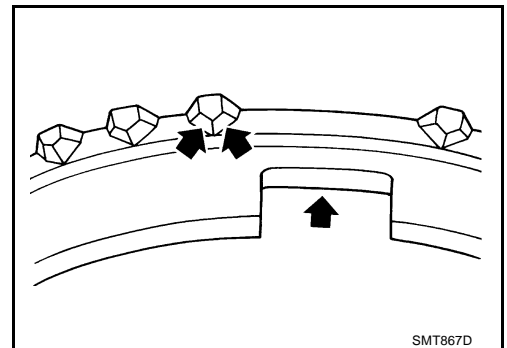
I

J

K

L

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



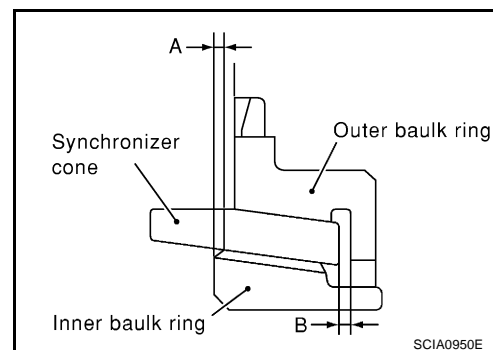
M

Baulk ring clearance

- Double cone synchronizer (1st and 2nd)
Check clearance of outer baulk ring, synchronizer cone, and inner baulk ring of 1st and 2nd double cone synchronizers, following procedure below.

CAUTION:

Outer baulk ring, synchronizer cone, and inner baulk ring as a set control clearance A and B. If measurement exceeds service limit value, replace all of them as a set.

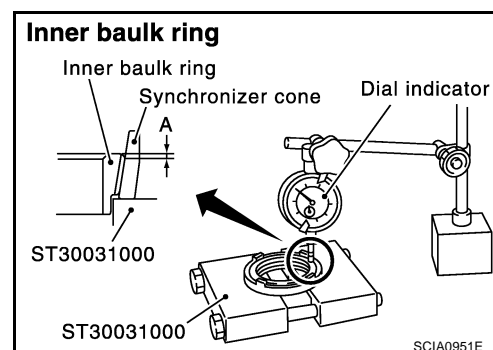


- Using a dial gauge, measure clearance A at 2 or more points diagonally opposite, and calculate mean value.

Clearance A

Standard : 0.6 - 0.8 mm (0.024 - 0.031 in)

Limit value : 0.2 mm (0.008 in) or less

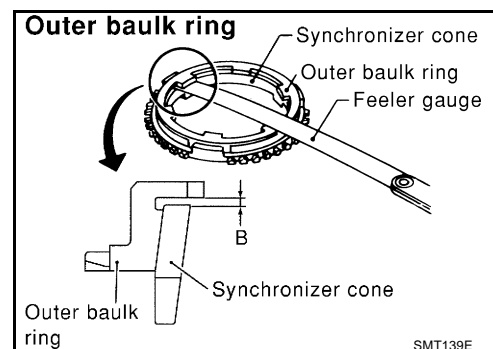


- Using a feeler gauge, measure clearance B at 2 or more points diagonally opposite, and calculate mean value.

Clearance B

Standard : 0.6 - 1.1 mm (0.024 - 0.043 in)

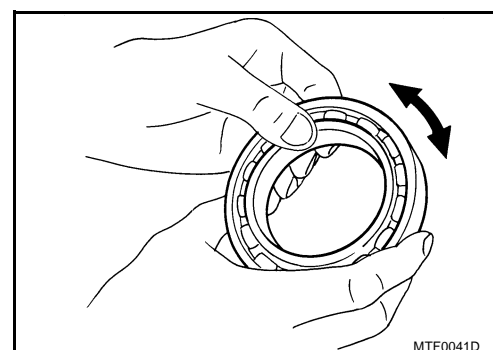
Limit value : 0.2 mm (0.008 in) or less



Bearing

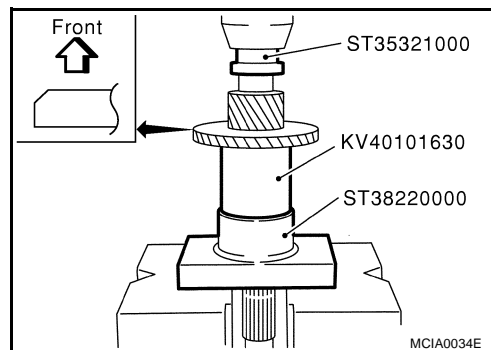
Check items below. If necessary, replace them with new ones.

- Damage and rough rotation of bearing



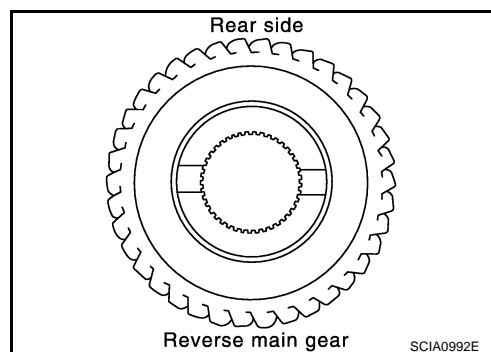
ASSEMBLY

1. Install reverse main gear.

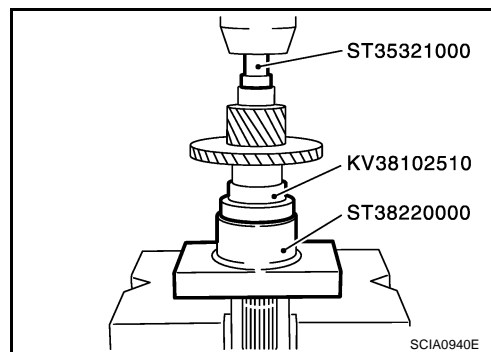


CAUTION:

Be careful with orientation of reverse main gear.



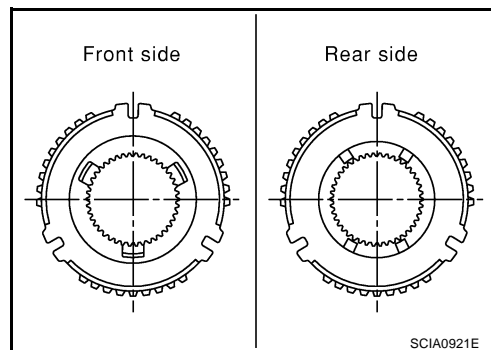
2. Install 1st bushing.
3. Install needle bearing, and then 1st main gear.



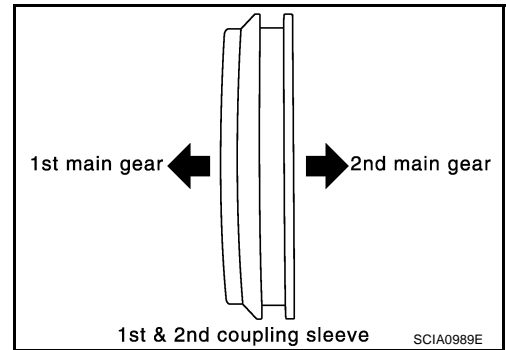
4. Install spread spring, shifting insert and 1st-2nd synchronizer hub onto 1st-2nd coupling sleeve.

CAUTION:

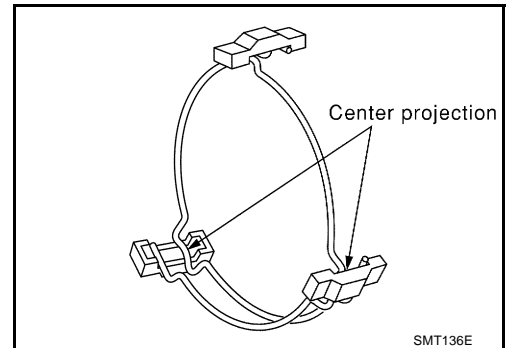
- Be careful with orientation of synchronizer hub.
- Do not reuse 1st-2nd synchronizer hub.



- Be careful with orientation of coupling sleeve.



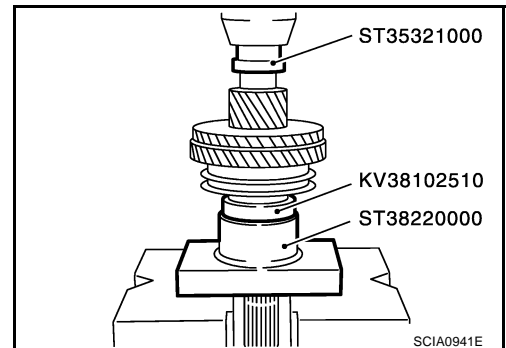
- Be sure not to hook center projection of 2 spread springs on same shifting insert.



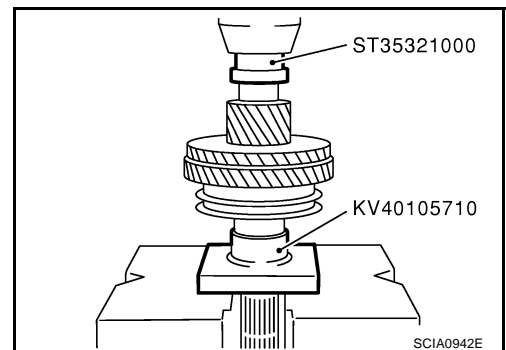
5. Install 1st gear synchronizer assembly onto mainshaft, and synchronizer hub assembly onto mainshaft.

CAUTION:

- Outer baulk ring, synchronizer cone, and inner baulk ring on 2nd gear-side must have been removed.
- Be careful with orientation of coupling sleeve.



6. Install 2nd bushing.
7. Install outer baulk ring, synchronizer cone, and inner baulk ring on 2nd gear-side.
8. Install 2nd needle bearing and 2nd gear.



MAINSHAFT AND GEARS

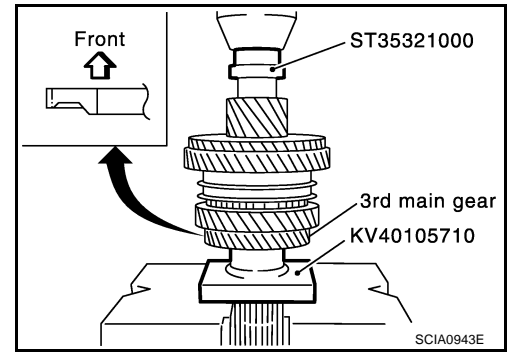
[RS6F51A]

- Install 3rd main gear.

CAUTION:

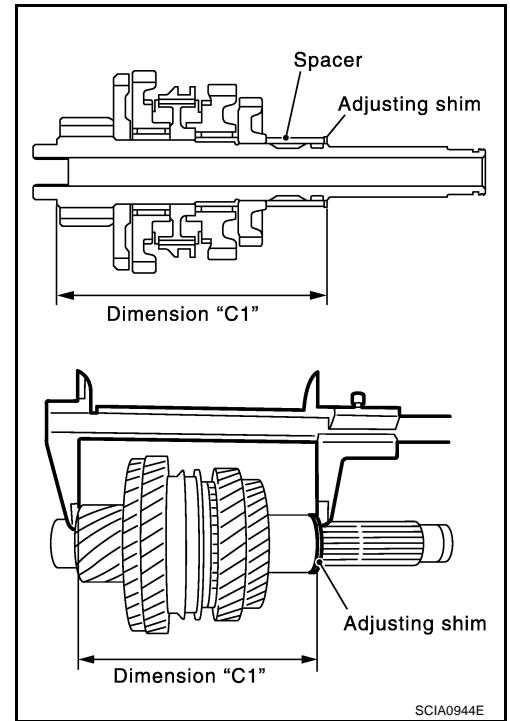
Be careful with orientation of 3rd main gear.

- Install 3rd-4th mainshaft spacer.



- Select suitable adjusting shim so that dimension "C1" satisfies standard value below, and install it onto mainshaft.

Standard for dimension C1 : 173.85 - 173.95 mm
(6.844 - 6.848 in)



Adjusting Shim

Thickness	Part number	Thickness	Part number
0.52 mm (0.0205 in)	32238 8H500	0.84 mm (0.0331 in)	32238 8H504
0.60 mm (0.0236 in)	32238 8H501	0.92 mm (0.0362 in)	32238 8H505
0.68 mm (0.0268 in)	32238 8H502	1.00 mm (0.0394 in)	32238 8H506
0.76 mm (0.0299 in)	32238 8H503	1.08 mm (0.0425 in)	32238 8H507

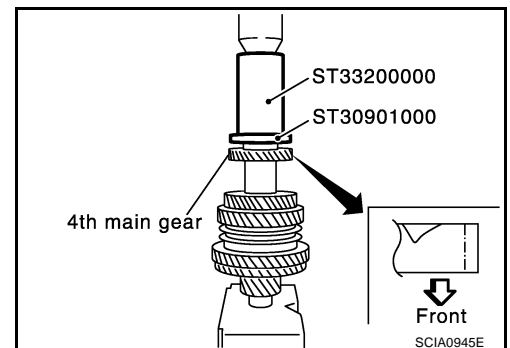
CAUTION:

Only one adjusting shim can be selected.

- Install 4th main gear.

CAUTION:

Be careful with orientation of 4th main gear.

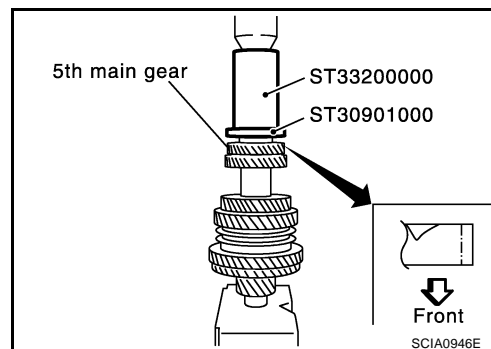


13. Install 5th main gear.

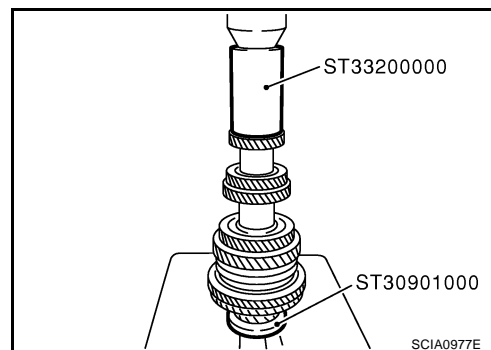
CAUTION:

Be careful with orientation of 5th main gear.

14. Install 5th-6th mainshaft spacer.



15. Install 6th main gear.



16. Select 6th main adjusting shim and then install it onto mainshaft.

- Calculate thickness "S" of 6th main adjusting shim by procedure below so that end play dimension between 6th main gear and mainshaft rear bearing becomes the dimension shown below.

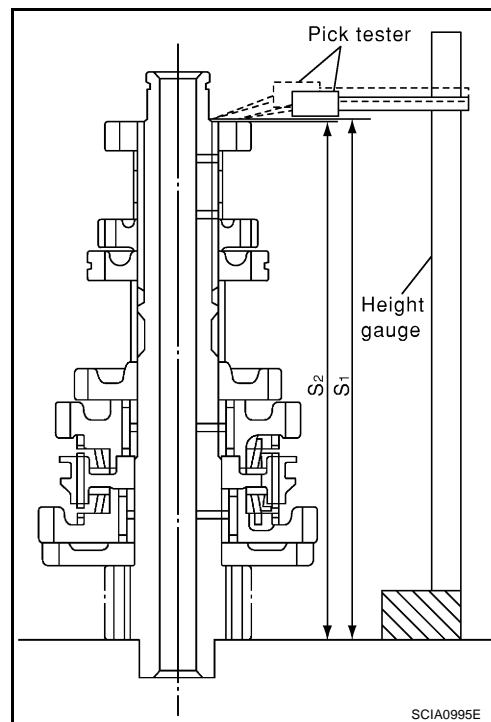
End play : 0 - 0.1 mm (0 - 0.004 in)

Dimension "S" = (S₁ - S₂) + End play

S : Thickness of adjusting shim

S₁ : Dimension from mainshaft standard face to mainshaft rear bearing press-fit end face

S₂ : Dimension from mainshaft standard face to 6th main gear end face



Adjusting Shim

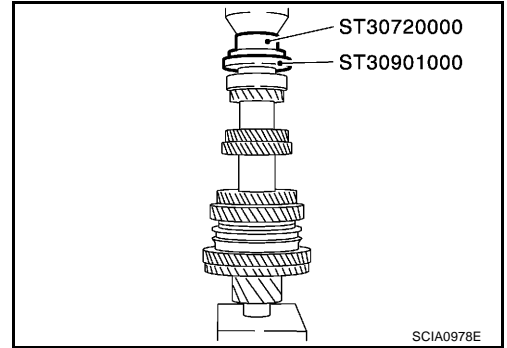
Thickness	Part number	Thickness	Part number
0.88 mm (0.0346 in)	32237 8H560	1.20 mm (0.0472 in)	32237 8H564
0.96 mm (0.0378 in)	32237 8H561	1.28 mm (0.0504 in)	32237 8H565
1.04 mm (0.0409 in)	32237 8H562	1.36 mm (0.0535 in)	32237 8H566
1.12 mm (0.0441 in)	32237 8H563		

CAUTION:

Only one adjusting shim can be selected.

a. Using height gauge, measure dimension "S₁" and "S₂".

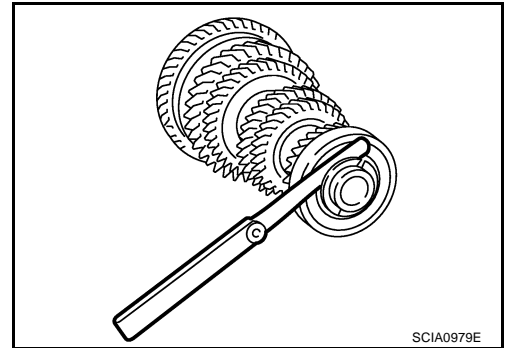
- b. Install selected 6th main adjusting shim to mainshaft.
17. Install mainshaft rear bearing.



18. Install C-ring onto mainshaft, and check that end play of mainshaft rear bearing satisfies standard value.

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

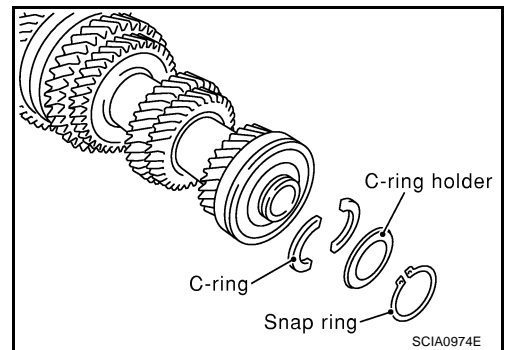
- If measurement is outside the standard range, reselect C-ring.



C-ring

Thickness	Part number	Thickness	Part number
2.535 mm (0.0998 in)	32348 8H800	2.835 mm (0.1116 in)	32348 8H810
2.565 mm (0.1010 in)	32348 8H801	2.865 mm (0.1128 in)	32348 8H811
2.595 mm (0.1022 in)	32348 8H802	2.895 mm (0.1140 in)	32348 8H812
2.625 mm (0.1033 in)	32348 8H803	2.925 mm (0.1152 in)	32348 8H813
2.655 mm (0.1045 in)	32348 8H804	2.955 mm (0.1163 in)	32348 8H814
2.685 mm (0.1057 in)	32348 8H805	2.985 mm (0.1175 in)	32348 8H815
2.715 mm (0.1069 in)	32348 8H806	3.015 mm (0.1187 in)	32348 8H816
2.745 mm (0.1081 in)	32348 8H807	3.045 mm (0.1199 in)	32348 8H817
2.775 mm (0.1093 in)	32348 8H808	3.075 mm (0.1211 in)	32348 8H818
2.805 mm (0.1104 in)	32348 8H809		

19. Fit C-ring holder, and install snap ring.

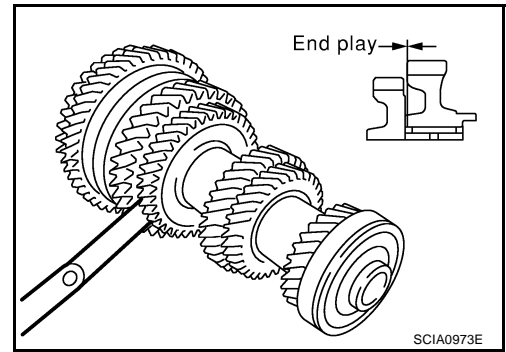


20. Check end play of 1st and 2nd main gears.

End play standard value

1st gear : 0.20 - 0.30 mm (0.0079 - 0.0118 in)

2nd gear : 0.06 - 0.16 mm (0.0024 - 0.0063 in)



REVERSE IDLER SHAFT AND GEARS

Assembly and Disassembly DISASSEMBLY

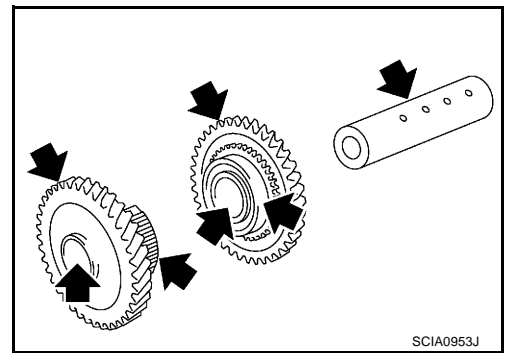
1. Remove reverse idler gear adjusting shim.
2. Remove reverse idler gear (rear), reverse coupling sleeve and insert spring simultaneously.
3. Remove reverse idler gear needle bearing.
4. Remove thrust needle bearing.
5. Remove reverse baulk ring.
6. Remove reverse idler gear (front).
7. Remove reverse idler gear needle bearing.
8. Remove thrust needle bearing.
9. Pull off locking pin from reverse idler shaft.

INSPECTION AFTER DISASSEMBLY

Reverse Idler Shaft and Gears

Check items below. If necessary, replace them with new ones.

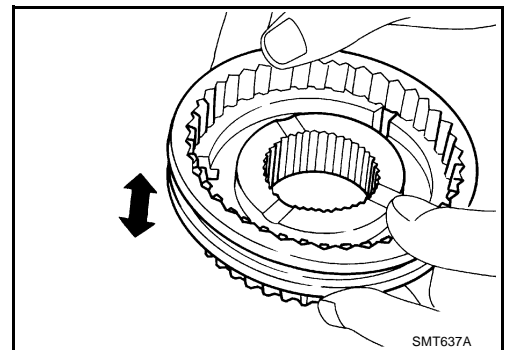
- Damage, peeling, dent, uneven wear, bending, and other non-standard conditions of the shaft.
- Excessive wear, damage, peeling, and other non-standard conditions of the gears.



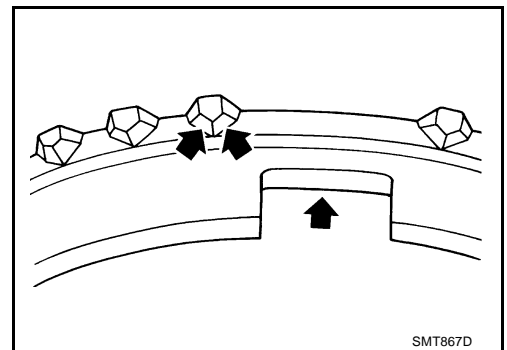
Synchronizer

Check items below. If necessary, replace them with new ones.

- Damage and unusual wear on contact surfaces of coupling sleeve, synchronizer hub, and insert spring.
- Coupling sleeve and synchronizer hub must move smoothly.



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



REVERSE IDLER SHAFT AND GEARS

[RS6F51A]

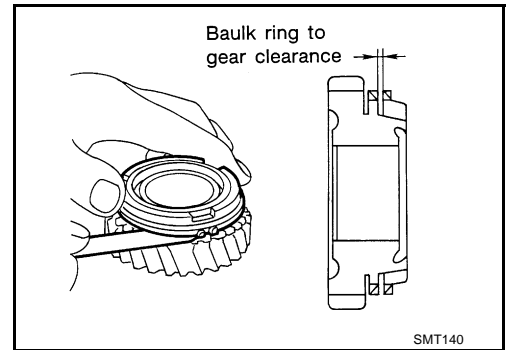
Baulk ring clearance

- Press baulk ring against cone, and measure clearance between baulk ring and cone. If measurement is below limit, replace it with a new one.

Clearance

Standard : 0.95 - 1.4 mm (0.0374 - 0.0551 in)

Limit value : 0.7 mm (0.0276 in)



Bearing

Check items below. If necessary, replace them with new ones.

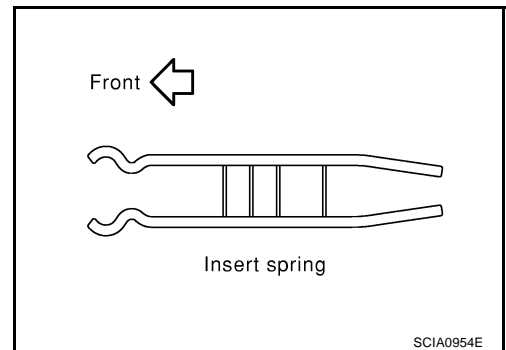
- Damage and rough rotation of bearing.

ASSEMBLY

Paying attention to following work, assemble in reverse order of disassembly.

CAUTION:

- Be careful with orientation of insert spring.



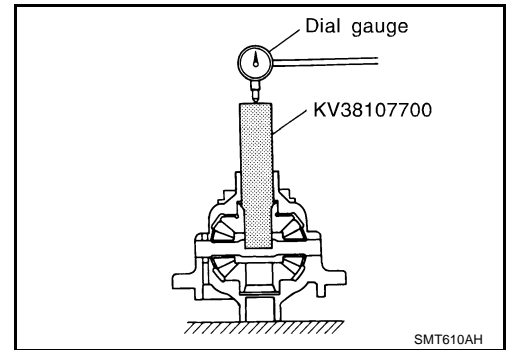
FINAL DRIVE

PFP:38411

Assembly and Disassembly PRE-INSPECTION

ECS006DG

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

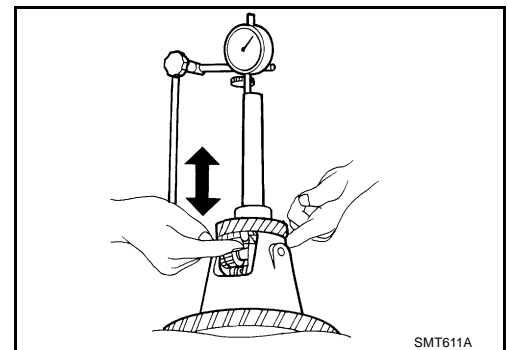


2. Upright the differential case so that the side gear to be measured faces upward.
3. Place final drive adapter and dial gauge onto side gear. Move side gear up and down, and measure the clearance.

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

CAUTION:

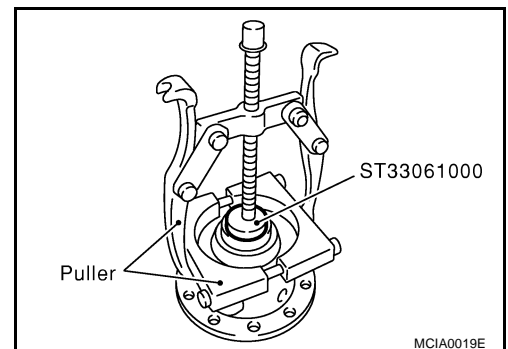
There should be no resistance and gears should rotate freely.



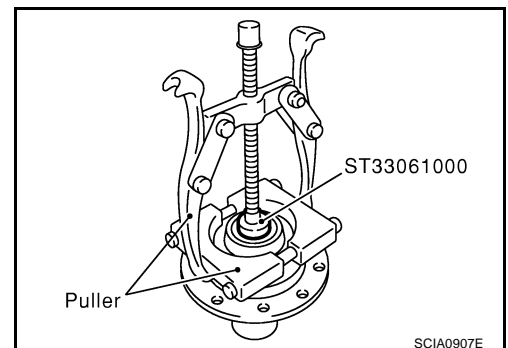
4. If not within specification, adjust the clearance by changing thrust washer thickness.
5. Turn differential case upside down, and measure the clearance between side gear and differential case on the other side in the same way.

DISASSEMBLY

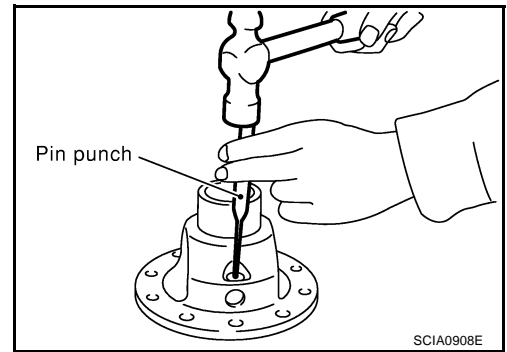
1. Remove mounting bolts. Then, separate the final gear from differential case.
2. Remove speedometer drive gear.
3. Using a drift and puller, remove differential side bearing (clutch housing side).



4. Using a drift and puller, remove differential side bearing (transaxle case side).



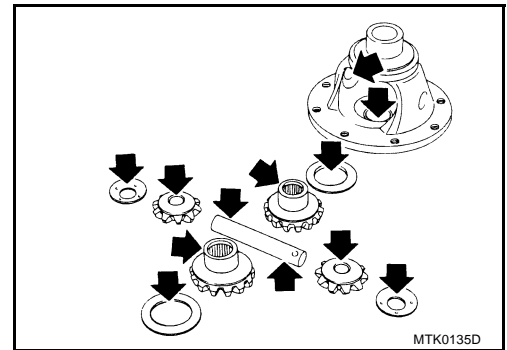
5. Using a pin punch, pull out lock pin and pinion mate shaft.
6. Rotate pinion mate gears, and remove pinion mate gears, pinion mate thrust washers, side gears, and side gear thrust washers from differential case.



INSPECTION AFTER DISASSEMBLY

Gear Washer, Shaft and Case

- Check side gears, side gear thrust washers, pinion mate shaft, pinion mate gears, pinion mate thrust washers and differential case. If necessary, replace with a new one.

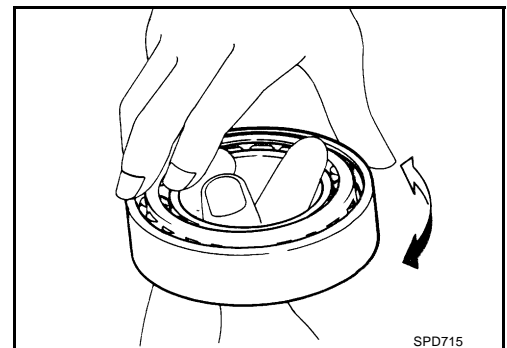


Bearing

- Check for bearing damage and rough rotation. If necessary, replace with a new one.

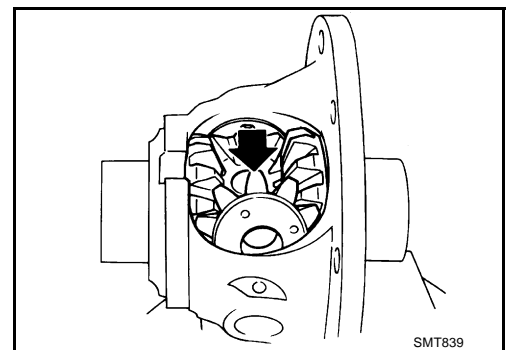
CAUTION:

When replacing tapered roller bearing, replace outer and inner race as a set.



ASSEMBLY

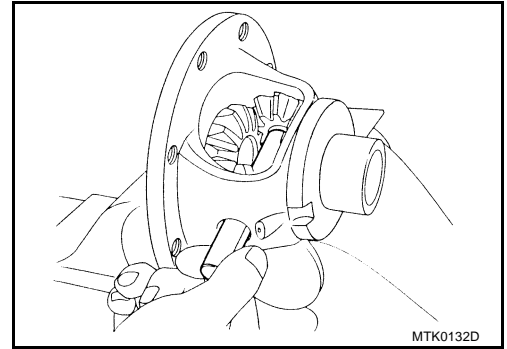
1. Apply gear oil to sliding area of differential case, each gear, and thrust washer.
2. Install side gear thrust washer and side gears into differential case.
3. While rotating pinion mate thrust washers and pinion mate gears, aligning them diagonally, install them into differential case.



4. Insert pinion mate shaft into differential case.

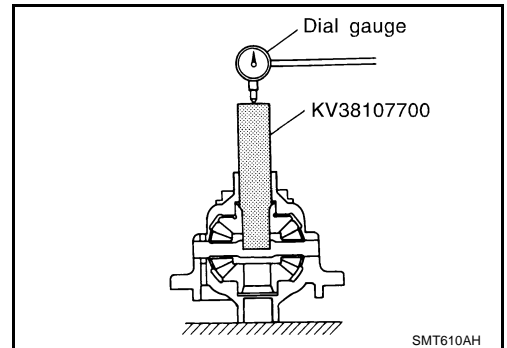
CAUTION:

Be sure not to damage pinion mate thrust washers.



5. Measure end play of side gears following procedure below. Then select side gear thrust washer.

- a. Upright the differential case so that its side gear to be measured face upward.
- b. Place final drive adapter and dial gauge onto side gears.

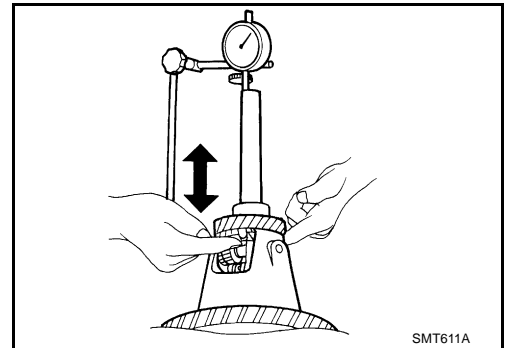


- c. Move side gears up and down to measure end play, and select thrust washer so that it satisfies standard.

End play standard value : 0.1 - 0.2 mm (0.004 - 0.008 in)

CAUTION:

- There should be no resistance and gears should rotate freely.
- Place differential case upside down. Be sure to measure end play for opposite side-gears likewise.



Thrust washer

Shim thickness	Part number
0.75 mm (0.0295 in)	38424 81X00
0.80 mm (0.0315 in)	38424 81X01
0.85 mm (0.0335 in)	38424 81X02
0.90 mm (0.0354 in)	38424 81X03
0.95 mm (0.0374 in)	38424 81X04

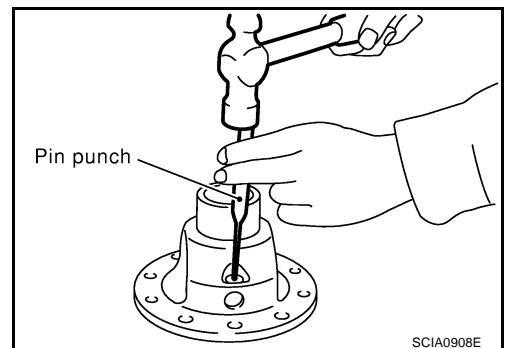
CAUTION:

Only one thrust washer can be selected.

6. Using a pin punch (special service tool), drive a lock pin into the pinion mate shaft.

CAUTION:

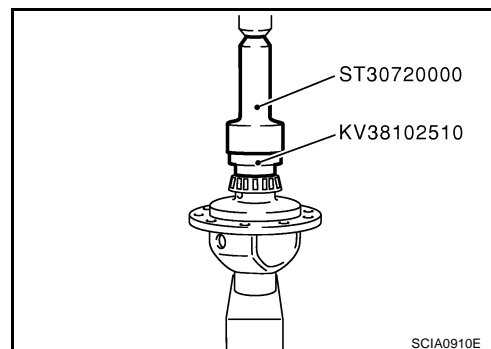
Do not reuse the lock pin.



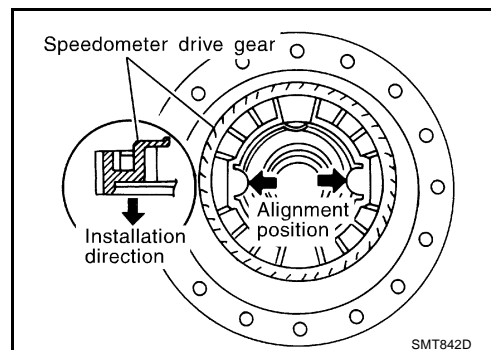
FINAL DRIVE

[RS6F51A]

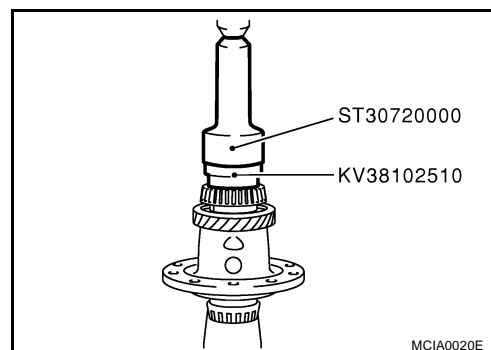
7. Using a drift (special service tool), install differential side bearing (transaxle case side).



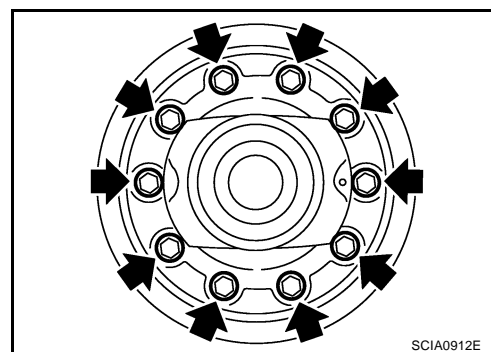
8. Align and install speedometer drive gear onto differential case.



9. Using a drift (special service tool), install differential side bearing (clutch housing side).



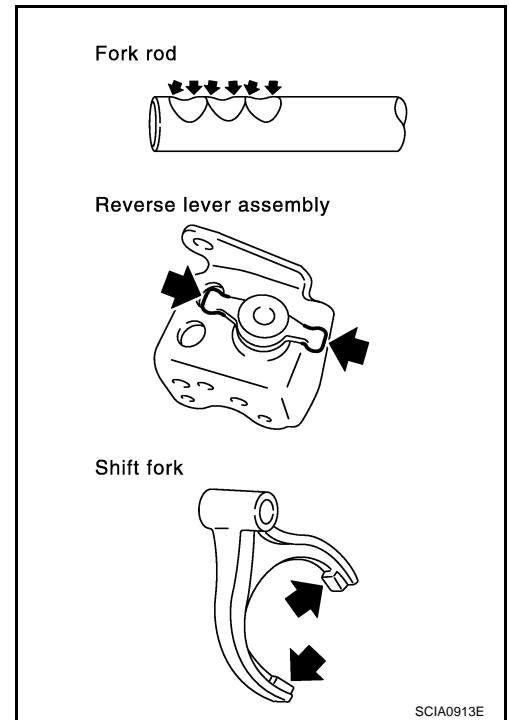
10. Install final gear into differential case, and tighten final gear mounting bolts.



SHIFT CONTROL

Inspection

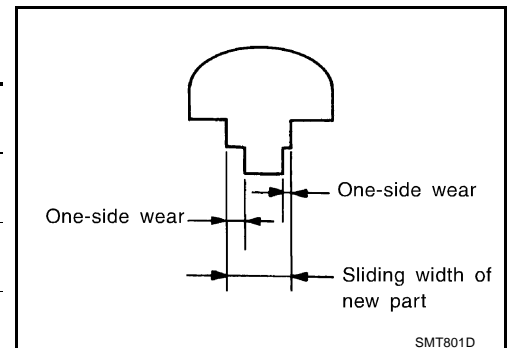
- Check contact surfaces and sliding area for wear, damage, bending, etc. If necessary, replace parts.



SHIFT FORK

- 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 & 6th	0.2 mm (0.008 in)	6.10 - 6.23 mm (0.2402 - 0.2453 in)
Reverse	0.2 mm (0.008 in)	12.80 - 12.93 mm (0.5039 - 0.5091 in)



SERVICE DATA AND SPECIFICATIONS (SDS)

[RS6F51A]

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications TRANSAXLE

ECS006DI

Engine			QR20DE		YD22DDTi	
Transaxle model			RS6F51A			
Model code number			AU460		AV964	
Number of speed			6			
Synchromesh type			Warner			
Shift pattern			<div><div>135</div><div>246</div><div>N</div><div>R</div></div>			
			SCIA0955E			
Gear ratio	1st		3.153		3.416	
	2nd		1.944			
	3rd		1.392		1.258	
	4th		1.055		0.902	
	5th		0.809		0.673	
	6th		0.673		0.540	
	Reverse		3.002		3.252	
Number of teeth	Input gear	1st	13		12	
		2nd	18			
		3rd	28		31	
		4th	36		41	
		5th	42		46	
		6th	49		50	
		Reverse	13		12	
	Main gear	1st	41			
		2nd	35			
		3rd	39			
		4th	38		37	
		5th	34		31	
		6th	33		27	
		Reverse	38			
	Reverse idler gear	Front	37			
Rear		38				
Oil capacity ℓ (Imp pt)			2.3 (4)			
Remarks	Reverse synchronizer		Installed			
	Double baulk ring type syn- chronizer		1st & 2rd synchronizer			

SERVICE DATA AND SPECIFICATIONS (SDS)

[RS6F51A]

FINAL GEAR

Engine	QR20DE		YD22DDTi
Transaxle model	RS6F51A		
Model code number	AU460	AV964	
Final gear ratio	4.750	3.812	
Number of teeth	Final gear/Pinion	76/16	61/16
	Side gear/Pinion mate gear	14/10	

*: Refer to MA section, "RECOMMENDED FLUIDS AND LUBRICANTS".

Gear End Play

ECS006DJ

Unit: mm (in)

Gear	End play
1st main gear	0.20 - 0.30 (0.0079 - 0.0118)
2nd main gear	0.06 - 0.16 (0.0024 - 0.0063)
3rd input gear	0.18 - 0.31 (0.0071 - 0.0122)
4th input gear	0.20 - 0.30 (0.0079 - 0.0118)
5th input gear	0.06 - 0.16 (0.0024 - 0.0063)
6th input gear	0.06 - 0.16 (0.0024 - 0.0063)

Clearance Between Baulk Ring and Gear 3RD, 4TH, 5TH, 6TH & REVERSE BAULK RING

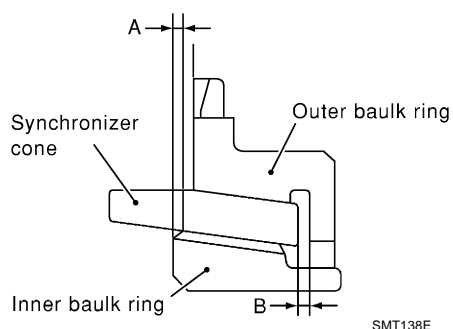
ECS006DK

Unit: mm (in)

	Standard	Wear limit
3rd	0.9 - 1.45 (0.0354 - 0.0571)	0.7 (0.0276)
4th	0.9 - 1.45 (0.0354 - 0.0571)	
5th	0.95 - 1.4 (0.0374 - 0.0551)	
6th	0.95 - 1.4 (0.0374 - 0.0551)	
Reverse	0.95 - 1.4 (0.0374 - 0.0551)	

1ST AND 2ND DOUBLE BAULK RING

Unit: mm (in)



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 6TH BUSHING

ECS006DL

End play	0 - 0.1 mm (0 - 0.004 in)
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SERVICE DATA AND SPECIFICATIONS (SDS)

[RS6F51A]

Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
1.76 (0.0693)	32204 8H511	2.01 (0.0791)	32204 8H516
1.81 (0.0713)	32204 8H512	2.06 (0.0811)	32204 8H517
1.86 (0.0732)	32204 8H513	2.11 (0.0831)	32204 8H518
1.91 (0.0752)	32204 8H514	2.16 (0.0850)	32204 8H519
1.96 (0.0772)	32204 8H515	2.21 (0.0870)	32204 8H520

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

Available C-rings MAINSHAFT C-RING

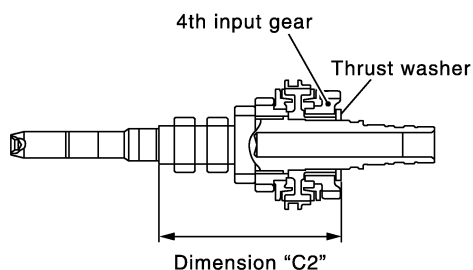
ECS006DM

End play		0 - 0.06 mm (0 - 0.0024 in)	
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
2.535 (0.0998)	32348 8H800	2.835 (0.1116)	32348 8H810
2.565 (0.1010)	32348 8H801	2.865 (0.1128)	32348 8H811
2.595 (0.1022)	32348 8H802	2.895 (0.1140)	32348 8H812
2.625 (0.1033)	32348 8H803	2.925 (0.1152)	32348 8H813
2.655 (0.1045)	32348 8H804	2.955 (0.1163)	32348 8H814
2.685 (0.1057)	32348 8H805	2.985 (0.1175)	32348 8H815
2.715 (0.1069)	32348 8H806	3.015 (0.1187)	32348 8H816
2.745 (0.1081)	32348 8H807	3.045 (0.1199)	32348 8H817
2.775 (0.1093)	32348 8H808	3.075 (0.1211)	32348 8H818
2.805 (0.1104)	32348 8H809		

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

Available Thrust Washer INPUT SHAFT THRUST WASHER

ECS006DN



SCIA1008E

Standard length "C2"		154.7 - 154.8 mm (6.091 - 6.094 in)	
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
3.84 (0.1512)	32347 8H500	4.02 (0.1583)	32347 8H503
3.90 (0.1535)	32347 8H501	4.08 (0.1606)	32347 8H504
3.96 (0.1559)	32347 8H502	4.14 (0.1630)	32347 8H505

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

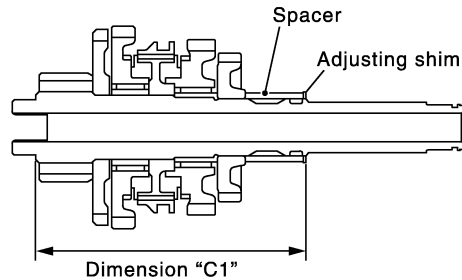
DIFFERENTIAL SIDE GEAR THRUST WASHER

Allowable clearance between side gear and differential case with washer		0.1 - 0.2 mm (0.004 - 0.008 in)	
Thickness mm (in)		Part number*	
0.75 (0.0295)		38424 81X00	
0.80 (0.0315)		38424 81X01	
0.85 (0.0335)		38424 81X02	
0.90 (0.0354)		38424 81X03	
0.95 (0.0374)		38424 81X04	

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

Available Adjusting Shims MAINSHAFT ADJUSTING SHIM

ECS006DO



SCIA1009E

Standard length "C1"		173.85 - 173.95 mm (6.844 - 6.848 in)	
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
0.52 (0.0205)	32238 8H500	0.84 (0.0331)	32238 8H504
0.60 (0.0236)	32238 8H501	0.92 (0.0362)	32238 8H505
0.68 (0.0268)	32238 8H502	1.00 (0.0394)	32238 8H506
0.76 (0.0299)	32238 8H503	1.08 (0.0425)	32238 8H507

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

INPUT SHAFT REAR BEARING ADJUSTING SHIM

End play			0 - 0.06 mm (0 - 0.0024 in)		
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
0.40 (0.0157)	32225 8H500	0.88 (0.0346)	32225 8H512	1.36 (0.0535)	32225 8H524
0.44 (0.0173)	32225 8H501	0.92 (0.0362)	32225 8H513	1.40 (0.0551)	32225 8H560
0.48 (0.0189)	32225 8H502	0.96 (0.0378)	32225 8H514	1.44 (0.0567)	32225 8H561
0.52 (0.0205)	32225 8H503	1.00 (0.0394)	32225 8H515	1.48 (0.0583)	32225 8H562
0.56 (0.0220)	32225 8H504	1.04 (0.0409)	32225 8H516	1.52 (0.0598)	32225 8H563
0.60 (0.0236)	32225 8H505	1.08 (0.0425)	32225 8H517	1.56 (0.0614)	32225 8H564
0.64 (0.0252)	32225 8H506	1.12 (0.0441)	32225 8H518	1.60 (0.0630)	32225 8H565
0.68 (0.0268)	32225 8H507	1.16 (0.0457)	32225 8H519	1.64 (0.0646)	32225 8H566
0.72 (0.0283)	32225 8H508	1.20 (0.0472)	32225 8H520		
0.76 (0.0299)	32225 8H509	1.24 (0.0488)	32225 8H521		
0.80 (0.0315)	32225 8H510	1.28 (0.0504)	32225 8H522		
0.84 (0.0331)	32225 8H511	1.32 (0.0520)	32225 8H523		

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

MAINSHAFT REAR BEARING ADJUSTING SHIM

End play		0 - 0.06 mm (0 - 0.0024 in)	
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
0.44 (0.0173)	32238 8H510	0.80 (0.0315)	32238 8H519
0.48 (0.0189)	32238 8H511	0.84 (0.0331)	32238 8H520
0.52 (0.0205)	32238 8H512	0.88 (0.0346)	32238 8H521
0.56 (0.0220)	32238 8H513	0.92 (0.0362)	32238 8H522
0.60 (0.0236)	32238 8H514	0.96 (0.0378)	32238 8H523
0.64 (0.0252)	32238 8H515	1.00 (0.0394)	32238 8H524
0.68 (0.0268)	32238 8H516	1.04 (0.0409)	32238 8H560
0.72 (0.0283)	32238 8H517	1.08 (0.0425)	32238 8H561
0.76 (0.0299)	32238 8H518		

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

REVERSE IDLER GEAR ADJUSTING SHIM

End play	0.04 - 0.10 mm (0.0016 - 0.0039 in)
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SERVICE DATA AND SPECIFICATIONS (SDS)

[RS6F51A]

Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
1.76 (0.0693)	32237 8H800	2.24 (0.0882)	32237 8H812
1.80 (0.0709)	32237 8H801	2.28 (0.0898)	32237 8H813
1.84 (0.0724)	32237 8H802	2.32 (0.0913)	32237 8H814
1.88 (0.0740)	32237 8H803	2.36 (0.0929)	32237 8H815
1.92 (0.0756)	32237 8H804	2.40 (0.0945)	32237 8H816
1.96 (0.0772)	32237 8H805	2.44 (0.0961)	32237 8H817
2.00 (0.0787)	32237 8H806	2.48 (0.0976)	32237 8H818
2.04 (0.0803)	32237 8H807	2.52 (0.0992)	32237 8H819
2.08 (0.0819)	32237 8H808	2.56 (0.1008)	32237 8H820
2.12 (0.0835)	32237 8H809	2.60 (0.1024)	32237 8H821
2.16 (0.0850)	32237 8H810	2.64 (0.1039)	32237 8H822
2.20 (0.0866)	32237 8H811		

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

6TH MAIN GEAR ADJUSTING SHIM

End play		0 - 0.1 mm (0 - 0.004 in)	
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
0.88 (0.0346)	32237 8H560	1.20 (0.0472)	32237 8H564
0.96 (0.0378)	32237 8H561	1.28 (0.0504)	32237 8H565
1.04 (0.0409)	32237 8H562	1.36 (0.0535)	32237 8H566
1.12 (0.0441)	32237 8H563		

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

Available Shims

ECS006DP

— Differential Side Bearing Preload and Adjusting Shim

BEARING PRELOAD

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

DIFFERENTIAL SIDE BEARING ADJUSTING SHIM (S)

Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
0.48 (0.0189)	31438 80X00	0.72 (0.0283)	31438 80X06
0.52 (0.0205)	31438 80X01	0.76 (0.0299)	31438 80X07
0.56 (0.0220)	31438 80X02	0.80 (0.0315)	31438 80X08
0.60 (0.0236)	31438 80X03	0.84 (0.0331)	31438 80X09
0.64 (0.0252)	31438 80X04	0.88 (0.0346)	31438 80X10
0.68 (0.0268)	31438 80X05	0.92 (0.0362)	31438 80X11

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