SECTION MT
MANUAL TRANSAXLE

CONTENTS

PRECAUTIONS

PFP:00001

Service Notice or Precautions

BCS0009U

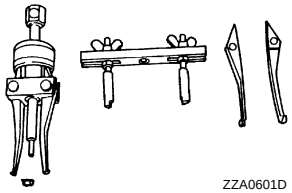
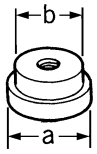
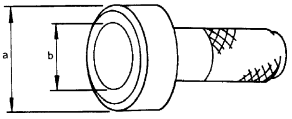
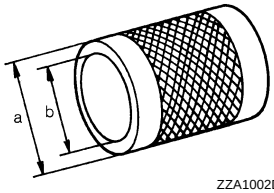
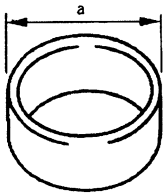
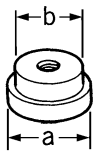
- Do not reuse transaxle oil, once it has been drained.
- Check oil level or replace oil with vehicle on level surface.
- During removal or installation, keep inside of transaxle clear of dust or dirt.
- Check for the correct installation status prior to removal or disassembly. If matching marks are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

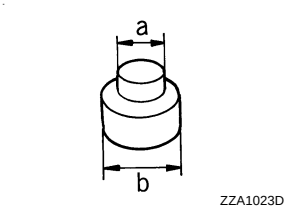
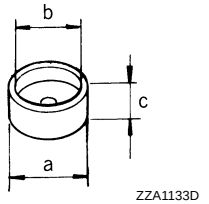
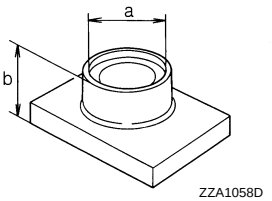
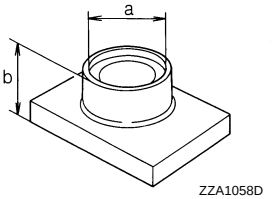
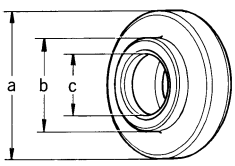
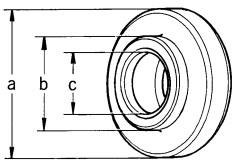
PREPARATION

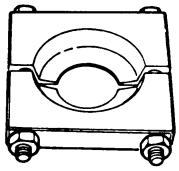
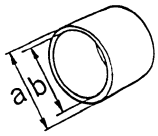
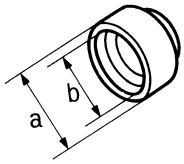
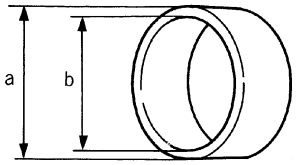
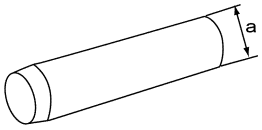
PFP:00002

Special Service Tools

BCS0009V

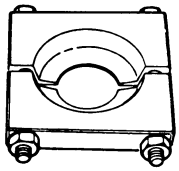
Tool number Tool name		Description
KV381054S0 Puller	 ZZA0601D	● Removing differential side bearing outer race ● Removing mainshaft front bearing
ST35321000 Drift a: 49 mm (1.93 in) dia. b: 41 mm (1.61 in) dia.	 ZZA1000D	● Installing input shaft oil seal ● Installing reverse main gear ● Installing 1st main gear bushing ● Installing 1st-2nd synchronizer hub assembly ● Installing 2nd main gear bushing ● Installing 3rd main gear ● Removing differential side bearing (clutch housing side for 4WD models)
ST30720000 Drift a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.	 ZZA0811D	● Installing differential side oil seal ● Installing differential side bearing outer race ● Installing mainshaft rear bearing ● Installing differential side bearing
ST33200000 Drift a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia.	 ZZA1002D	● Installing mainshaft front bearing ● Installing 6th input gear bushing (RS6F51A) ● Installing 4th main gear ● Installing 5th main gear ● Installing 6th main gear (RS6F51A)
KV40105320 Drift a: 88 mm (3.46 in) dia.	 ZZA0898D	Installing differential side bearing outer race
ST33061000 Drift a: 38 mm (1.50 in) dia. b: 28.5 mm (1.122 in) dia.	 ZZA1000D	● Installing bore plug ● Removing differential side bearing (clutch housing side for 2WD models) ● Removing differential side bearing (transaxle case side for 4WD models)

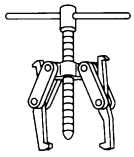
Tool number Tool name	Description
ST33052000 Drift a: 22 mm (0.87 in) dia. b: 28 mm (1.10 in) dia.  ZZA1023D	● Installing welch plug ● Removing input shaft rear bearing ● Removing input shaft bearing spacer and 5th stopper (RS5F51A) ● Removing 5th input gear bushing, thrust washer, 4th input gear, 4th input gear bushing, 3rd-4th synchronizer hub assembly and 3rd input gear ● Installing input shaft front bearing ● Removing 6th input gear and 6th input gear bushing (RS6F51A) ● Removing mainshaft rear bearing ● Removing 4th main gear and 5th main gear ● Removing 6th main gear (RS6F51A)
KV40105020 Drift a: 39.7 mm (1.563 in) dia. b: 35 mm (1.38 in) dia. c: 15 mm (0.59 in)  ZZA1133D	● Removing 5th input gear, 5th synchronizer hub assembly (RS5F51A) and 5th-6th synchronizer hub assembly (RS6F51A) ● Removing 3rd main gear, 2nd main gear, 2nd main gear bushing, 1st-2nd synchronizer hub assembly, 1st main gear, reverse main gear and 1st main gear bushing
KV40105710 Press stand a: 46 mm (1.81 in) dia. b: 41 mm (1.61 in)  ZZA1058D	● Installing 3rd-4th synchronizer hub assembly ● Installing 4th input gear bushing ● Installing 5th input gear bushing ● Installing 5th synchronizer hub assembly (RS5F51A) ● Installing 5th-6th synchronizer hub assembly (RS6F51A) ● Installing 2nd main gear bushing ● Installing 3rd main gear
ST38220000 Press stand a: 63 mm (2.48 in) dia. b: 65 mm (2.56 in)  ZZA1058D	● Installing reverse main gear ● Installing 1st main gear bushing ● Installing 1st-2nd synchronizer hub assembly
ST30032000 Drift a: 80 mm (3.15 in) dia. b: 38 mm (1.50 in) dia. c: 31 mm (1.22 in) dia.  ZZA0978D	● Installing 5th stopper and input shaft bearing spacer (RS5F51A) ● Installing input shaft front bearing
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	● Installing input shaft rear bearing ● Installing 4th main gear ● Installing 5th main gear ● Installing 6th main gear (RS6F51A) ● Installing mainshaft rear bearing

Tool number Tool name	Description
ST30031000 Puller  ZZA0537D	Measuring wear of inner baulk ring
KV40101630 Drift a: 68 mm (2.68 in) dia. b: 60 mm (2.36 in) dia.  ZZA1003D	Installing reverse main gear
KV38102510 Drift a: 71 mm (2.80 in) dia. b: 65 mm (2.56 in) dia.  ZZA0838D	● Installing 1st main gear bushing ● Installing 1st-2nd synchronizer hub assembly ● Installing differential side bearing (clutch housing side for 2WD models) ● Installing differential side bearing (transaxle case side for 4WD models)
KV40104830 Drift a: 70 mm (2.76 in) dia. b: 63.5 mm (2.500 in) dia.  ZZA0936D	Installing differential side bearing (clutch housing side for 4WD models)
ST15243000 Drift a: 30 mm (1.18 in) dia.  SCIA1088J	Measuring end play of side gear

Commercial Service Tools

BCS0009W

Tool name	Description
Puller  ZZA0537D	Removing each bearing, gear and bushing

Tool name	Description
Puller  NT077	Removing each bearing, gear and bushing
Pin punch Tip diameter: 4.5 mm (0.177 in) dia.  ZZA0815D	Removing and installing each retaining pin

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting Chart

BCS0009X

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.

Reference page		MA-39			MT-22 (RS5F51A), MT-40 (RS6F51A)			MT-16	MT-25 (RS5F51A), MT-43 (RS6F51A)		MT-23 (RS5F51A), MT-41 (RS6F51A)			
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			

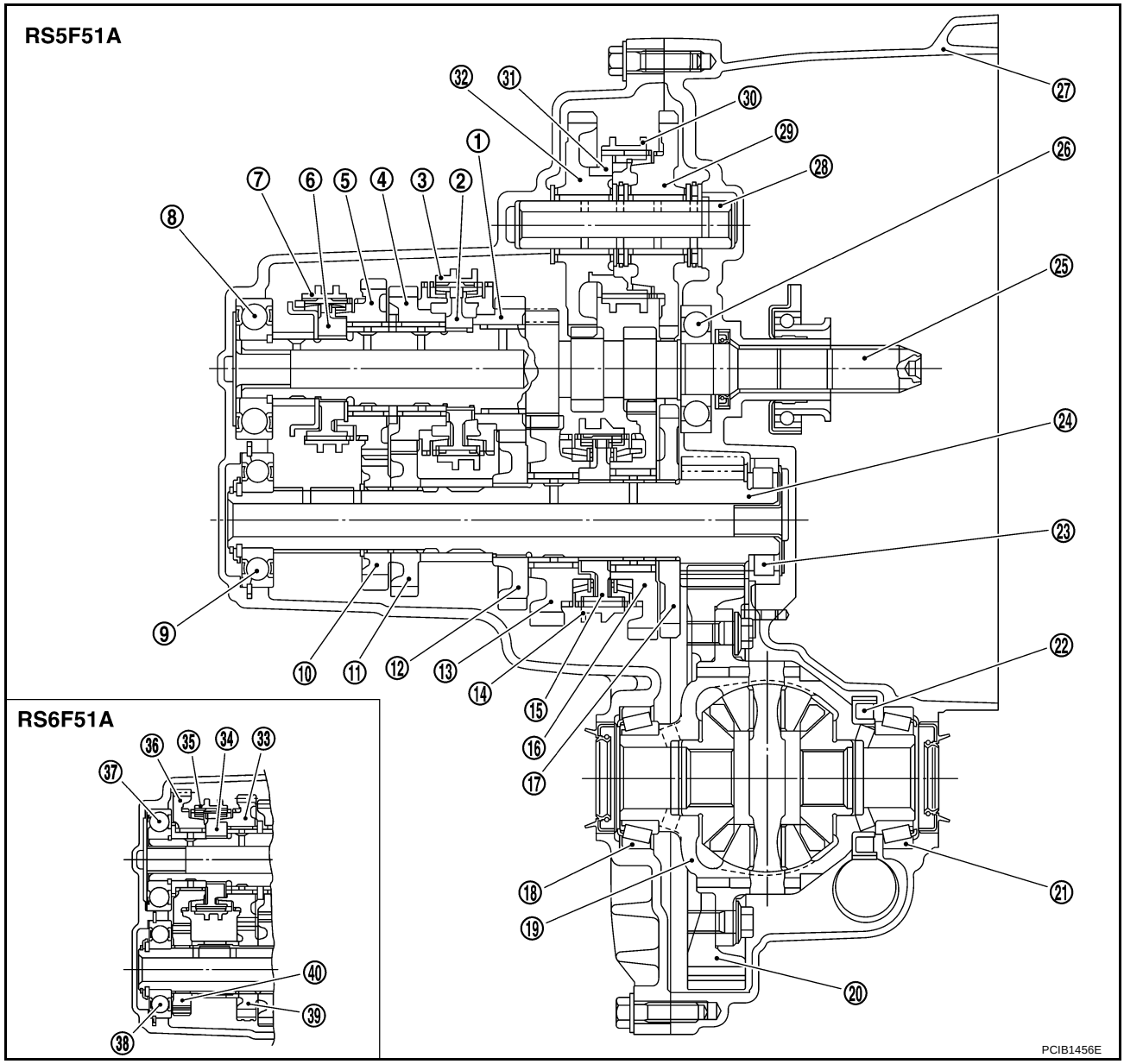
DESCRIPTION

PFP:00000

Cross-Sectional View

BCS0009Y

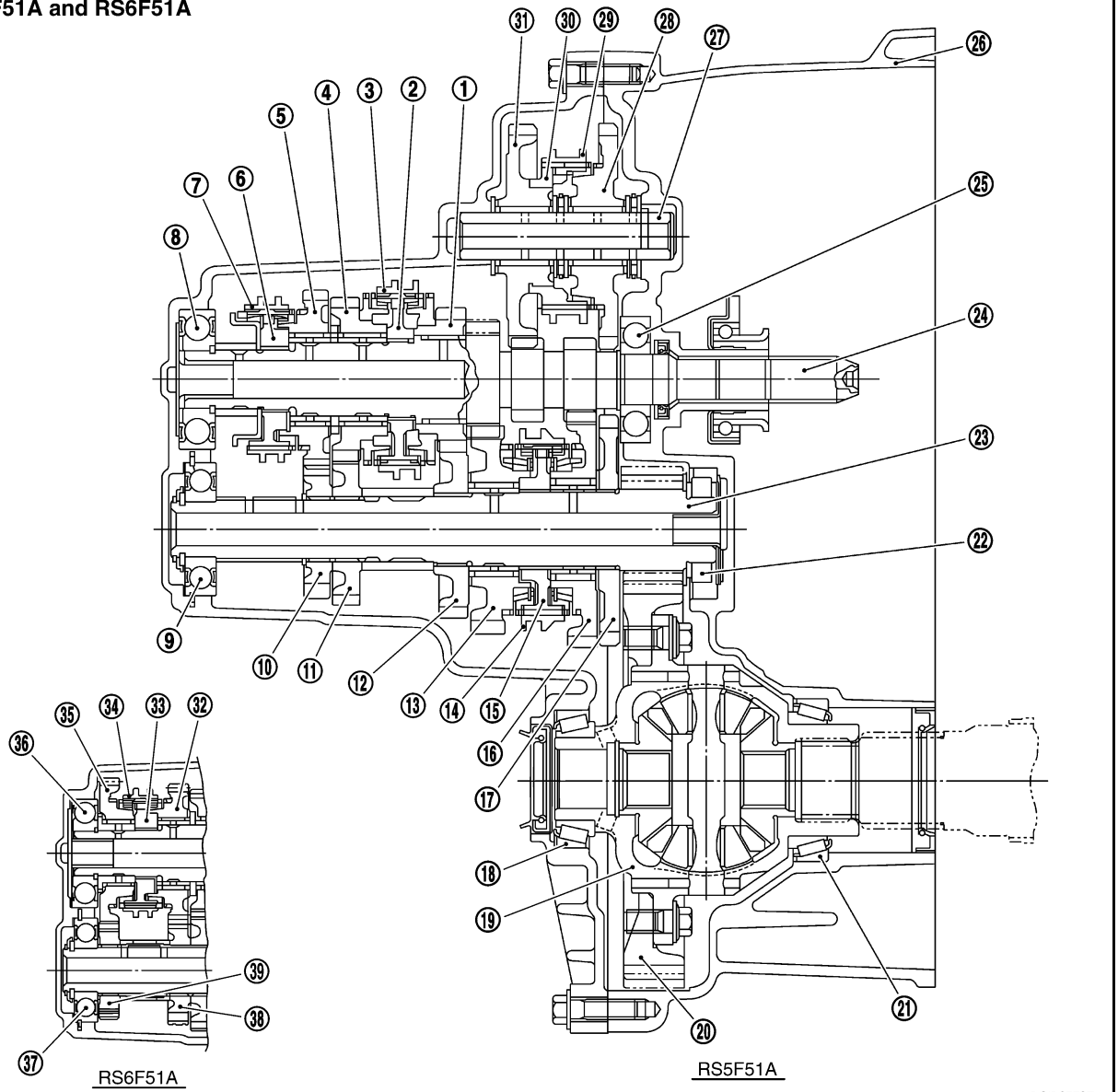
2WD models



1. 3rd input gear
2. 3rd-4th synchronizer hub
3. 3rd-4th coupling sleeve
4. 4th input gear
5. 5th input gear
6. 5th synchronizer hub
7. 5th coupling sleeve
8. Input shaft rear bearing
9. Mainshaft rear bearing
10. 5th main gear
11. 4th main gear
12. 3rd main gear
13. 2nd main gear
14. 1st-2nd coupling sleeve
15. 1st-2nd synchronizer hub
16. 1st main gear
17. Reverse main gear
18. Differential side bearing
19. Differential case
20. Final gear
21. Differential side bearing
22. Speedometer drive gear
23. Mainshaft front bearing
24. Mainshaft
25. Input shaft
26. Input shaft front bearing
27. Clutch housing
28. Reverse idler shaft
29. Reverse idler gear (Front)
30. Reverse coupling sleeve
31. Reverse synchronizer hub
32. Reverse idler gear (Rear)
33. 5th input gear
34. 5th-6th synchronizer hub
35. 5th-6th coupling sleeve
36. 6th input gear
37. Input shaft rear bearing
38. Mainshaft rear bearing
39. 5th main gear
40. 6th main gear

4WD models

RS5F51A and RS6F51A



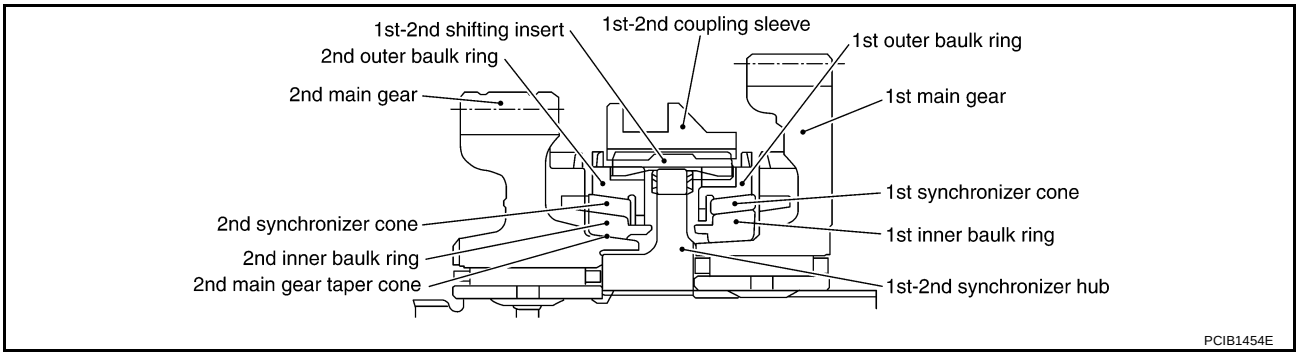
1. 3rd input gear
2. 3rd-4th synchronizer hub
3. 3rd-4th coupling sleeve
4. 4th input gear
5. 5th input gear
6. 5th synchronizer hub
7. 5th coupling sleeve
8. Input shaft rear bearing
9. Mainshaft rear bearing
10. 5th main gear
11. 4th main gear
12. 3rd main gear
13. 2nd main gear
14. 1st-2nd coupling sleeve
15. 1st-2nd synchronizer hub
16. 1st main gear
17. Reverse main gear
18. Differential side bearing
19. Differential case
20. Final gear
21. Differential side bearing
22. Mainshaft front bearing
23. Mainshaft
24. Input shaft
25. Input shaft front bearing
26. Clutch housing
27. Reverse idler shaft
28. Reverse idler gear (Front)
29. Reverse coupling sleeve
30. Reverse synchronizer hub
31. Reverse idler gear (Rear)
32. 5th input gear
33. 5th-6th synchronizer hub
34. 5th-6th coupling sleeve
35. 6th input gear
36. Input shaft rear bearing
37. Mainshaft rear bearing
38. 5th main gear
39. 6th main gear

DOUBLE-CONE SYNCHRONIZER

Double-cone synchronizer is adopted for 3rd gear to reduce operating force of the shift lever.

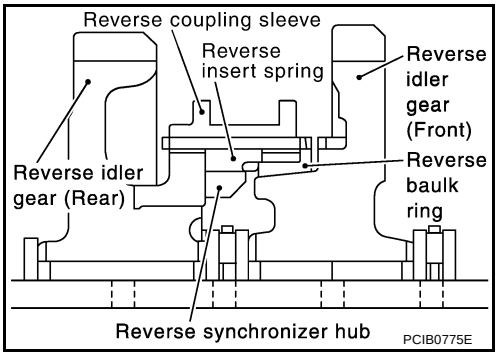
TRIPLE-CONE SYNCHRONIZER

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



REVERSE GEAR NOISE PREVENTION FUNCTION (SYNCHRONIZING METHOD)

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



M/T OIL

PFP:KLD20

Changing M/T Oil

BCS0009Z

DRAINING

1. Start engine and let it run to warm up transaxle.
2. Stop engine. Remove drain plug and then drain oil.
3. Set a gasket on drain plug and install it to transaxle case. Tighten drain plug to the specified torque. Refer to MT-22, "Case and Housing Components" (RS5F51A) or MT-40, "Case and Housing Components" (RS6F51A).

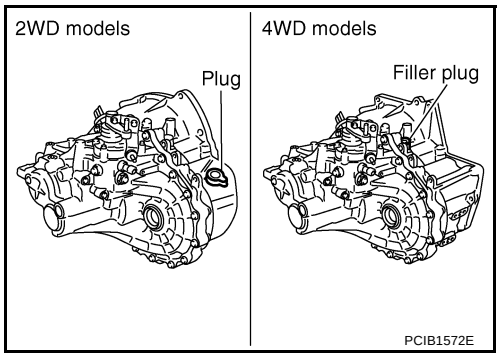
   CAUTION:
   Do not reuse gasket.

FILLING

1. Remove plug (for 2WD models) or filler plug (for 4WD models). Fill with new oil to transaxle.

   Oil grade and viscosity: **Refer to MA-17, "Fluids and Lubricants" .**

   Oil capacity (reference): **Approx. 2.2 ℓ (3-7/8 Imp pt)**



2. After refilling oil, check oil level.
3. Set a O-ring on plug (for 2WD models) or gasket on filler plug (for 4WD models) and then install it to clutch housing.

   CAUTION:
   Do not reuse O-ring or gasket.
4. Tighten plug mounting bolt (for 2WD models) or filler plug (for 4WD models) to the specified torque. Refer to MT-22, "Case and Housing Components" (RS5F51A) or MT-40, "Case and Housing Components" (RS6F51A).

Checking M/T Oil

BCS000A0

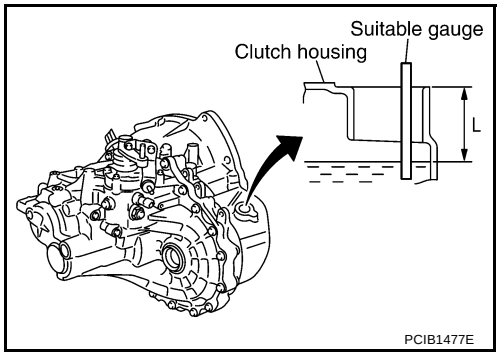
OIL LEAKAGE AND OIL LEVEL

- Make sure that oil is not leaking from transaxle or around it.
- Remove plug (for 2WD models) or filler plug (for 4WD models).
- Measure oil level using a suitable gauge as shown in the figure, and then check if it is within the specifications.

  CAUTION:
  Do not start engine while checking oil level.

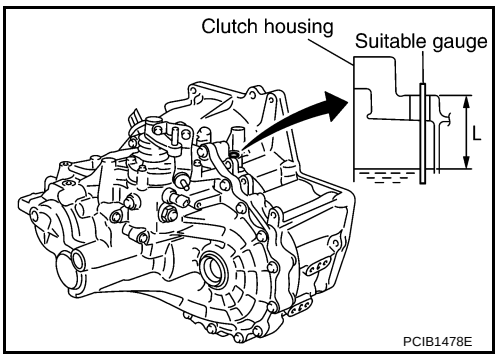
– **For 2WD models**

Oil level “L”: **55.0 - 61.0 mm (2.17 - 2.40 in)**



– **For 4WD models**

Oil level “L”: 168.0 - 174.0 mm (6.61 - 6.85 in)



- Set a O-ring on plug (for 2WD models) or gasket on filler plug (for 4WD models) and then install it to clutch housing.

  CAUTION:
  Do not reuse O-ring or gasket.
- Tighten plug mounting bolt (for 2WD models) or filler plug (for 4WD models) to the specified torque. Refer to MT-22, "Case and Housing Components" (RS5F51A) or MT-40, "Case and Housing Components" (RS6F51A).

SIDE OIL SEAL

PFP:32113

Removal and Installation

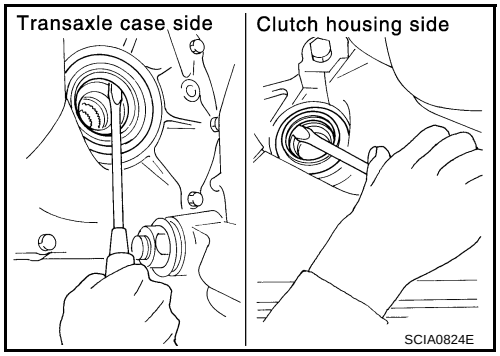
BCS000A1

REMOVAL

- **Clutch housing side oil seal used on 4WD vehicles is attached to transfer. Be sure to replace it when transfer is removed.**

1. Remove drive shaft from transaxle. Refer to FAX-11, "FRONT DRIVE SHAFT" .
2. Remove oil seal using a flat-bladed screwdriver.

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



INSTALLATION

1. Drive the oil seal straight until it protrudes from the case end equal to the dimension “A” shown in the figure by using the drift.

   Dimension “A”:

   Within 0.5 mm (0.020 in) of flush with the case.

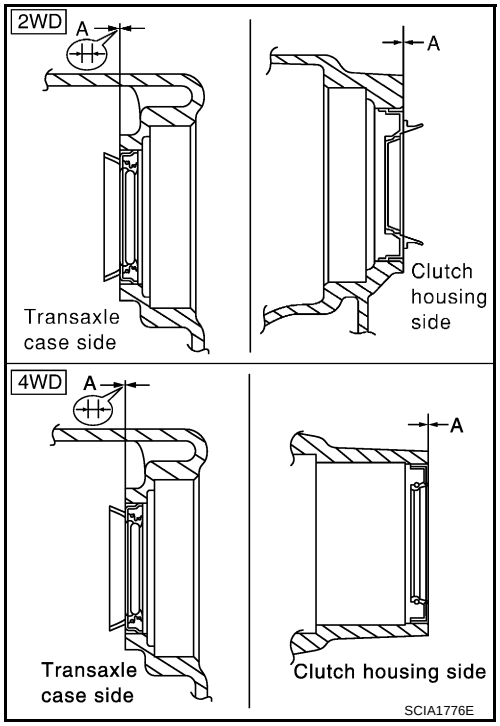
   Drift to be used

   Transaxle case side : ST30720000

   Clutch housing side : ST30720000

   CAUTION:
   - **Apply multi-purpose grease onto oil seal lip (for clutch housing side of 4WD models).**
   - **Do not reuse oil seal.**

2. Install all parts in the reverse order of removal and check oil level after installation. Refer to MT-12, "Checking M/T Oil" .



POSITION SWITCH

PFP:32005

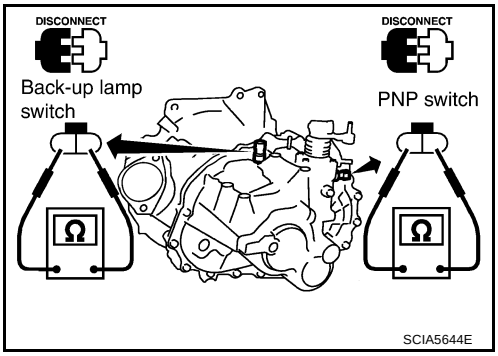
Checking

BCS000A2

BACK-UP LAMP SWITCH

- Check continuity.

Gear position	Continuity
Reverse	Yes
Except reverse	No



PARK/NEUTRAL POSITION (PNP) SWITCH

- Check continuity.

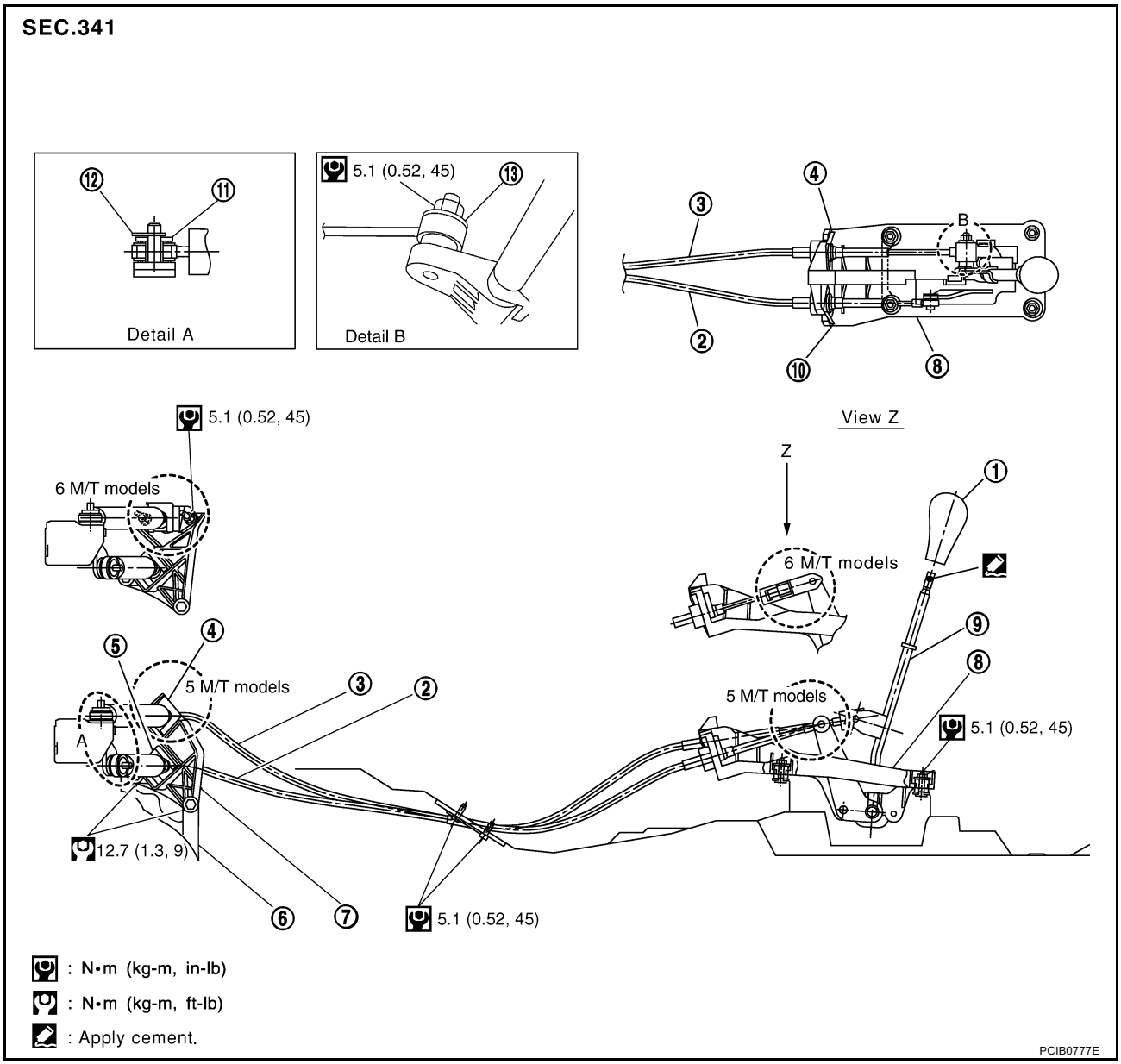
Gear position	Continuity
Neutral	Yes
Except neutral	No

CONTROL LINKAGE

PFP:34103

Components of Control Device and Cable

BCS000A3



1. Control lever knob
2. Select cable
3. Shift cable
4. Lock plate (shift side)
5. Lock plate (select side)
6. Clutch housing
7. Cable mounting bracket
8. Control device assembly
9. Control lever
10. Lock plate
11. Washer
12. Snap pin
13. Washer

Removal and Installation

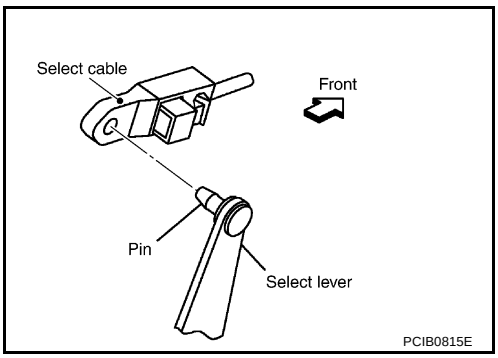
BCS000A4

Note the following, when removal and installation.

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

Install select cable according to the following procedure.

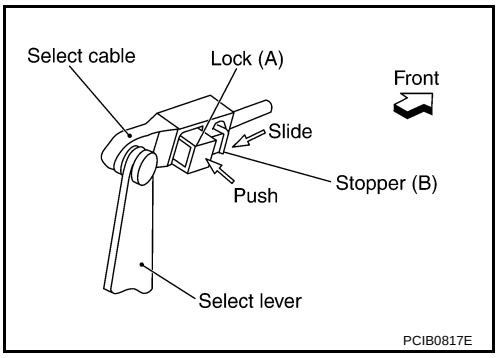
1. Install select cable of transaxle side to control assembly.
2. Install select cable to pin on select lever part of control device assembly.



3. Push lock part (A) of select cable all the way to the direction of the arrow (for 6M/T models).
4. Slide stopper part (B) all the way to lock part (A) as shown by the arrow (for 6M/T models).

CAUTION:

Make sure that select cable and select lever are installed securely.



AIR BREATHER HOSE

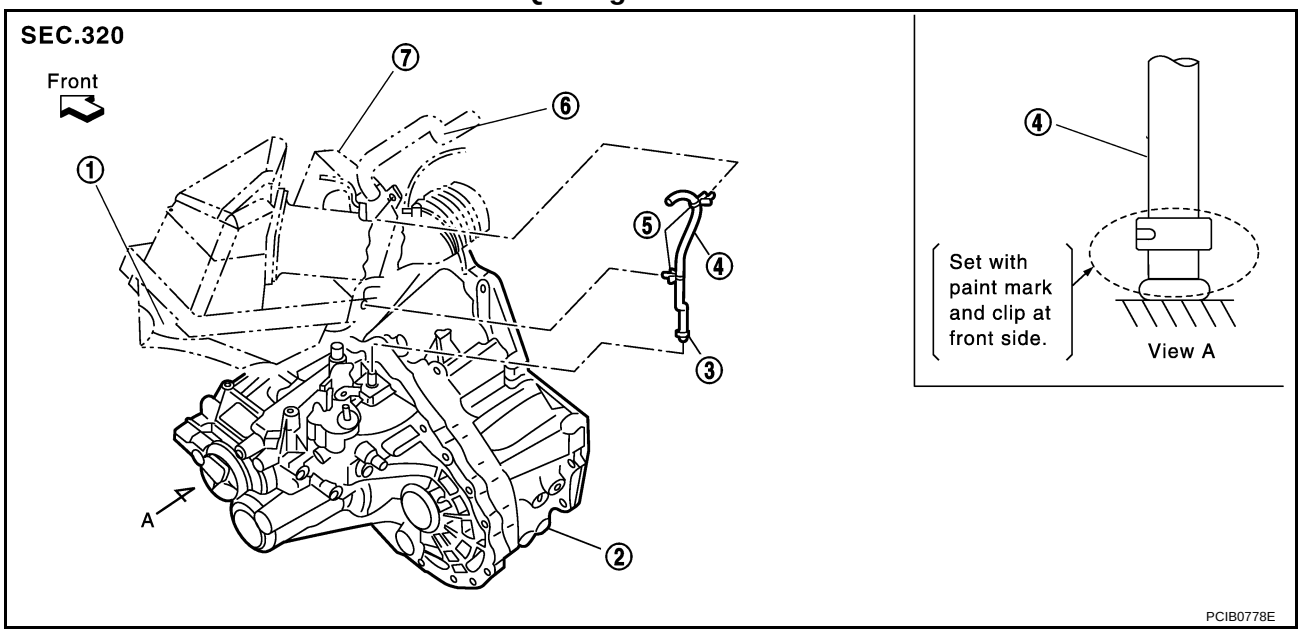
PFP:31098

Removal and Installation

BCS000A5

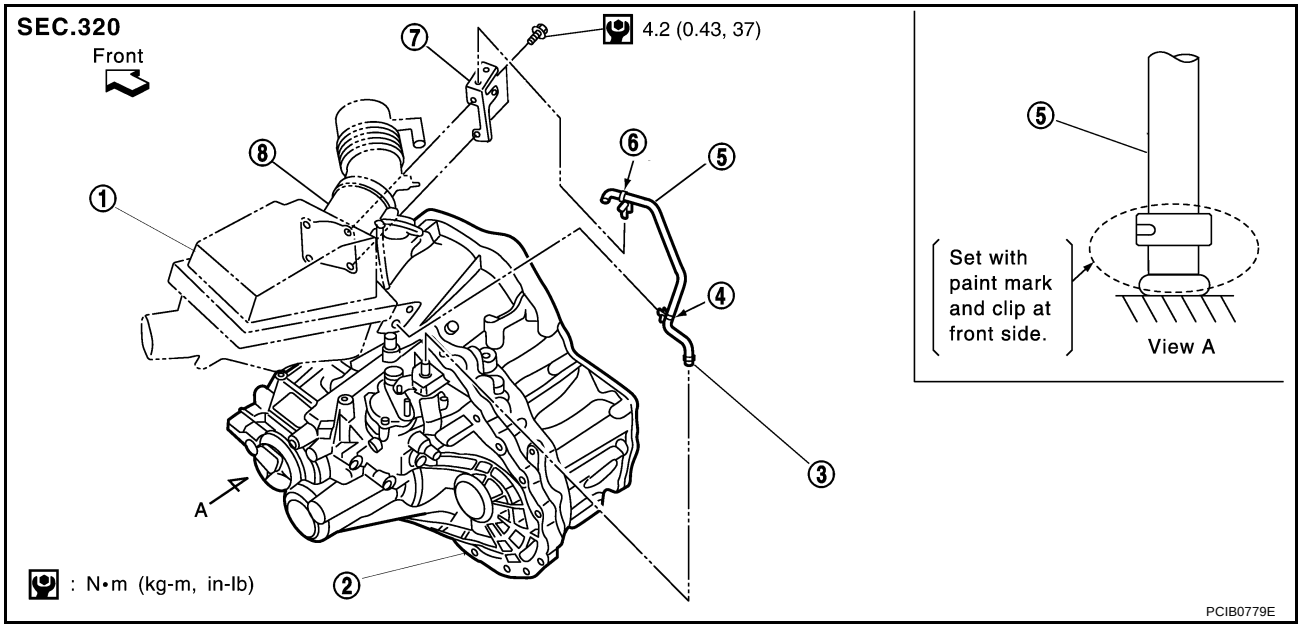
Refer to the figure for air breather hose removal and installation information.

QR engine models



1. Air cleaner case
2. Transaxle assembly
3. Clip
4. Air breather hose
5. Clip
6. PCV hose
7. Resonator

YD engine models



1. Air cleaner case
2. Transaxle assembly
3. Clip
4. Clip
5. Air breather hose
6. Clip
7. Bracket
8. Mass air flow sensor

CAUTION:

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

TRANSAXLE ASSEMBLY

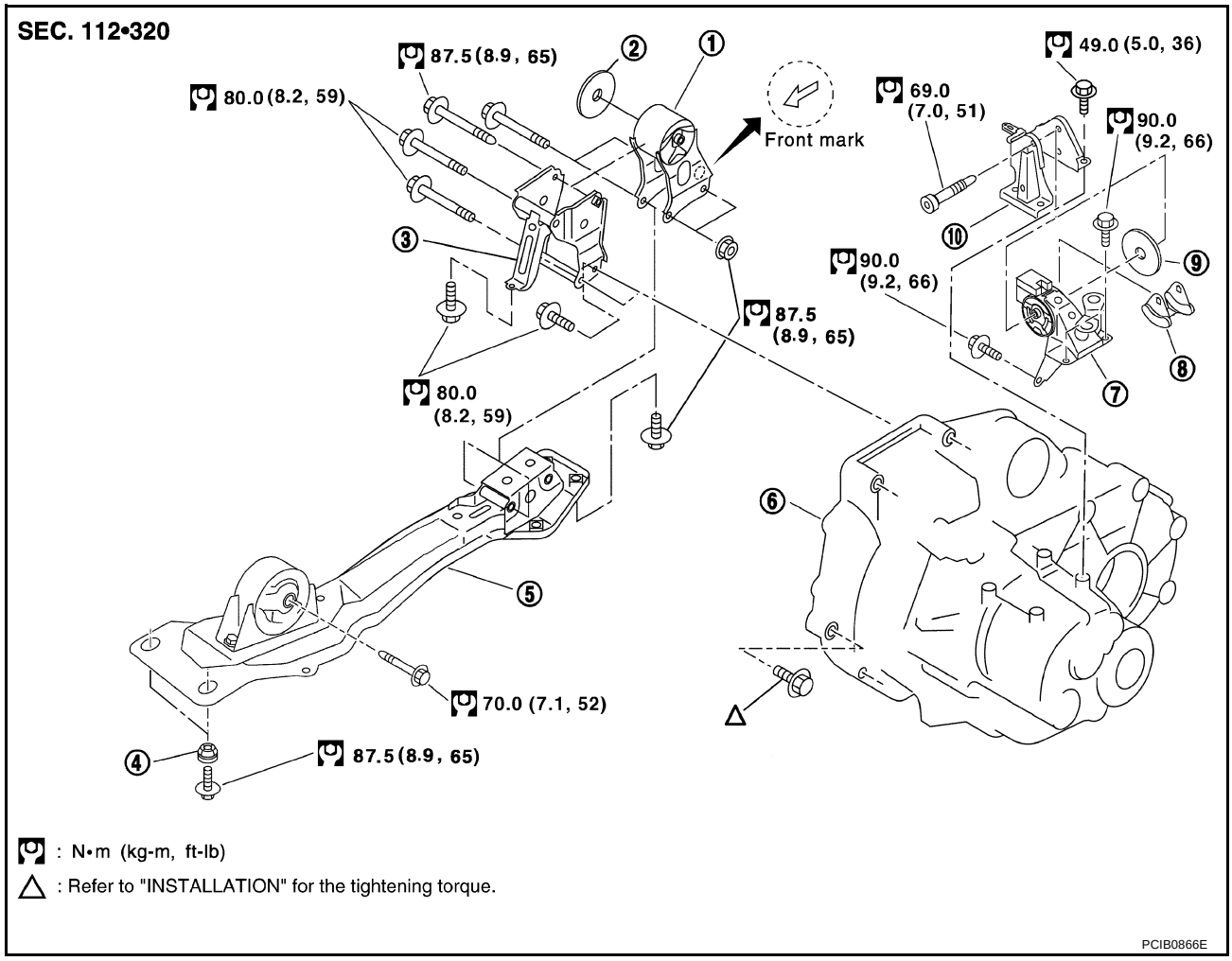
PFP:32010

Removal and Installation

BCS000A6

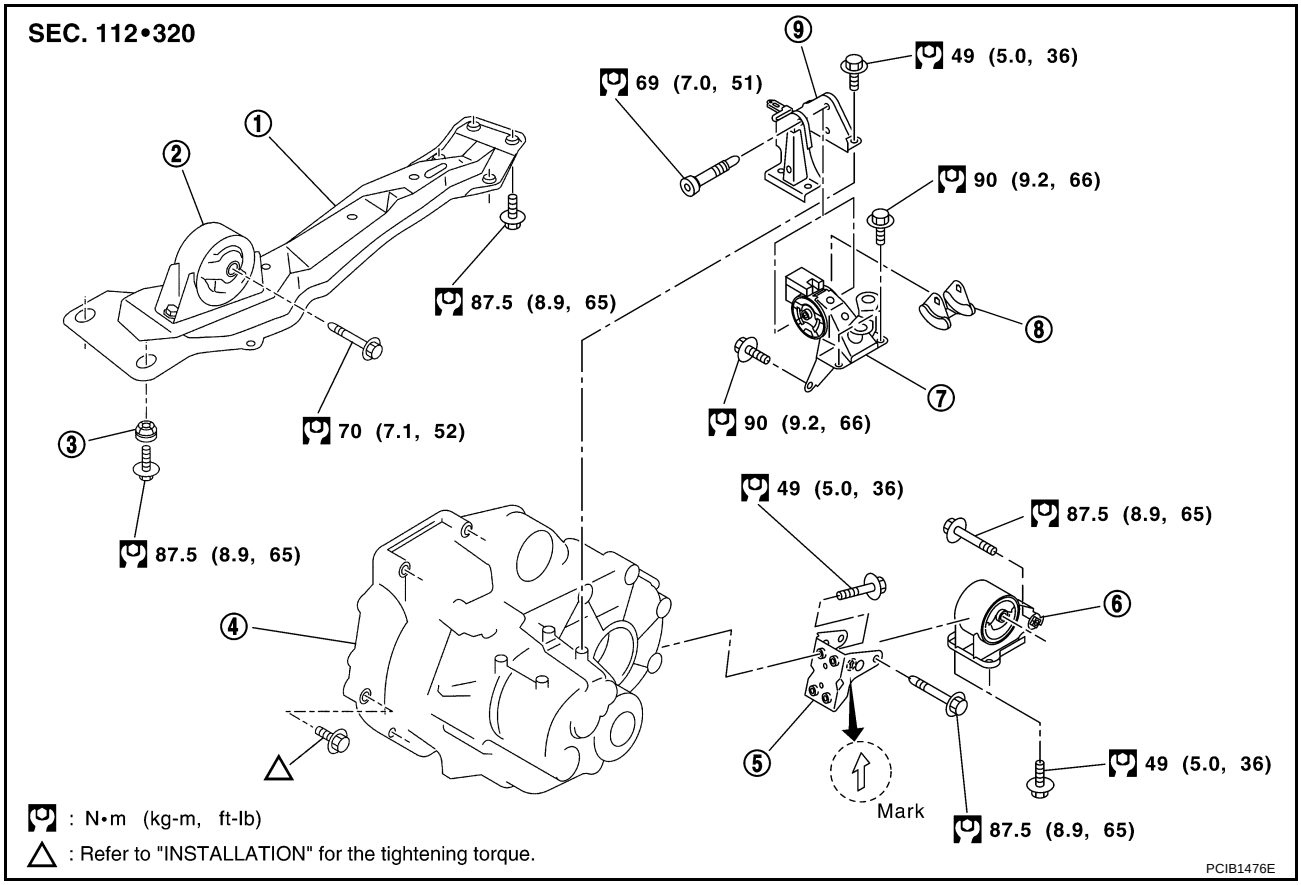
COMPONENTS

2WD models



1. Rear engine mounting insulator
2. Rubber seat
3. Rear engine mounting bracket
4. Grommet
5. Center member
6. Transaxle assembly
7. LH engine mounting insulator
8. Stopper
9. Rubber seat
10. LH engine mounting bracket

4WD models



1. Center member
2. Front engine mounting insulator
3. Grommet
4. Transaxle assembly
5. Rear engine mounting bracket
6. Rear engine mounting insulator
7. LH engine mounting insulator
8. Stopper
9. LH engine mounting bracket

REMOVAL

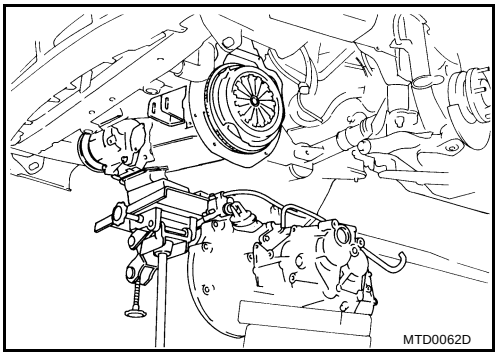
1. Disconnect the battery cable from the negative terminal.
2. Remove battery. Refer to SC-12, "Removal and Installation" .
3. Remove air cleaner and air duct. Refer to EM-16, "Removal and Installation" (QR engine models) or EM-141, "Removal and Installation" (YD engine models).
4. Remove air breather hose. Refer to MT-18, "Removal and Installation" .
5. Remove clutch operating cylinder. Refer to CL-12, "Removal and Installation" .

   CAUTION:
   Do not depress clutch pedal during removal procedure.
6. Disconnect control cable from transaxle assembly. Refer to MT-17, "Removal and Installation" .
7. Drain gear oil. Refer to MT-12, "Changing M/T Oil" .
8. Disconnect PNP switch, back-up lamp switch and ground harness connectors.
9. Remove exhaust front tube. Refer to EX-2, "Removal and Installation" .
10. Remove drive shaft. Refer to FAX-11, "FRONT DRIVE SHAFT" .
11. Remove transfer (for 4WD models). Refer to TF-57, "Removal and Installation" .
12. Remove starter motor. Refer to SC-27, "Removal and Installation" .
13. Support transaxle assembly with a jack.

    CAUTION:
    When setting a jack, be careful not to bring it into contact with switches.
14. Remove center member, engine insulator and engine mount bracket. Refer to EM-81, "ENGINE ASSEMBLY" (QR engine models) or EM-227, "ENGINE ASSEMBLY" (YD engine models).
15. Remove suspension members (for 4WD models). Refer to FSU-12, "Removal and Installation" .
16. Support engine with a jack under oil pan.

17. Remove transaxle assembly mounting bolts.
18. Remove transaxle assembly from the vehicle.

CAUTION:
Secure transaxle assembly to a jack while removing it.



INSTALLATION

Note the following, and install in the reverse order of removal.

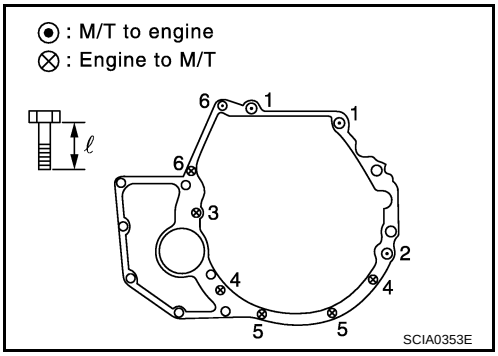
- When installing the transaxle assembly to the engine, install the mounting bolts following the standard below.

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

– **QR engine models**

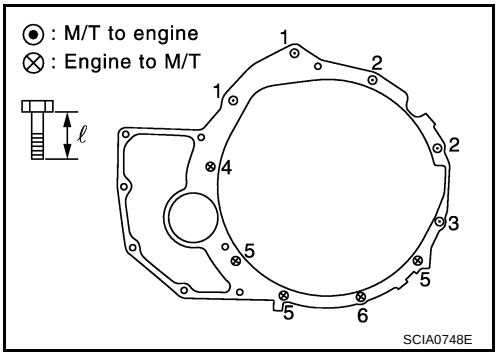
Bolt No.	1	2	3*	4	5	6
Quantity	2	1	1	2	2	2
Bolt length " ℓ " mm (in)	40 (1.57)	75 (2.95)	45 (1.77)	40 (1.57)	30 (1.18)	40 (1.57)
Tightening torque N·m (kg - m, ft- lb)	74.5 (7.6, 55)			42.7 (4.4, 31)		35.3 (3.6, 26)

*: Tightening the bolt for 4WD models.



– **YD engine models**

Bolt No.	1	2	3	4	5	6
Quantity	2	2	1	1	3	1
Bolt length " ℓ " mm (in)	55 (2.17)	50 (2.76)	120 (4.72)	45 (1.77)	40 (1.57)	35 (1.38)
Tightening torque N·m (kg - m, ft- lb)	44 (4.5, 32)				33.5 (3.4, 25)	



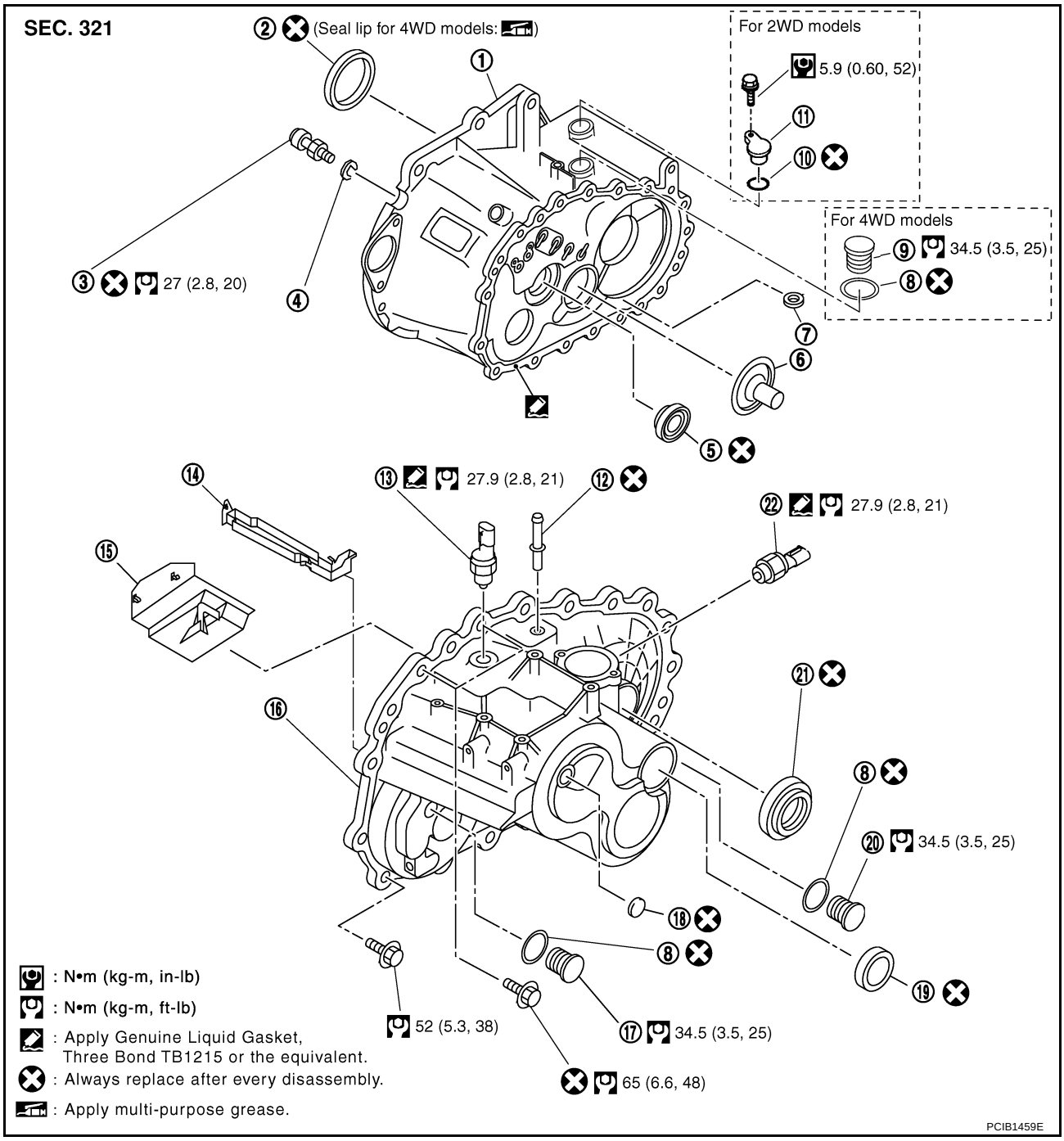
- After installation, check oil level, and check for leaks and loose mechanisms. Refer to MT-12, "Checking M/T Oil" .

Disassembly and Assembly (RS5F51A)

BCS000A7

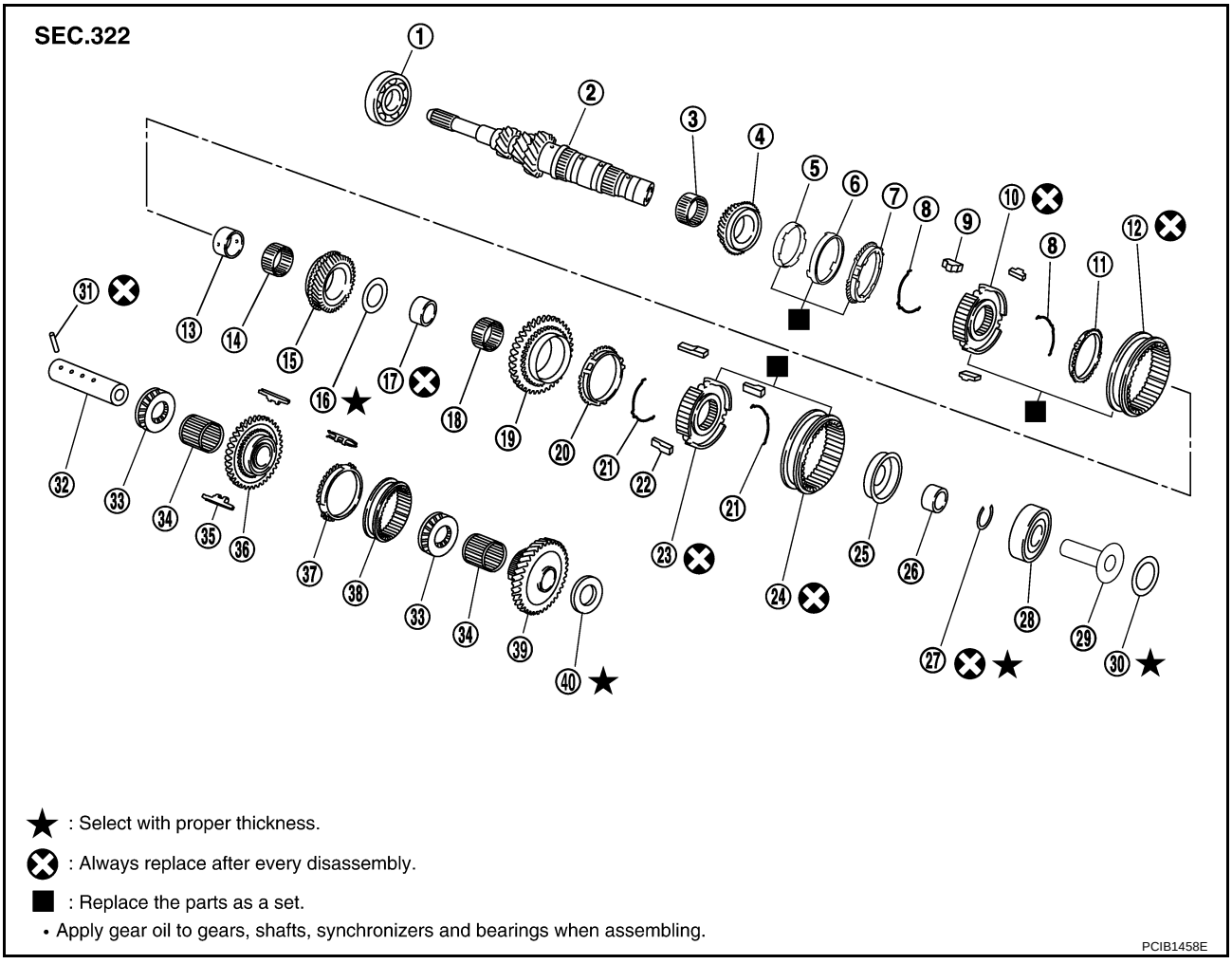
COMPONENTS

Case and Housing Components



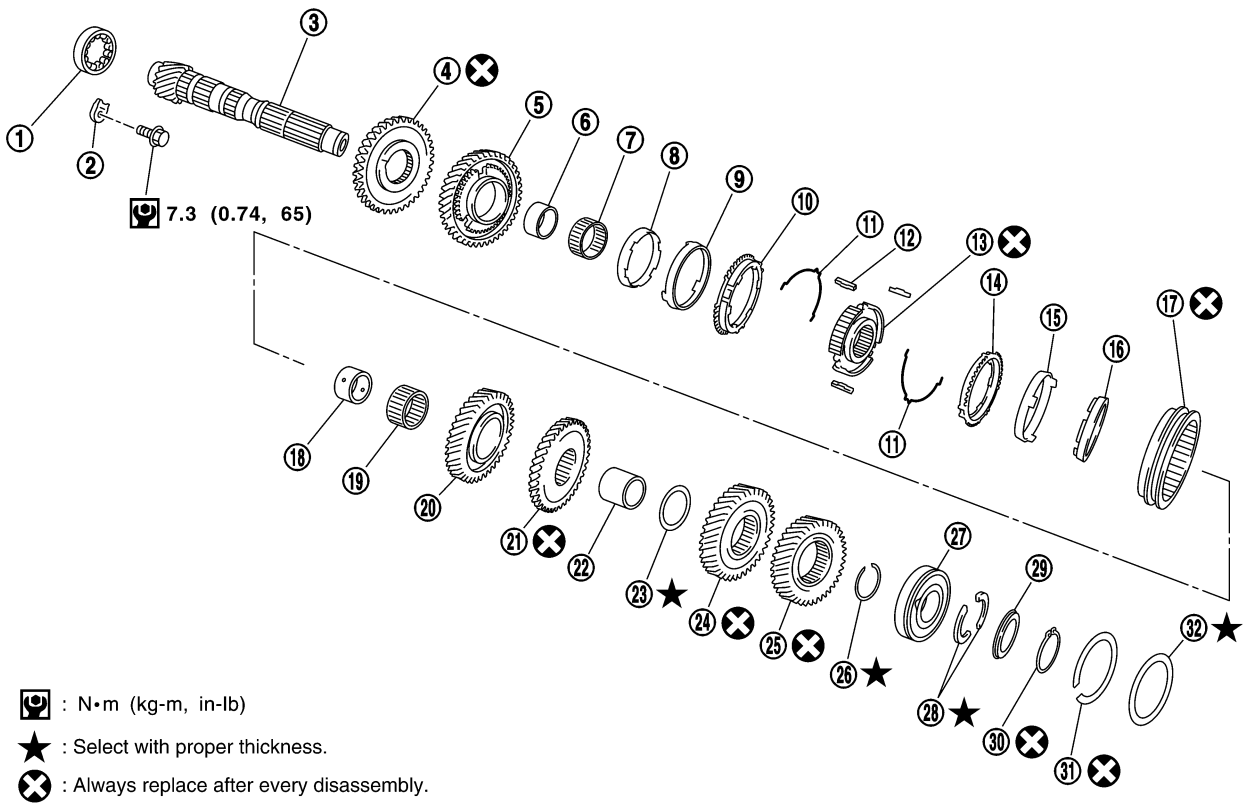
1. Clutch housing
2. Differential side oil seal
3. Ball pin
4. Washer
5. Input shaft oil seal
6. Oil channel
7. Magnet
8. Gasket
9. Filler plug
10. O-ring
11. Plug
12. Air breather tube
13. Back-up lamp switch
14. Oil gutter
15. Baffle plate
16. Transaxle case
17. Plug
18. Welch plug
19. Bore plug
20.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

Gear Components



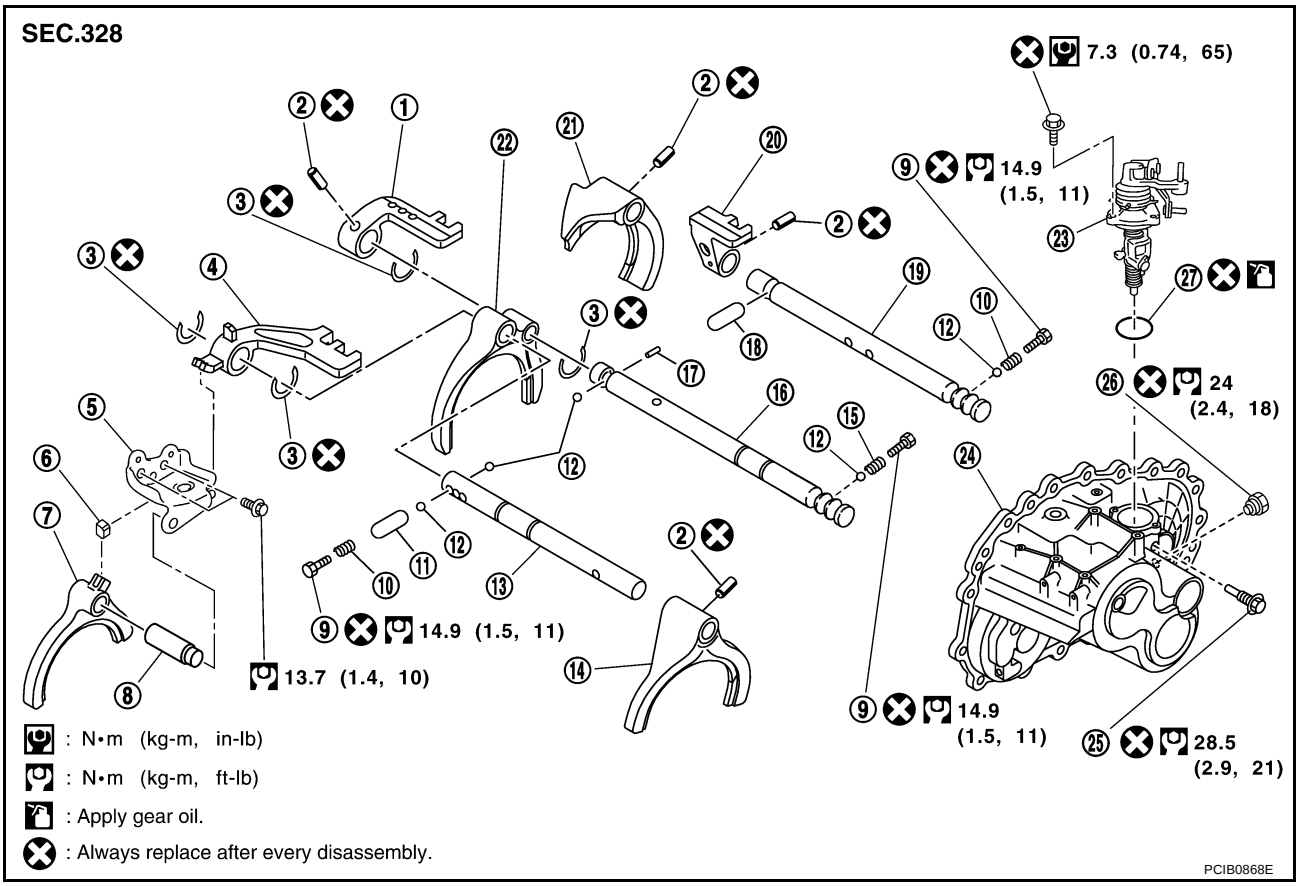
1. Input shaft front bearing
2. Input shaft
3. 3rd needle bearing
4. 3rd input gear
5. 3rd inner baulk ring
6. 3rd synchronizer cone
7. 3rd outer baulk ring
8. 3rd-4th spread spring
9. 3rd-4th shifting insert
10. 3rd-4th synchronizer hub
11. 4th baulk ring
12. 3rd-4th coupling sleeve
13. 4th input gear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

SEC. 322



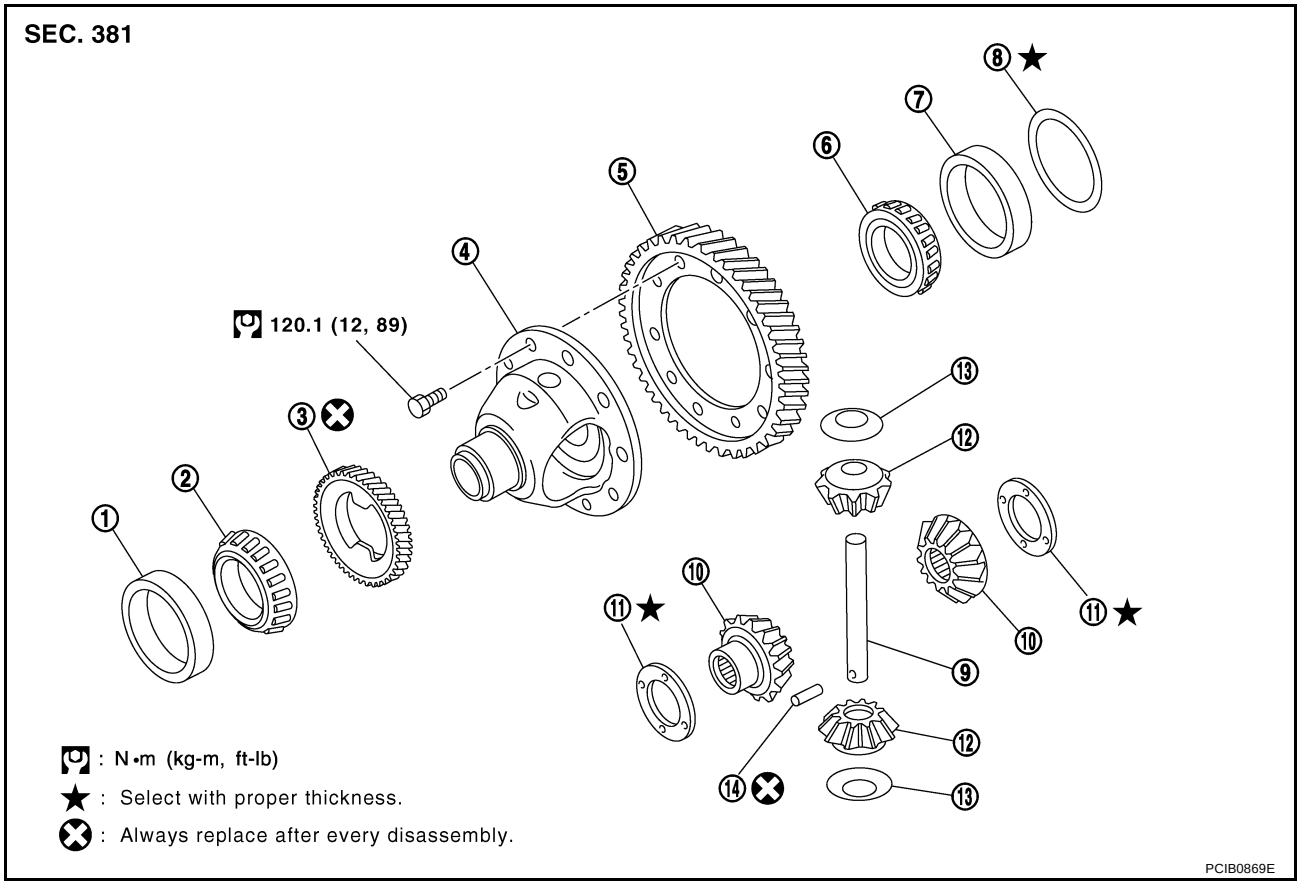
1. Mainshaft front bearing
2. Mainshaft bearing retainer
3. Mainshaft
4. Reverse main gear
5. 1st main gear
6. 1st main gear bushing
7. 1st needle bearing
8. 1st inner baulk ring
9. 1st synchronizer cone
10. 1st outer baulk ring
11. 1st-2nd spread spring
12. 1st-2nd shifting insert
13. 1st-2nd synchronizer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

Shift Control Components



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

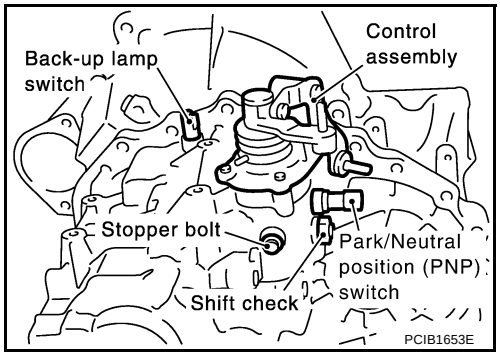
Final Drive Components



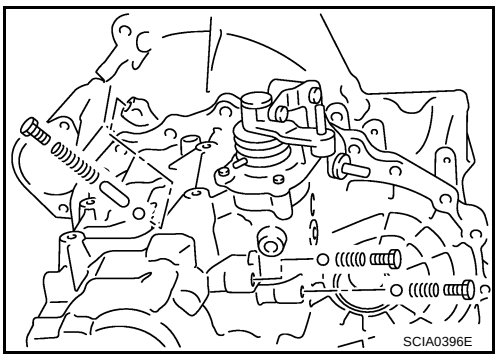
1. Differential side bearing outer race (clutch housing side)
2. Differential side bearing (clutch housing side)
3. Speedometer drive gear (for 2WD models)
4. Differential case
5. Final gear
6. Differential side bearing (transaxle case side)
7. Differential side bearing outer race (transaxle case side)
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 thrust washer
14. Retaining pin

DISASSEMBLY

1. Remove plug (for 2WD models) or filler plug (for 4WD models) from clutch housing.
2. Remove drain plug and plug from transaxle case.
3. Remove park/neutral position (PNP) switch and back-up lamp switch from transaxle case.
4. Remove shift check and stopper bolt from transaxle case, and then remove control assembly from transaxle case.



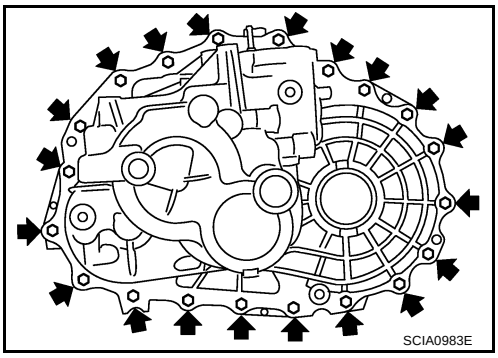
5. Remove check plugs (3 pieces), check springs (3 pieces), check balls (3 pieces) and shift check sleeve (1 piece).



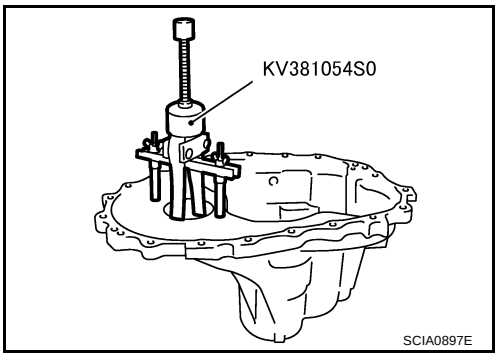
6. Remove transaxle case mounting bolts.
7. Remove bore plug from transaxle case.

CAUTION:
Be careful not to damage transaxle case.

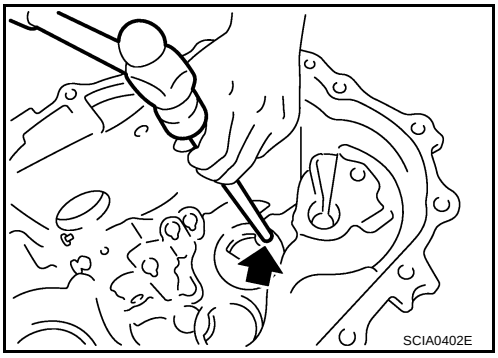
8. While spreading the snap ring of mainshaft rear bearing located at bore plug hole, remove transaxle case from clutch housing.
9. Remove oil gutter, baffle plate from transaxle case.
10. Remove snap ring, mainshaft rear bearing adjusting shim from transaxle case.
11. Remove input shaft rear bearing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



12. Remove differential side bearing outer race from transaxle case using the puller, and then remove differential side bearing adjusting shim from transaxle case.



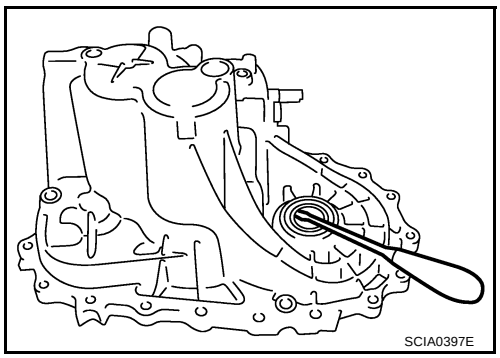
13. Remove welch plug from transaxle case.



14. Remove differential side oil seal from transaxle case.

CAUTION:
Be careful not to damage transaxle case.

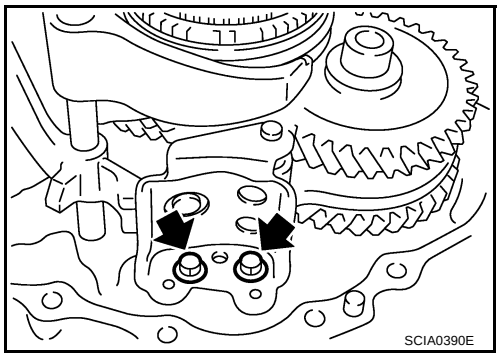
15. Remove magnet from clutch housing.


SCIA0397E

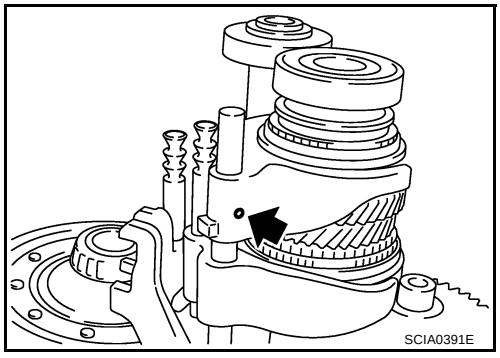
16. With shift lever in 5th position, remove mounting bolts from reverse lever assembly. Lift reverse lever assembly to remove.

CAUTION:
Be careful not to lose shifter cap.

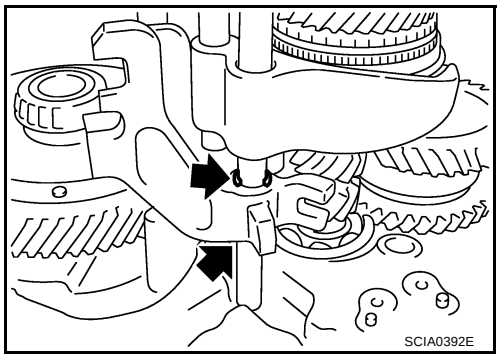
17. Pull out reverse fork rod then remove reverse shift fork.


SCIA0390E

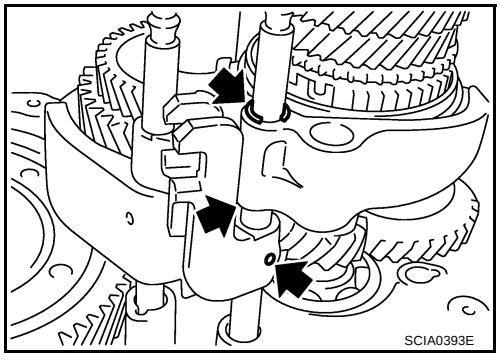
18. Shift 3rd-4th fork rod to 3rd position. Remove retaining pin of 5th shift fork using a pin punch.


SCIA0391E

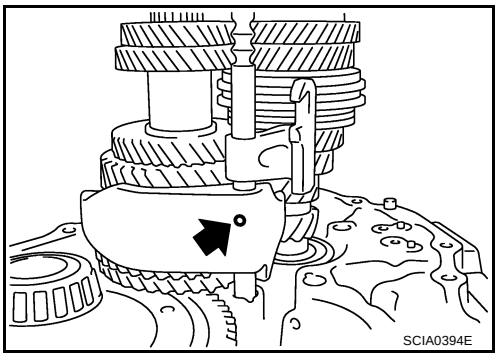
19. Remove stopper rings for 5th-reverse bracket.
20. Pull out 5th-reverse fork rod and remove 5th shift fork and 5th-reverse bracket.
21. Remove check balls (2 pieces) from clutch housing.


SCIA0392E

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


SCIA0393E

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

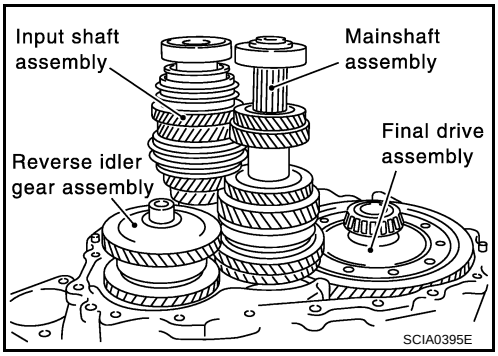

SCIA0394E

30. Remove gear components from clutch housing in the following procedure.

a. Remove input shaft assembly, mainshaft assembly and reverse idler gear assembly as a set, tapping input shaft with plastic hammer.

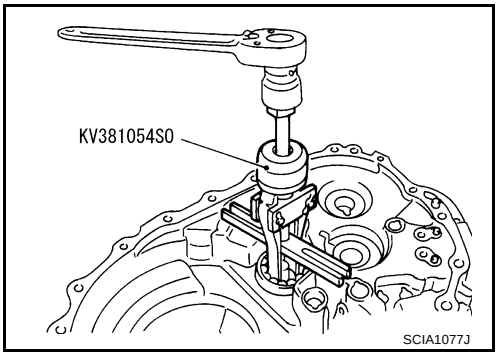
CAUTION:
Always withdraw mainshaft straight out. Failure to do so can damage resin oil channel on clutch housing side.

b. Remove final drive assembly.



SCIA0395E

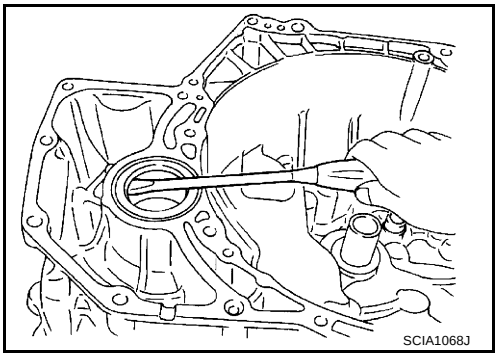
31. Remove mainshaft bearing retainer and then mainshaft front bearing from clutch housing using the puller.
32. Remove oil channel from clutch housing.



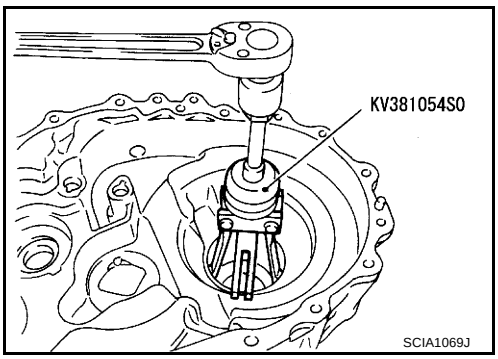
SCIA1077J

33. Remove differential side oil seal from clutch housing.

CAUTION:
Be careful not to damage clutch housing.


SCIA1068J

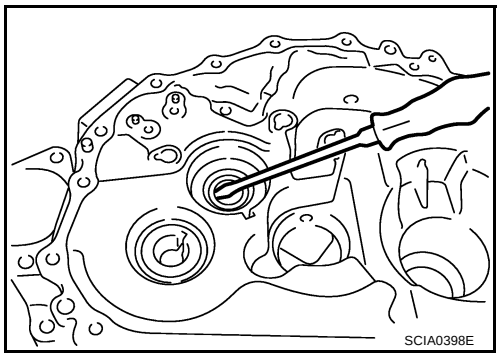
34. Remove differential side bearing outer race from clutch housing using the puller.



SCIA1069J

35. Remove input shaft oil seal from clutch housing.

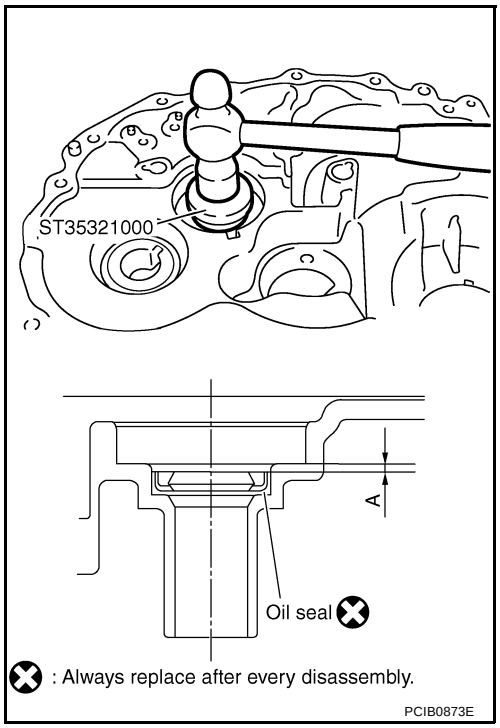
CAUTION:
Be careful not to damage clutch housing.



ASSEMBLY

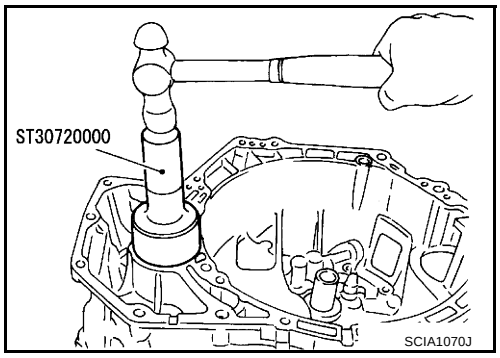
1. Install input shaft oil seal to clutch housing using the drift.

Dimension "A": 1.8 - 2.8 mm (0.071 - 0.110 in)



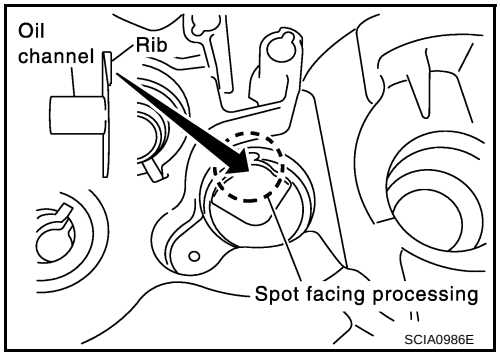
2. Install differential side oil seal until it become flush with end face of clutch housing using the drift.

CAUTION:
- **Do not reuse differential side oil seal.**
- **Apply multi-purpose grease onto oil seal lip (for 4WD models).**



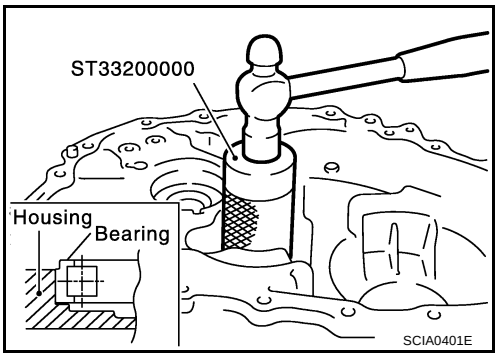
3. Install oil channel on mainshaft side.

CAUTION:
Be careful with the orientation of installation.



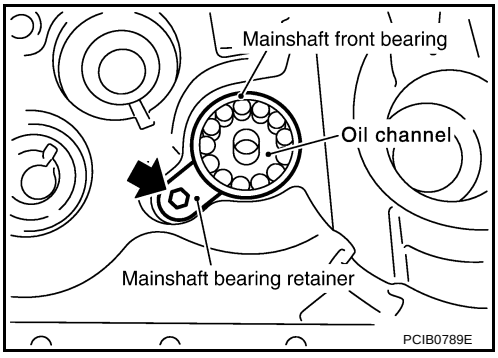
4. Install mainshaft front bearing to clutch housing using the drift.

CAUTION:
Be careful with the orientation of installation.

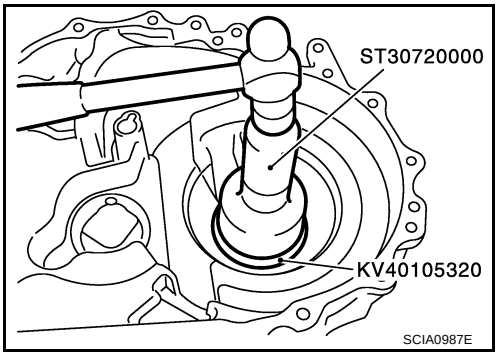


5. Install mainshaft bearing retainer to clutch housing and tighten mounting bolt to the specified torque. Refer to MT-23, "Gear Components" .

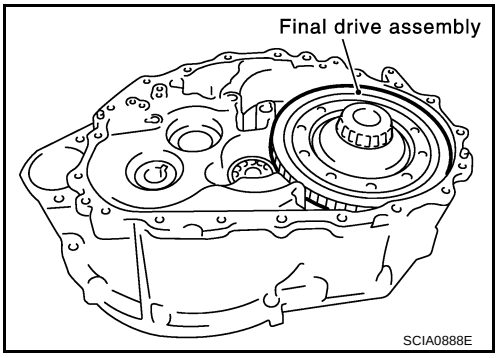
CAUTION:
Install with punched surface facing up.



6. Install differential side bearing outer race to clutch housing using the drifts.

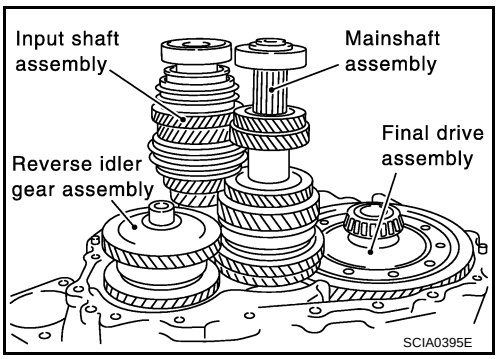


7. Install final drive assembly into clutch housing.



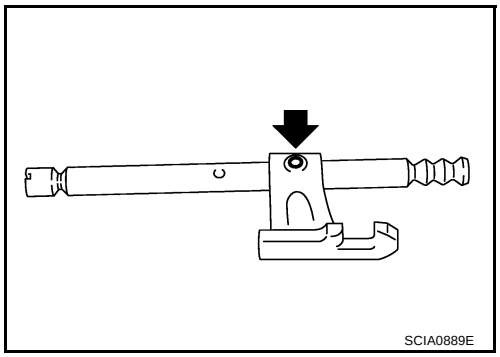
8. Install input shaft assembly, mainshaft assembly, and reverse idler gear assembly into clutch housing.

CAUTION:
Be sure not to damage input shaft oil seal.



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

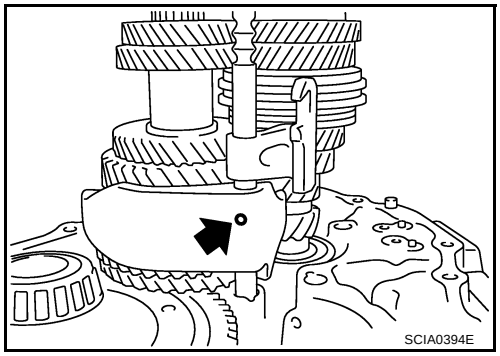
CAUTION:
Do not reuse retaining pin.



10. Install 1st-2nd fork rod and 1st-2nd shift fork, and then install retaining pin to1st-2nd shift fork.

CAUTION:
Do not reuse retaining pin.

11. Install shift check sleeve to clutch housing.



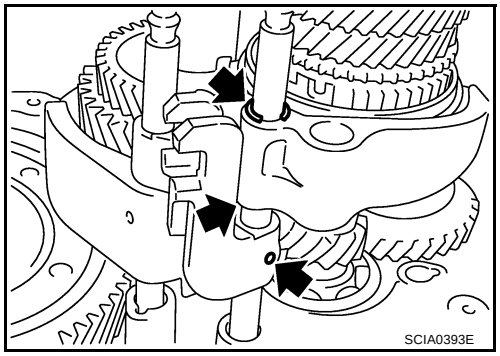
12. Install interlock pin to 3rd-4th fork rod.
13. Install 3rd-4th bracket, 3rd-4th shift fork, and 3rd-4th fork rod.
14. Install stopper rings onto 3rd-4th shift fork.

CAUTION:
Do not reuse stopper ring.

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

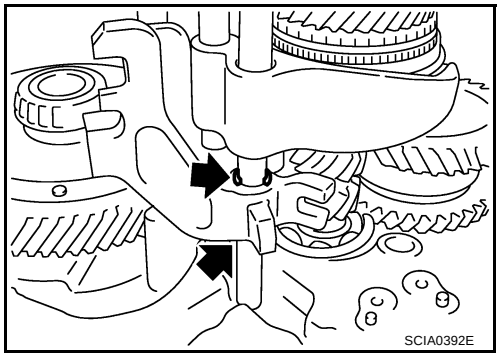
CAUTION:
Do not reuse retaining pin.

16. Install 2 check balls to clutch housing.



17. Install 5th-reverse bracket, 5th shift fork, and 5th-reverse fork rod.
18. Install stopper rings onto 5th-reverse bracket.

CAUTION:
Do not reuse stopper ring.



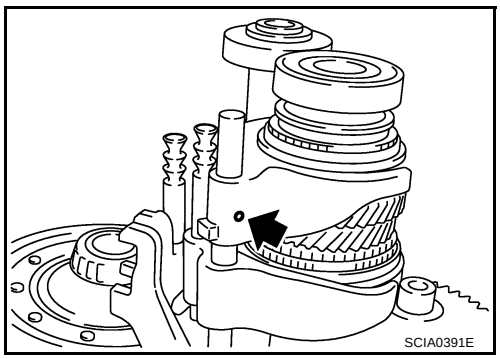
19. Install retaining pin onto 5th shift fork.

CAUTION:
Do not reuse retaining pin.

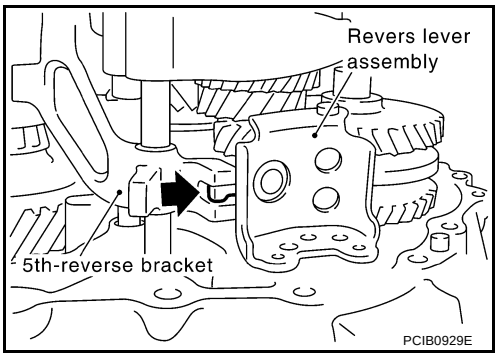
20. Install reverse shift fork and reverse fork rod.
21. Install reverse lever assembly following the procedures below.

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 5th-reverse bracket.



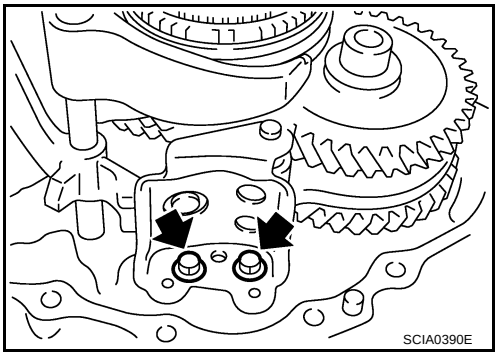
c. Install reverse lever assembly to clutch housing, and then tighten mounting bolts to the specified torque. Refer to MT-25, "Shift Control Components" .

22. Install check ball, shift check sleeve, check spring and check plug to clutch housing.

CAUTION:

- **Do not reuse check plug.**
- **Do not drop check ball.**

23. Install the magnet onto clutch housing.

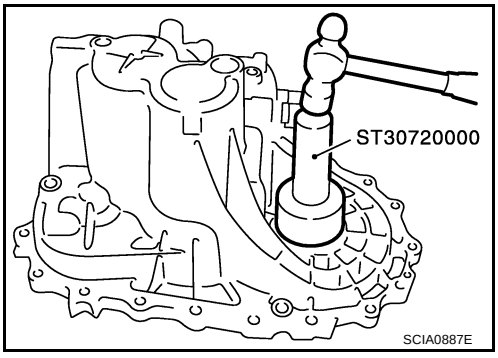


24. Install differential side oil seal until it is flush with end face of transaxle case using the drift.

CAUTION:

Do not reuse differential side oil seal.

25. Install selected differential side bearing adjusting shims and differential side bearing outer race.
    - For selection of adjusting shims, refer to MT-36, "Differential Side Bearing Preload" .
26. Install selected reverse idler gear adjusting shim onto reverse idler gear assembly.
    - For selection of adjusting shim, refer to MT-37, "Reverse Idler Gear End Play" .



27. Install selected input shaft rear bearing adjusting shim onto input shaft.
    - For selection of adjusting shim, refer to MT-37, "Input Shaft End Play" .
28. Install baffle plate and oil gutter to transaxle case.
29. Install transaxle case following the procedures below.

a. Install selected mainshaft rear bearing adjusting shim into transaxle case.
    - For selection of adjusting shim, refer to MT-38, "Mainshaft End Play" .

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

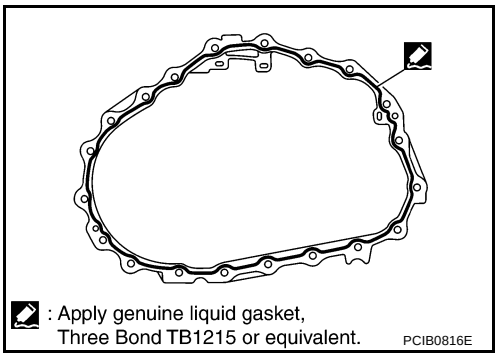
CAUTION:

Do not reuse snap ring.

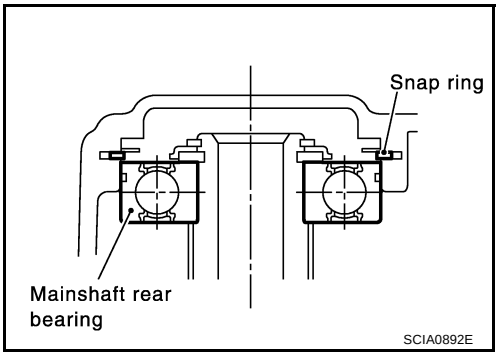
c. Apply recommended sealant to mating surfaces of transaxle case and clutch housing.

CAUTION:

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

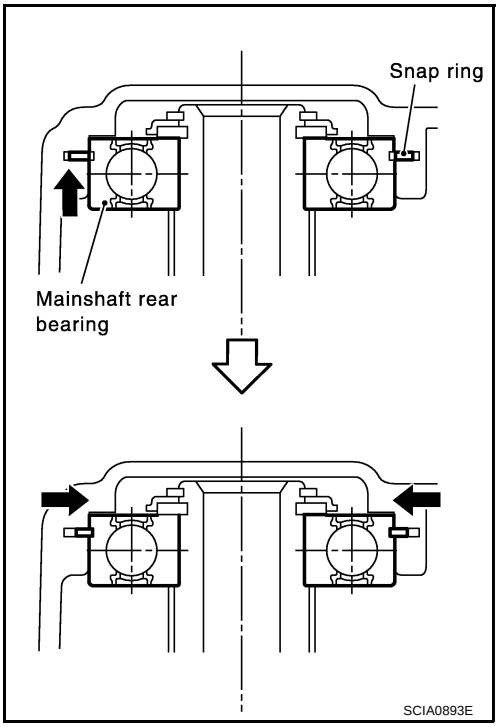


d. With snap ring of mainshaft rear bearing temporarily installed, place transaxle case over clutch housing.



e. Lift up mainshaft assembly from the control assembly mounting hole through the bore plug mounting hole with snap ring stretched.

f. Securely install snap ring onto mainshaft rear bearing.



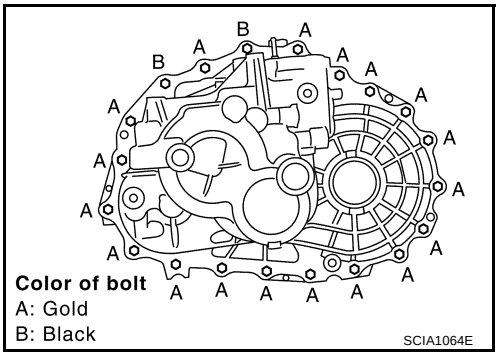
g. Tighten mounting bolts to the specified torque.

Bolt A:

: 52 N·m (5.3 kg-m, 38 ft-lb)

Bolt B:

: 65 N·m (6.6 kg-m, 48 ft-lb)



CAUTION:

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

h. Apply gear oil to O-ring and install it to control assembly. Then install control assembly to transaxle case. Tighten bolts to the specified torque. Refer to MT-25, "Shift Control Components" .

CAUTION:

Do not reuse O-ring.

i. Install shift check to transaxle case, and then tighten shift check to the specified torque. Refer to MT-25, "Shift Control Components" .

CAUTION:

Do not reuse shift check.

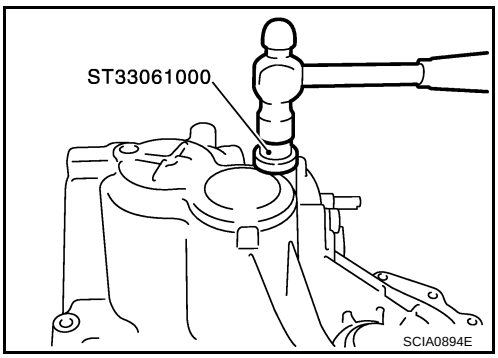
j. Install stopper bolt to transaxle case, and then tighten stopper bolt to the specified torque. Refer to MT-25, "Shift Control Components" .

CAUTION:

Do not reuse stopper bolt.

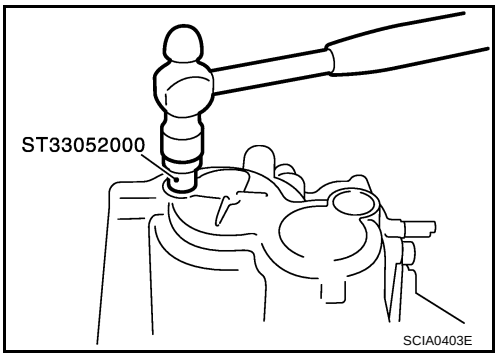
30. Install bore plug to transaxle case using the drift.

CAUTION:
Do not reuse bore plug.



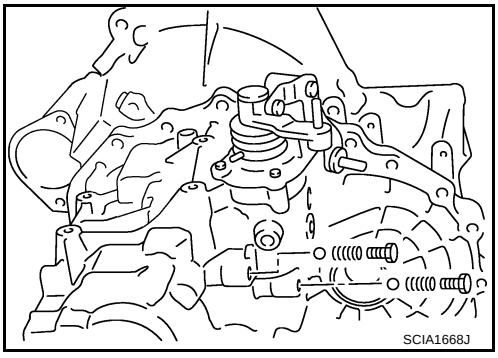
31. Install welch plug to transaxle case using the drift.

CAUTION:
Do not reuse welch plug.



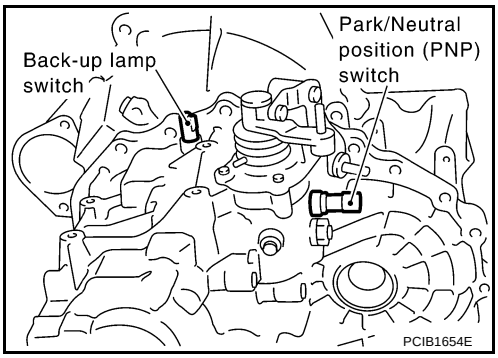
32. Install 2 check balls, 2 check springs and 2 check plugs to transaxle case, and then tighten check plug to the specified torque. Refer to MT-25, "Shift Control Components" .

CAUTION:
Do not reuse check plug.



33. Apply recommended sealant to threads of park/neutral position (PNP) switch and back-up lamp switch. Then install them to transaxle case and tighten to the specified torque. Refer to MT-22, "Case and Housing Components" .
34. Install gaskets onto drain plug and plug, and then install them into transaxle case. Tighten drain plug and plug to the specified torque. Refer to MT-22, "Case and Housing Components" .

CAUTION:
Do not reuse gasket.



35. Install O-ring onto plug (for 2WD models) or gasket onto filler plug (for 4WD models), and then install it into clutch housing. Tighten plug mounting bolt (for 2WD models) or filler plug (for 4WD models) to the specified torque. Refer to MT-22, "Case and Housing Components" .

CAUTION:
- **Do not reuse O-ring or gasket.**
- **After oil is filled, tighten plug mounting bolt (for 2WD models) or filler plug (for 4WD models) to the specified torque.**

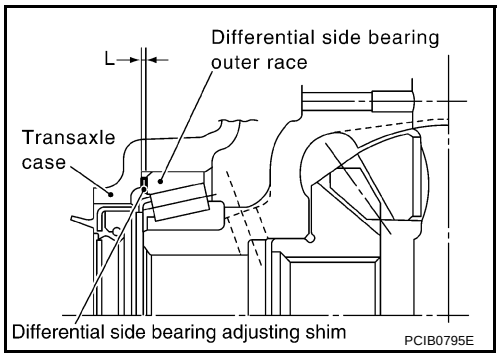
ADJUSTMENT

Differential Side Bearing Preload

- When adjusting differential side bearing preload, select adjusting shim for differential side bearing. To select adjusting shim, measure the clearance “L” between transaxle case and differential side bearing outer race. Refer to MT-109, "DIFFERENTIAL SIDE BEARING ADJUSTING SHIM(S)" .

  CAUTION:

  Up to 2 adjusting shims can be selected.



- Calculate the 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)

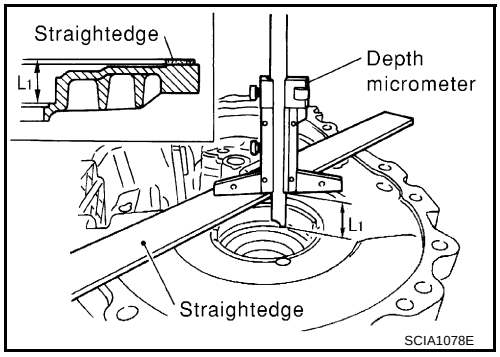
  Dimension “L” = (L_1 - L_2) + Preload

  L: Thickness of adjusting shim

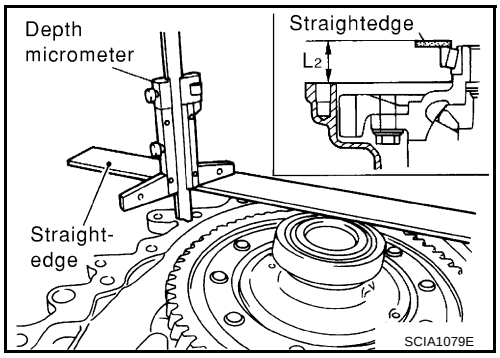
  L_1 : Distance between transaxle case end face and mounting face of adjusting shim

  L_2 : Distance between differential side bearing outer race and clutch housing end face

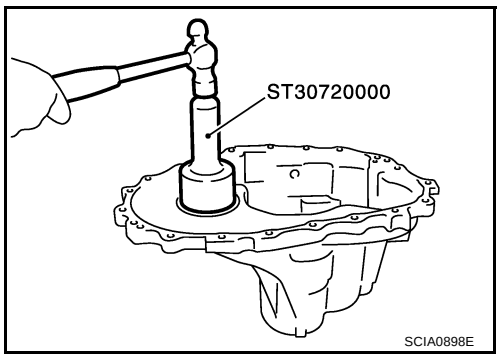
1. Using depth micrometer and straightedge, measure the dimension “L_1 ” between transaxle case end face and mounting face of adjusting shim.
2. Install differential side bearing outer race onto differential side bearing on final gear side. Holding lightly differential side bearing outer race horizontally by hand, rotate final gear five times or more (for smooth movement of bearing roller).



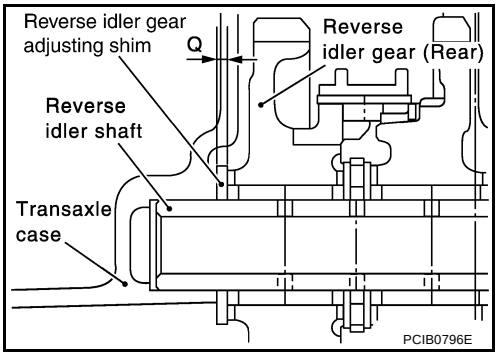
3. Using depth micrometer and straightedge as shown in the figure, measure the dimension “L_2 ” between differential side bearing outer race and clutch housing end face.



4. Install selected differential side bearing adjusting shim, and then install differential side bearing outer race using the drift.



Reverse Idler Gear End Play



- When adjusting reverse idler gear end play, select adjusting shim for reverse idler gear. To select adjusting shim, measure the clearance between transaxle case and reverse idler gear. Refer to MT-108, "REVERSE IDLER GEAR ADJUSTING SHIM" .

  CAUTION:
  Only 1 adjusting shim can be selected.

- Calculate the 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)

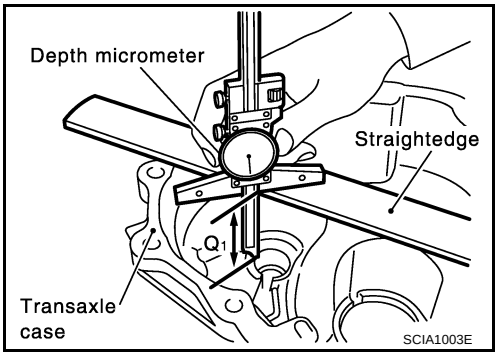
  Dimension “Q” = (Q_1 - Q_2) - End play

  Q: Thickness of adjusting shim

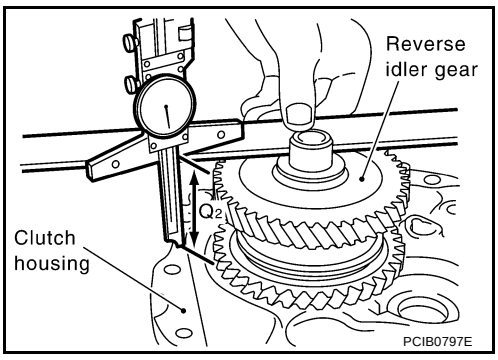
  Q_1 : Distance between transaxle case end face and mounting face of adjusting shim

  Q_2 : Distance between clutch housing end face and end face of reverse idler gear (Rear)

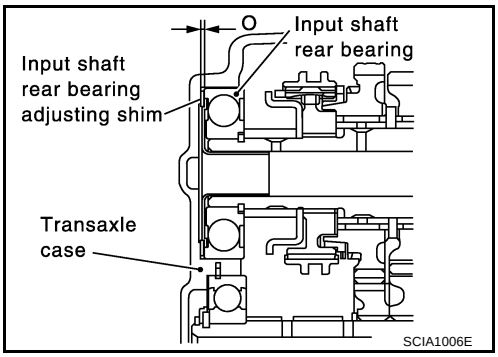
1. Using depth micrometer and straightedge, measure the dimension “Q_1 ” between transaxle case end face and mounting face of adjusting shim.



2. Using depth micrometer and straightedge as shown in the figure, measure the dimension “Q_2 ” between clutch housing end face and end face of reverse idler gear (Rear).
3. Install selected reverse idler gear adjusting shim onto reverse idler gear assembly.



Input Shaft End Play



- When adjusting input shaft end play, select adjusting shim for input shaft rear bearing. To select adjusting shim, measure the clearance between transaxle case and input shaft rear bearing. Refer to MT-108, "INPUT SHAFT REAR BEARING ADJUSTING SHIM" .

  CAUTION:
  Only 1 adjusting shim can be selected.

- Calculate the 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)

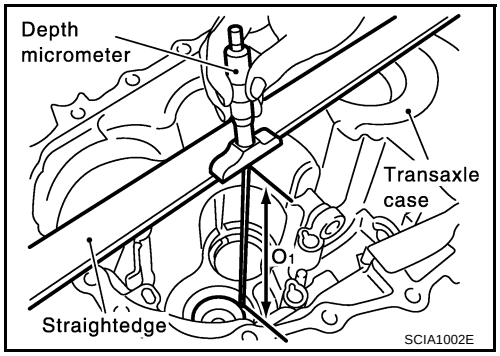
  Dimension “O” = (O_1 - O_2) - End play

O: Thickness of adjusting shim

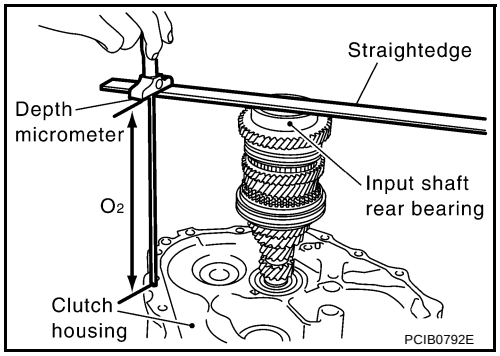
O_1 : Distance between transaxle case end face and mounting face of adjusting shim

O_2 : Distance between clutch housing end face and end face of input shaft rear bearing

1. Using depth micrometer and straightedge, measure the dimension “O_1 ” between transaxle case end face and mounting face of adjusting shim.



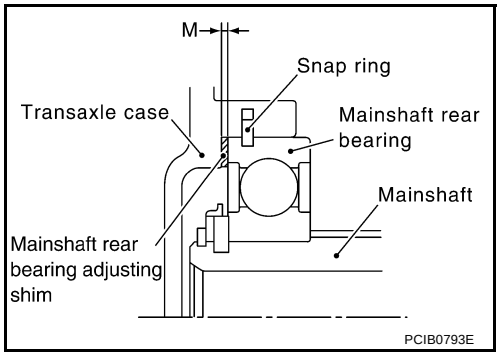
2. Using depth micrometer and straightedge as shown in the figure, measure the dimension “O_2 ” between clutch housing end face and end face of input shaft rear bearing.
3. Install selected input shaft rear bearing adjusting shim onto input shaft.



Mainshaft End Play

- When adjusting mainshaft end play, select adjusting shim for mainshaft rear bearing. To select adjusting shim, measure the clearance “M” between transaxle case and mainshaft rear bearing. Refer to MT-108, "MAINSHAFT REAR BEARING ADJUSTING SHIM" .

  CAUTION:
  Only 1 adjusting shim can be selected.



- Calculate the 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)

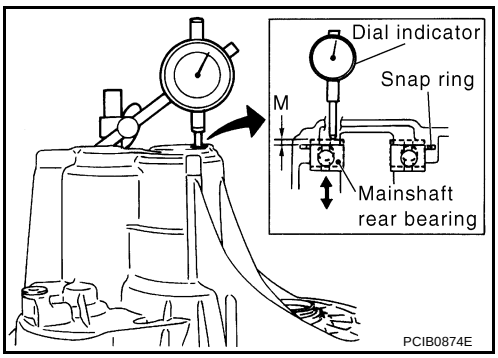
Dimension “P” = “M” - End play

P: Thickness of adjusting shim

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

1. 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 indicator to bore plug mounting 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 rear bearing, becomes “M”.

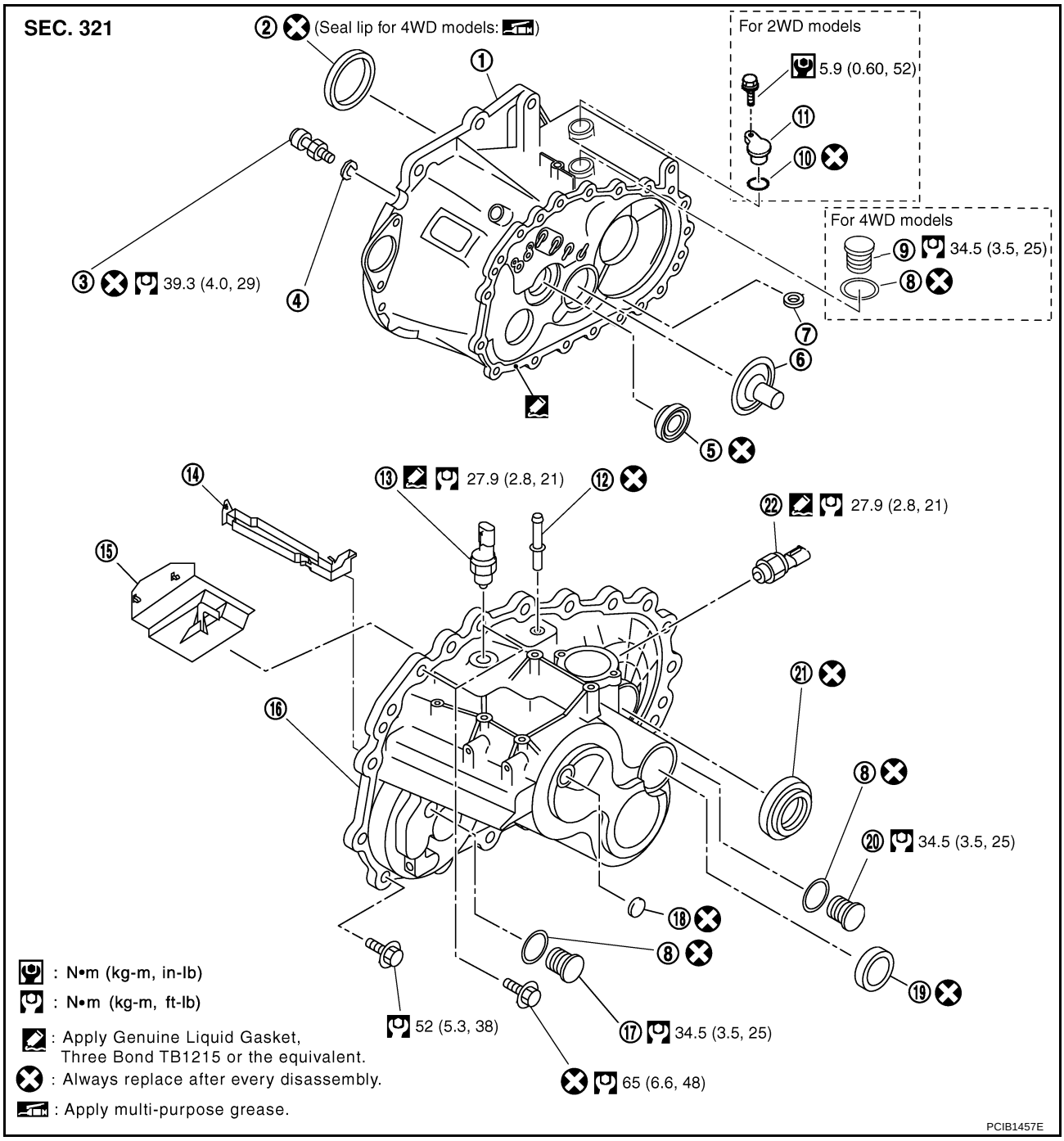


Disassembly and Assembly (RS6F51A)

BCS000A8

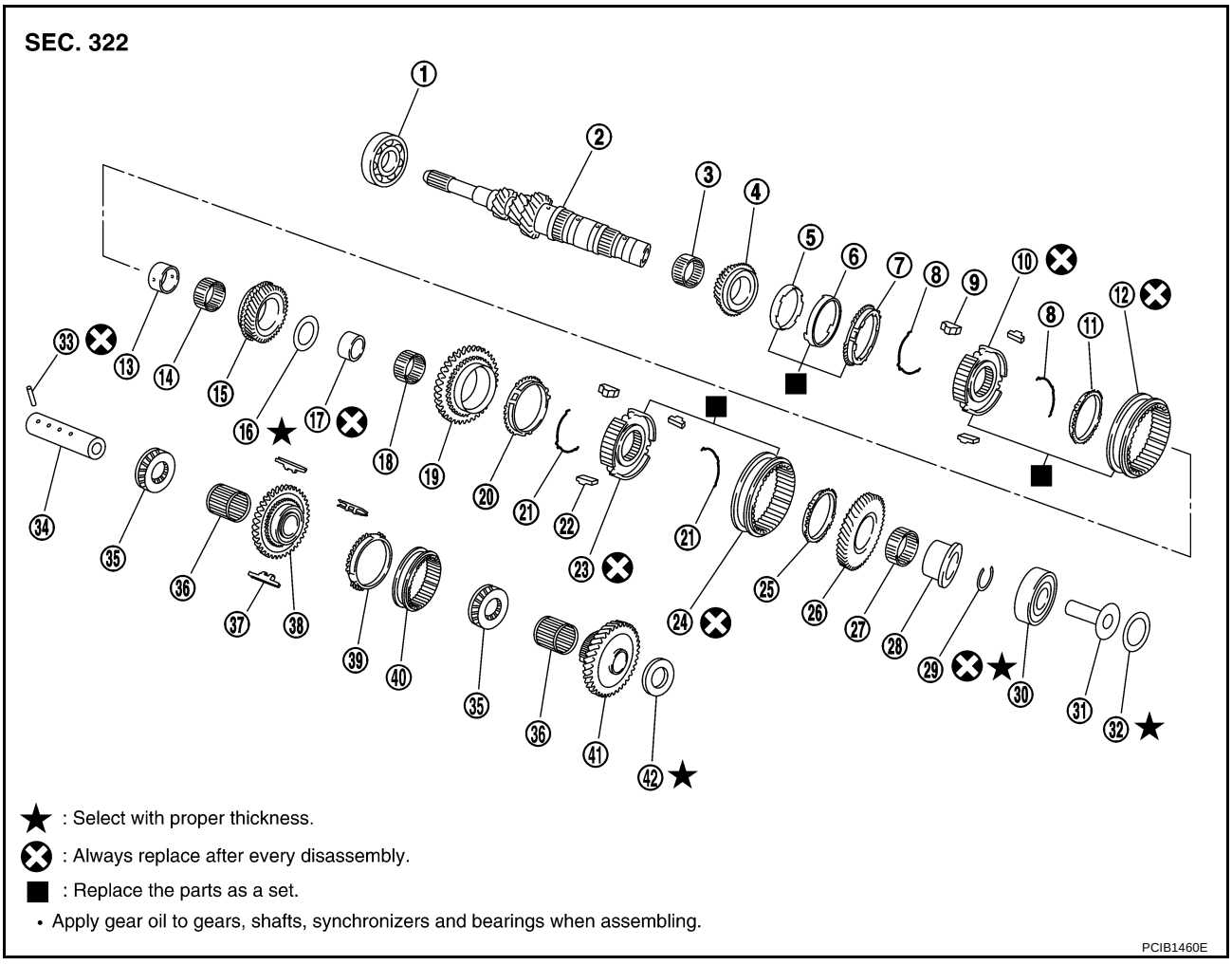
COMPONENTS

Case and Housing Components



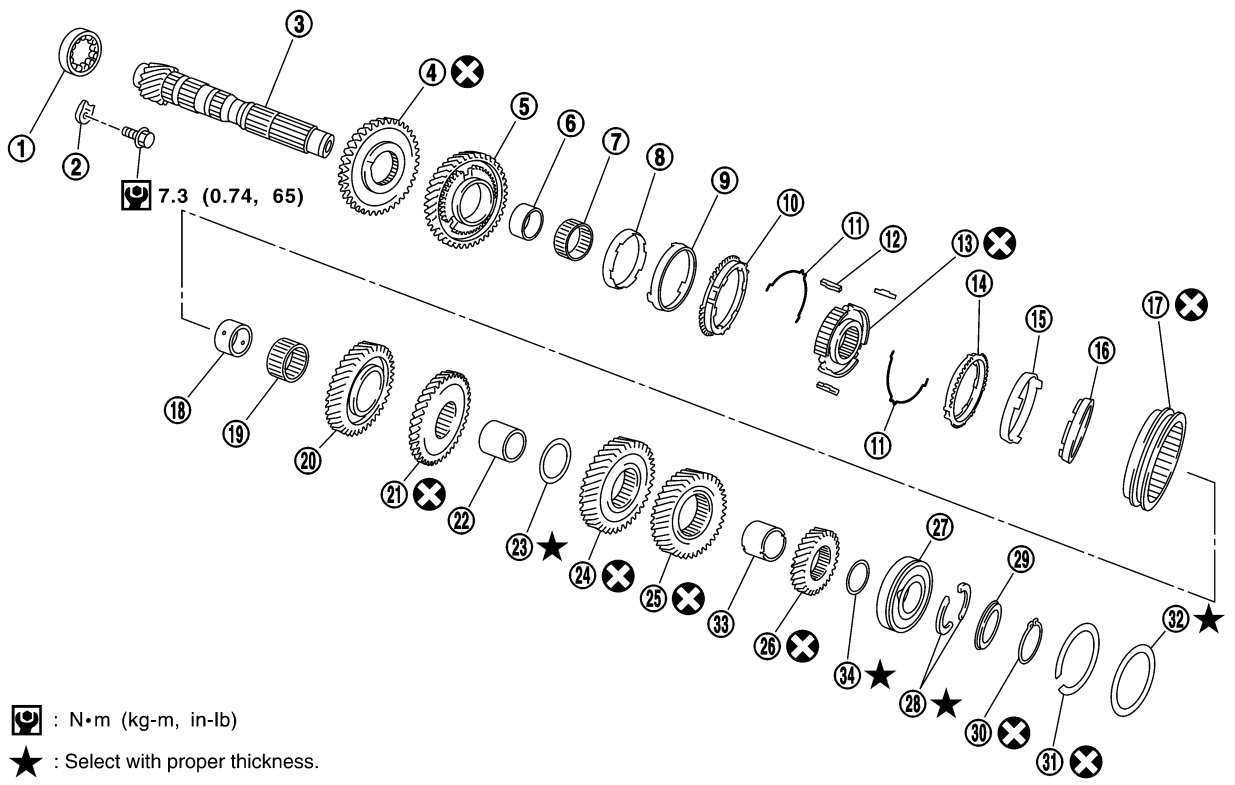
1. Clutch housing
2. Differential side oil seal
3. Ball pin
4. Washer
5. Input shaft oil seal
6. Oil channel
7. Magnet
8. Gasket
9. Filler plug
10. O-ring
11. Plug
12. Air breather tube
13. Back-up lamp switch
14. Oil gutter
15. Baffle plate
16. Transaxle case
17. Plug
18. Welch plug
19. Bore plug
20.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

Gear Components



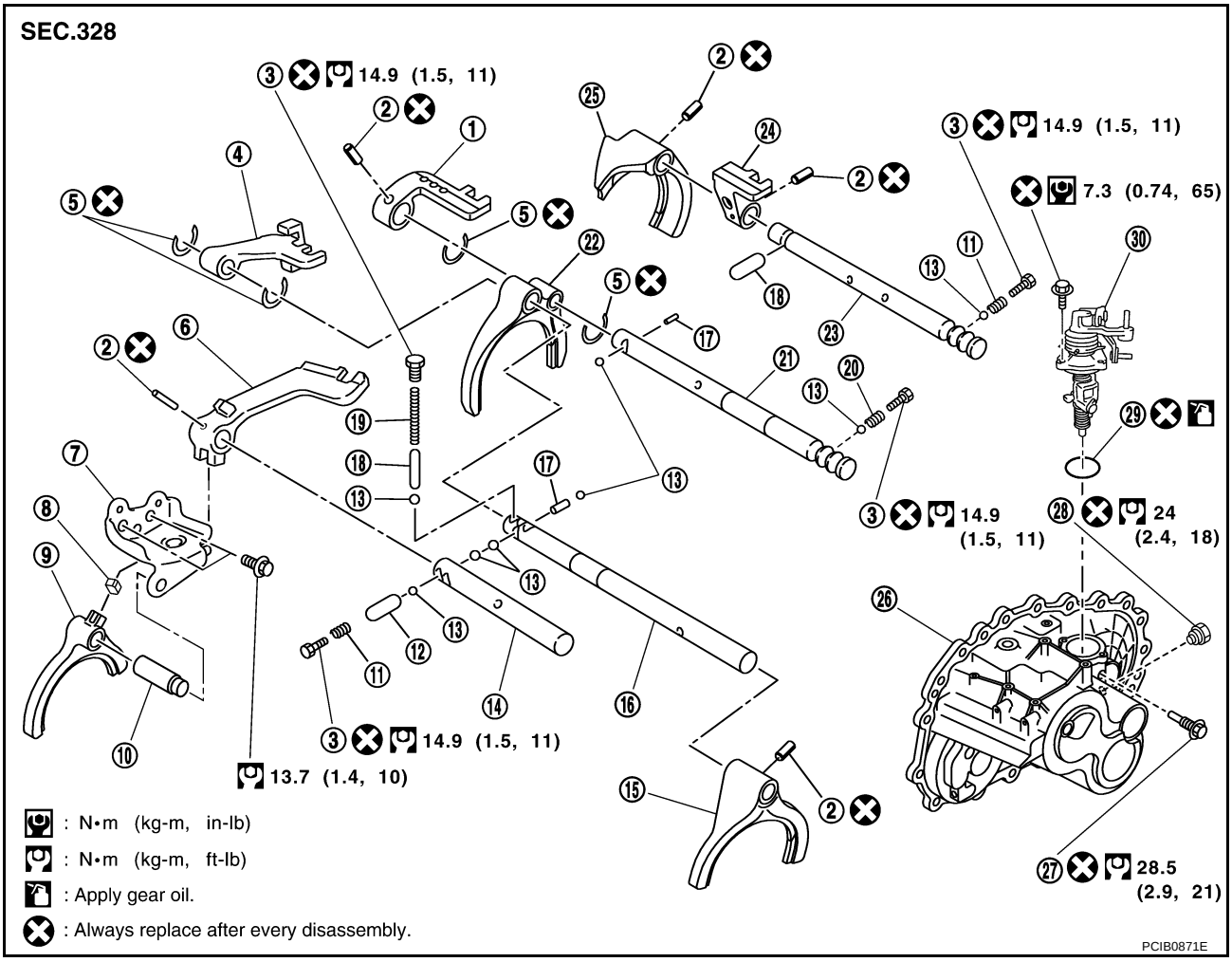
1. Input shaft front bearing
2. Input shaft
3. 3rd needle bearing
4. 3rd input gear
5. 3rd inner baulk ring
6. 3rd synchronizer cone
7. 3rd outer baulk ring
8. 3rd-4th spread spring
9. 3rd-4th shifting insert
10. 3rd-4th synchronizer hub
11. 4th baulk ring
12. 3rd-4th coupling sleeve
13. 4th input gear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

SEC. 322



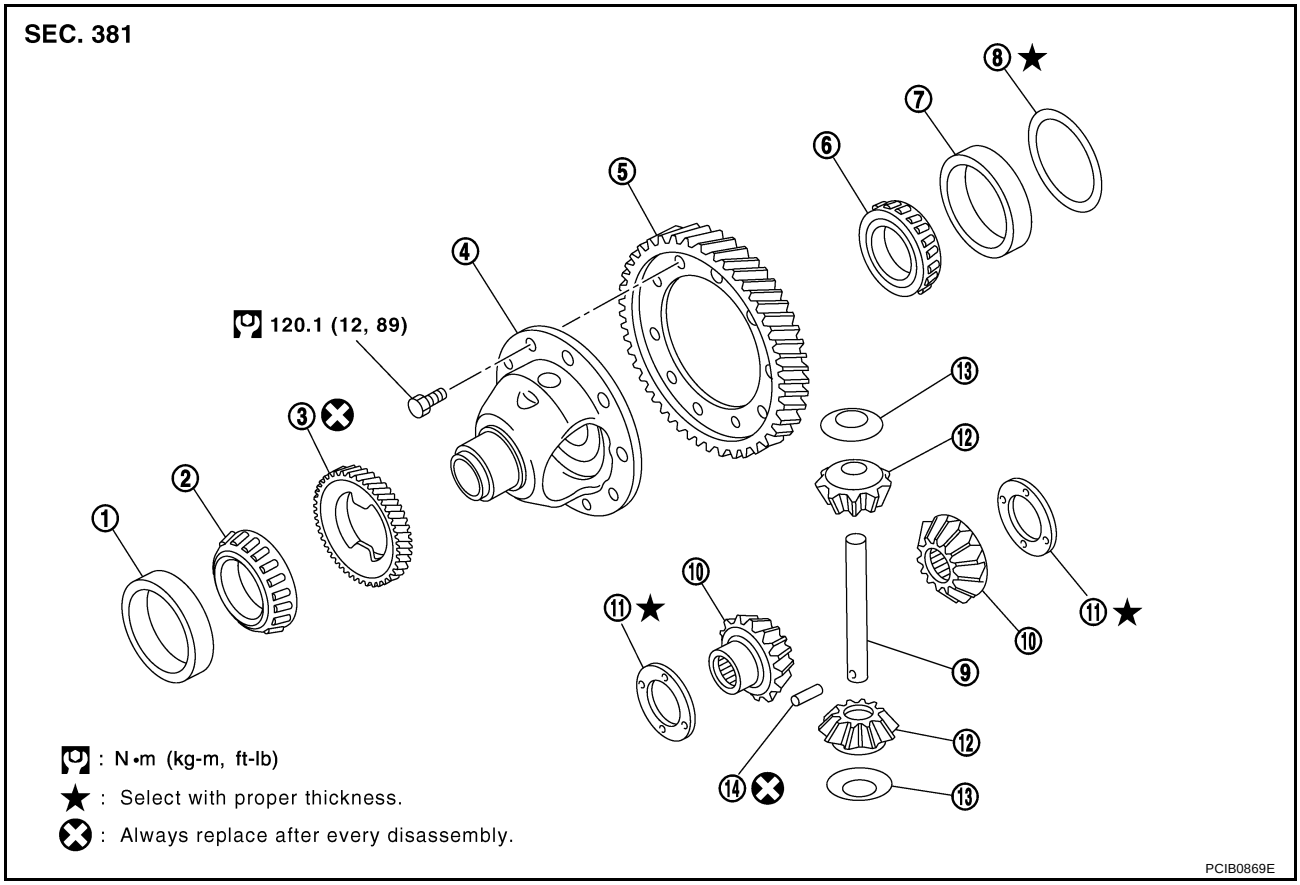
1. Mainshaft front bearing
2. Mainshaft bearing retainer
3. Mainshaft
4. Reverse main gear
5. 1st main gear
6. 1st main gear bushing
7. 1st needle bearing
8. 1st inner baulk ring
9. 1st synchronizer cone
10. 1st outer baulk ring
11. 1st-2nd spread spring
12. 1st-2nd shifting insert
13. 1st-2nd synchronizer hub
14. 2nd outer baulk ring
15. 2nd synchronizer cone
16. 2nd inner baulk ring
17. 1st-2nd coupling sleeve
18. 2nd main gear bushing
19. 2nd 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



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

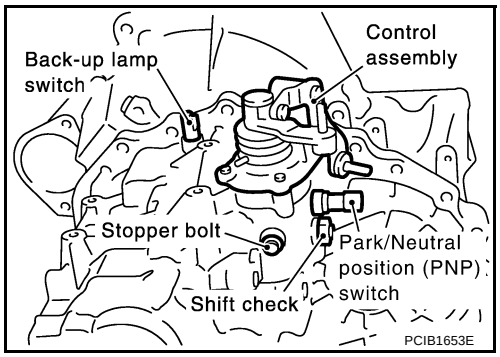
Final Drive Components



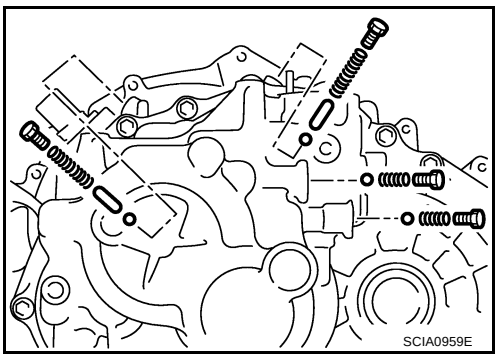
1. Differential side bearing outer race (clutch housing side)
2. Differential side bearing (clutch housing side)
3. Speedometer drive gear (for 2WD models)
4. Differential case
5. Final gear
6. Differential side bearing (transaxle case side)
7. Differential side bearing outer race (transaxle case side)
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 thrust washer
14. Retaining pin

DISASSEMBLY

1. Remove plug (for 2WD models) or filler plug (for 4WD models) from clutch housing.
2. Remove drain plug and plug from transaxle case.
3. Remove park/neutral position (PNP) switch and back-up lamp switch from transaxle case.
4. Remove shift check and stopper bolt from transaxle case, and then remove control assembly from transaxle case.



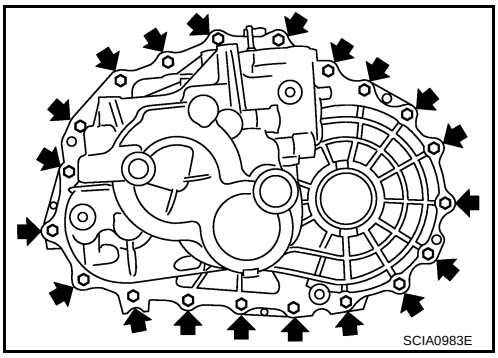
5. Remove check plugs (4 pieces), check springs (4 pieces), check balls (4 pieces) and shift check sleeves (2 pieces).



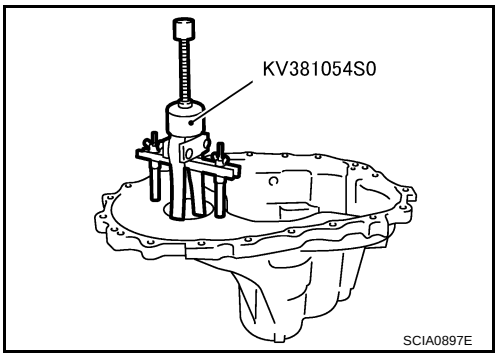
6. Remove transaxle case mounting bolts.
7. Remove bore plug from transaxle case.

CAUTION:
Be careful not to damage transaxle case.

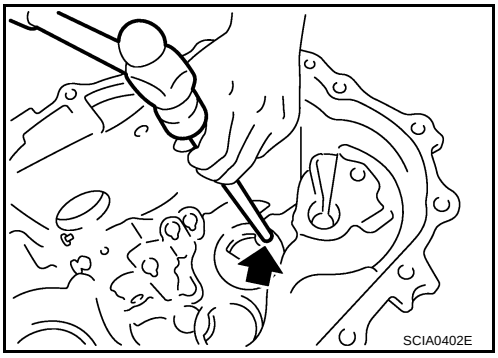
8. While spreading the snap ring of mainshaft rear bearing located at bore plug hole, remove transaxle case from clutch housing.
9. Remove oil gutter, baffle plate from transaxle case.
10. Remove snap ring, mainshaft rear bearing adjusting shim from transaxle case.
11. Remove input shaft rear bearing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



12. Remove differential side bearing outer race from transaxle case using the puller, and then remove differential side bearing adjusting shim from transaxle case.



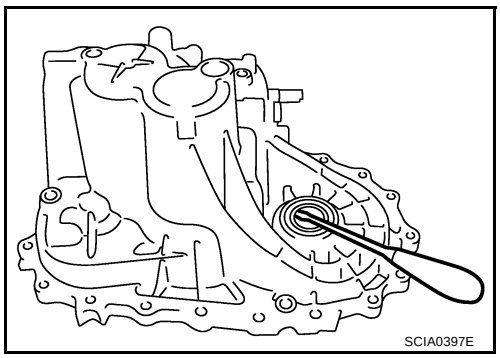
13. Remove welch plug from transaxle case.



14. Remove differential side oil seal from transaxle case.

    CAUTION:
    Be careful not to damage transaxle case.

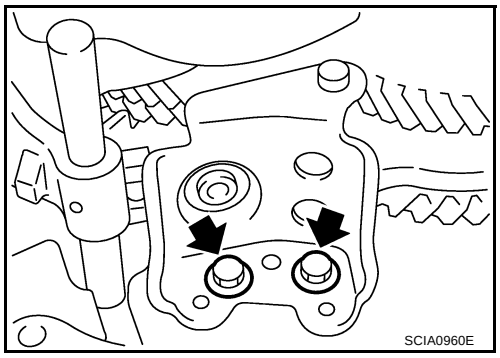
15. Remove magnet from clutch housing.


SCIA0397E

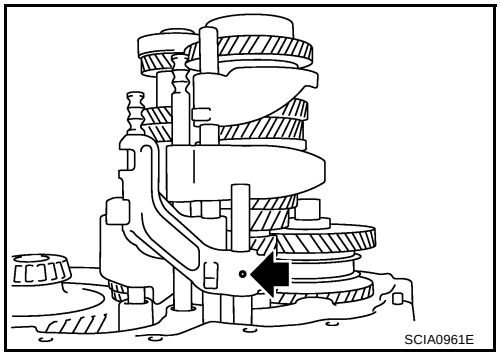
16. With shift lever in 5th position, remove mounting bolts from reverse lever assembly. Lift reverse lever assembly to remove.

    CAUTION:
    Be careful not to lose shifter cap.

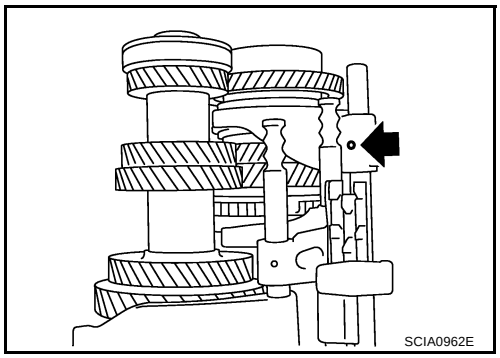
17. Pull out reverse fork rod then remove reverse shift fork.


SCIA0960E

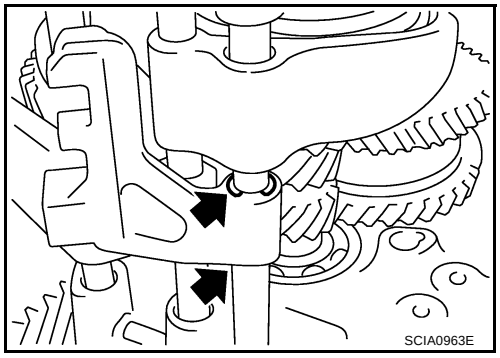
18. Remove retaining pin of reverse bracket using a pin punch.
19. Pull out reverse bracket and reverse bracket fork rod.
20. Remove check balls (2 pieces) from clutch housing.


SCIA0961E

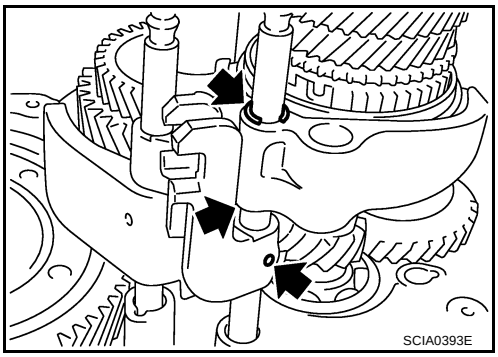
21. Shift 3rd-4th fork rod to 3rd position. Remove retaining pin of 5th - 6th shift fork using a pin punch.


SCIA0962E

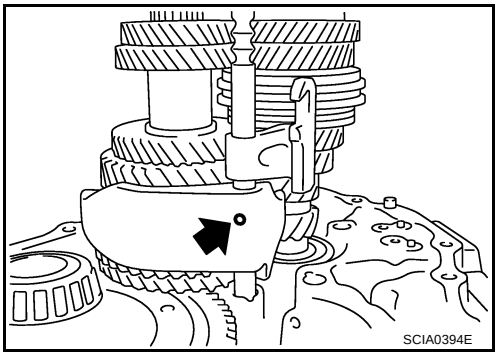
22. Remove stopper rings for 5th-6th bracket.
23. Pull out 5th-6th fork rod and remove 5th-6th shift fork and 5th-6th bracket.
24. Remove check balls (2 pieces) and interlock pin.


SCIA0963E

25. Remove retaining pin of 3rd-4th bracket using a pin punch.
26. Remove stopper rings for 3rd-4th shift fork.
27. Pull out 3rd-4th fork rod and remove 3rd-4th shift fork and 3rd-4th bracket.
28. Remove interlock pin and shift check sleeve from clutch housing.


SCIA0393E

29. Remove retaining pin of 1st-2nd shift fork using a pin punch.
30. Pull out 1st-2nd fork rod with 1st-2nd bracket.
31. Remove 1st-2nd shift fork.
32. Remove retaining pin of 1st-2nd bracket using a pin punch and separate fork rod and 1st-2nd bracket.

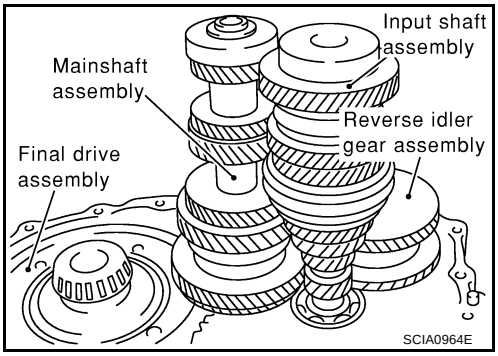

SCIA0394E

33. Remove gear components from clutch housing in the following procedure.

a. Remove input shaft assembly, mainshaft assembly and reverse idler gear assembly as a set, tapping input shaft with plastic hammer.

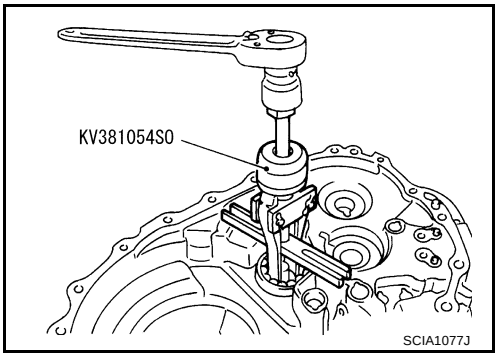
CAUTION:
Always withdraw mainshaft straight out. Failure to do so can damage resin oil channel on clutch housing side.

b. Remove final drive assembly.



SCIA0964E

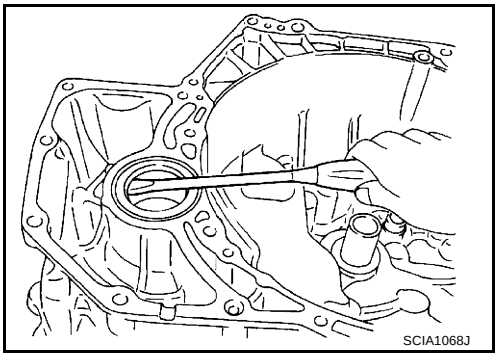
34. Remove mainshaft bearing retainer and then mainshaft front bearing from clutch housing using the puller.
35. Remove oil channel from clutch housing.



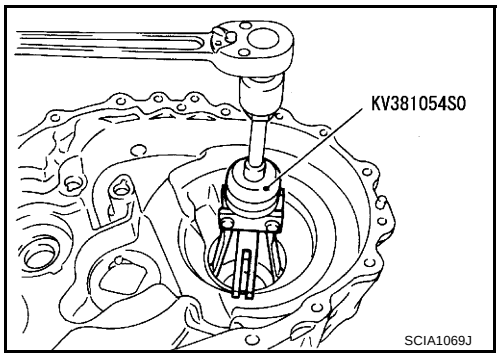
SCIA1077J

36. Remove differential side oil seal from clutch housing.

CAUTION:
Be careful not to damage clutch housing.


SCIA1068J

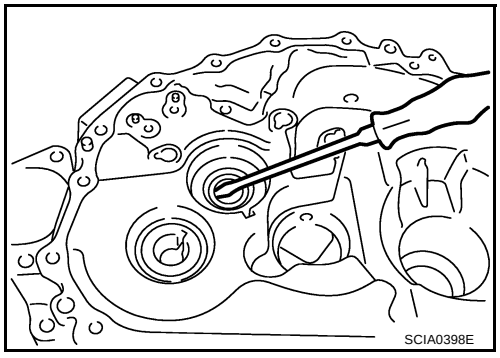
37. Remove differential side bearing outer race from clutch housing using the puller.



38. Remove input shaft oil seal from clutch housing.

CAUTION:

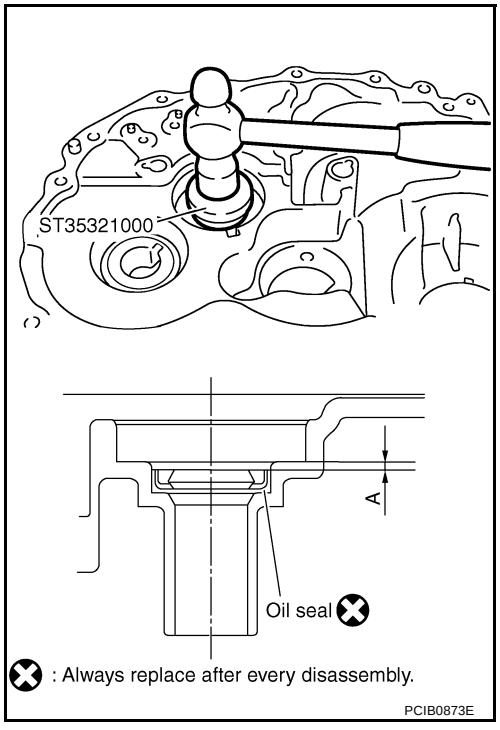
Be careful not to damage clutch housing.



ASSEMBLY

1. Install input shaft oil seal to clutch housing using the drift.

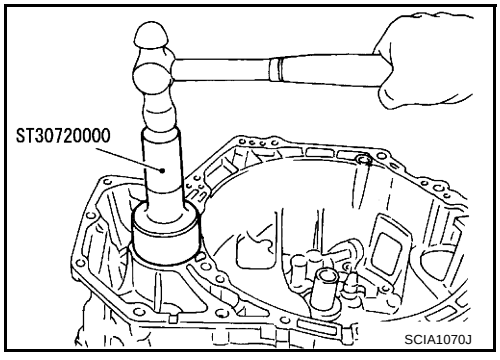
Dimension "A": 1.8 - 2.8 mm (0.071 - 0.110 in)



2. Install differential side oil seal until it become flush with end face of clutch housing using the drift.

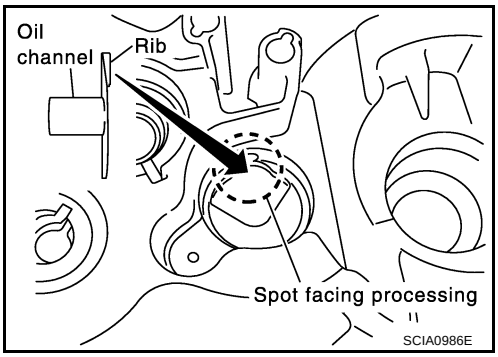
CAUTION:

- **Do not reuse differential side oil seal.**
- **Apply multi-purpose grease onto oil seal lip (for 4WD models).**



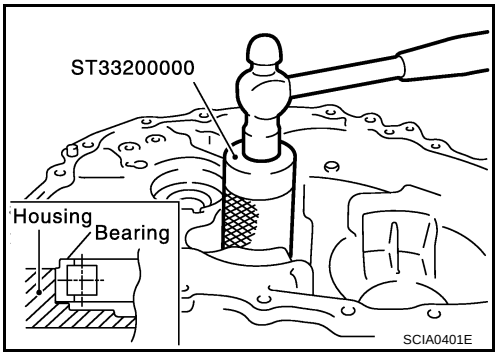
3. Install oil channel on mainshaft side.

CAUTION:
Be careful with the orientation of installation.



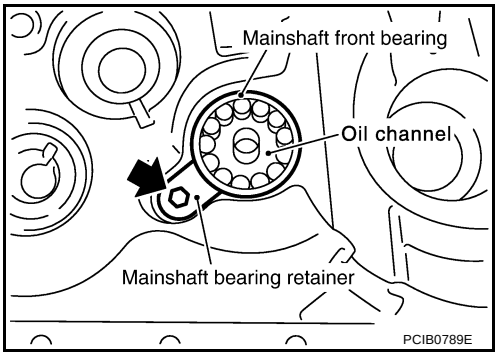
4. Install mainshaft front bearing to clutch housing using the drift.

CAUTION:
Be careful with the orientation of installation.

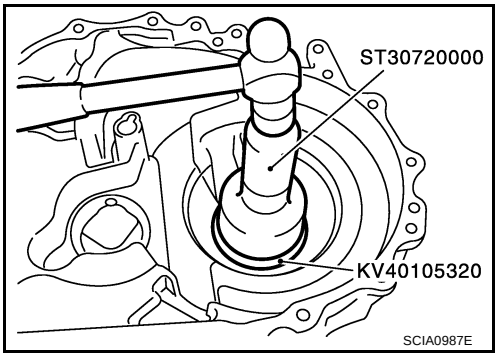


5. Install mainshaft bearing retainer to clutch housing and tighten mounting bolt to the specified torque. Refer to MT-41, "Gear Components" .

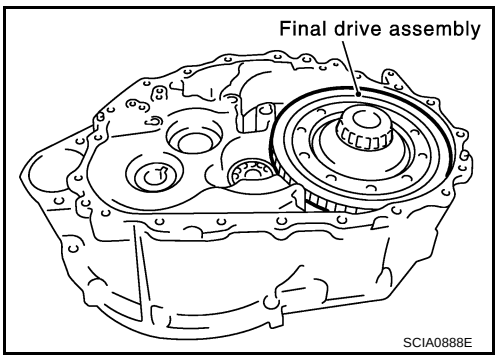
CAUTION:
Install with punched surface facing up.



6. Install differential side bearing outer race to clutch housing using the drifts.

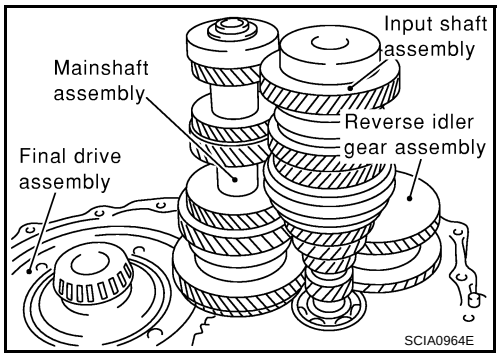


7. Install final drive assembly into clutch housing.



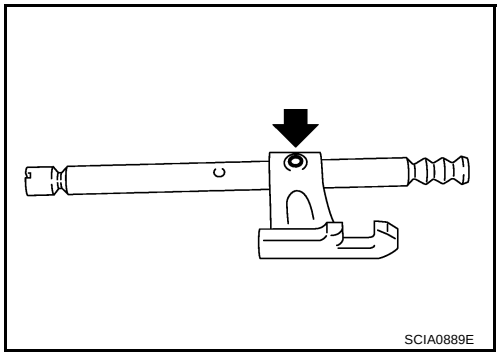
8. Install input shaft assembly, mainshaft assembly, and reverse idler gear assembly into clutch housing.

   CAUTION:
   Be sure not to damage input shaft oil seal.



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

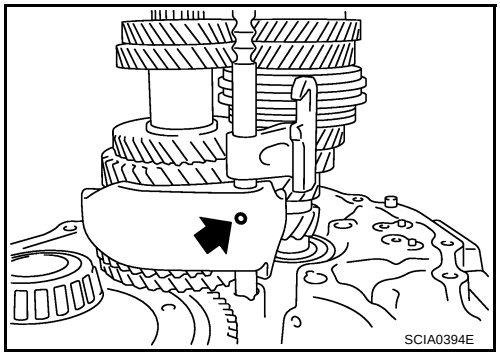
   CAUTION:
   Do not reuse retaining pin.



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

    CAUTION:
    Do not reuse retaining pin.

11. Install shift check sleeve to clutch housing.



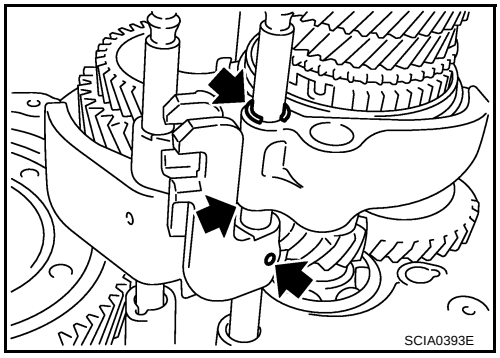
12. Install interlock pin to 3rd-4th fork rod.
13. Install 3rd-4th bracket, 3rd-4th shift fork, and 3rd-4th fork rod.
14. Install stopper rings onto 3rd-4th shift fork.

    CAUTION:
    Do not reuse stopper ring.

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

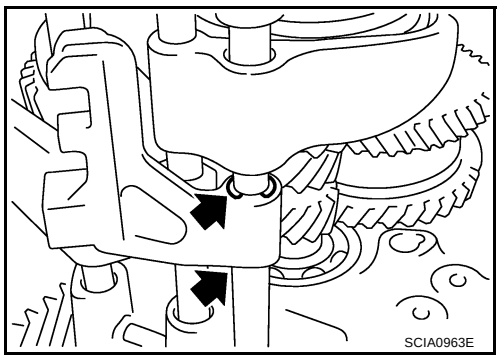
    CAUTION:
    Do not reuse retaining pin.

16. Install 2 check balls to clutch housing.



17. Install 5th-6th bracket, 5th-6th shift fork, and 5th-6th fork rod with interlock pin.
18. Install stopper rings onto 5th-6th bracket.

    CAUTION:
    Do not reuse stopper ring.



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

CAUTION:
Do not reuse retaining pin.

20. Install 2 check balls.
21. Install check ball, shift check sleeve, check spring and check plug.

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

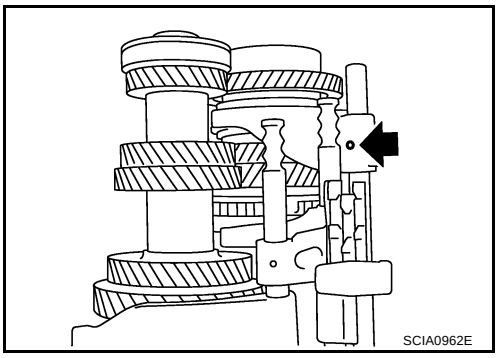
22. Install reverse bracket fork rod and reverse bracket.
23. Install retaining pin onto reverse bracket.

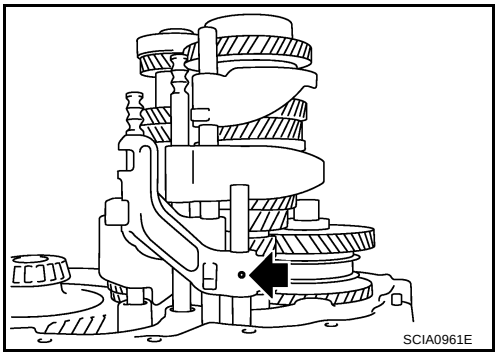
CAUTION:
Do not reuse retaining pin.

24. Install reverse shift fork and reverse fork rod.
25. Install reverse lever assembly following the procedures below.

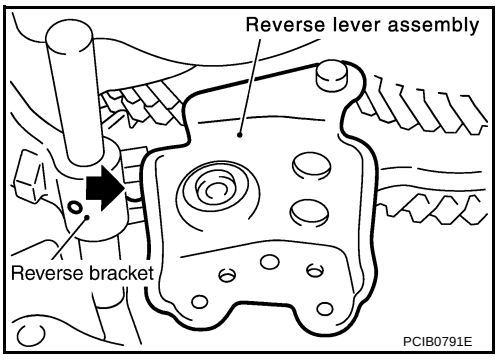
a. Install shifter cap onto reverse lever assembly cam, and then install them onto reverse shift fork.

CAUTION:
Do not drop shifter cap.





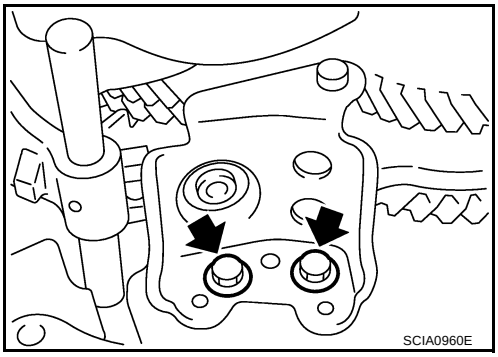
b. While lifting reverse shift fork, align cam with reverse bracket.



c. Install reverse lever assembly to clutch housing, and then tighten mounting bolts to the specified torque. Refer to MT-43, "Shift Control Components" .
26. Install check ball, shift check sleeve, check spring and check plug to clutch housing.

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

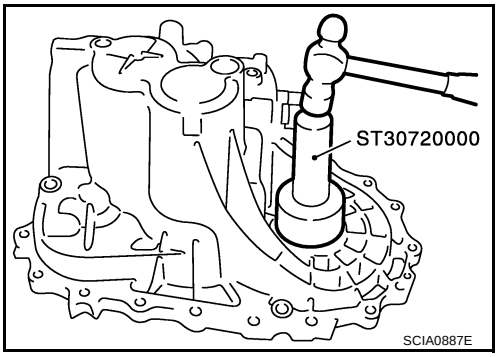
27. Install the magnet onto clutch housing.



28. Install differential side oil seal until it is flush with end face of transaxle case using the drift.

CAUTION:
Do not reuse differential side oil seal.

29. Install selected differential side bearing adjusting shims and differential side bearing outer race.
    - For selection of adjusting shims, refer to MT-54, "Differential Side Bearing Preload" .
30. Install selected reverse idler gear adjusting shim onto reverse idler gear assembly.



- For selection of adjusting shim, refer to MT-55, "Reverse Idler Gear End Play" .

31. Install selected input shaft rear bearing adjusting shim onto input shaft.
    - For selection of adjusting shim, refer to MT-56, "Input Shaft End Play" .
32. Install baffle plate and oil gutter to transaxle case.
33. Install transaxle case following the procedures below.

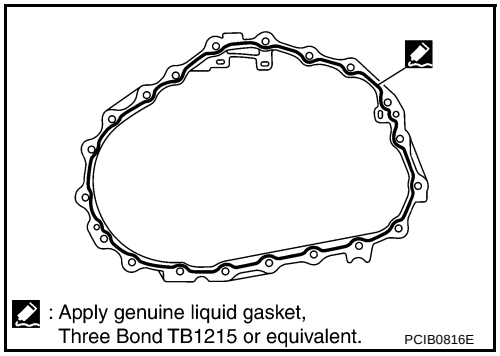
a. Install selected mainshaft rear bearing adjusting shim into transaxle case.
   - For selection of adjusting shim, refer to MT-57, "Mainshaft End Play" .

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

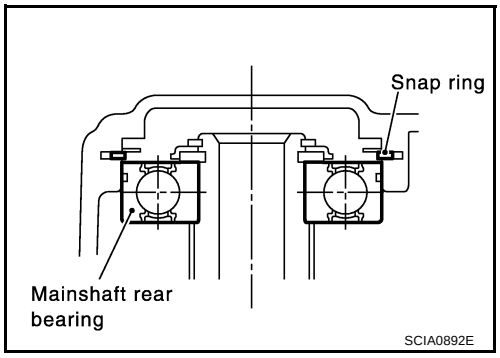
CAUTION:
Do not reuse snap ring.

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

CAUTION:
Remove old sealant adhering to the mounting surfaces. Also remove any moisture, oil, or foreign material adhering to both mounting surfaces.

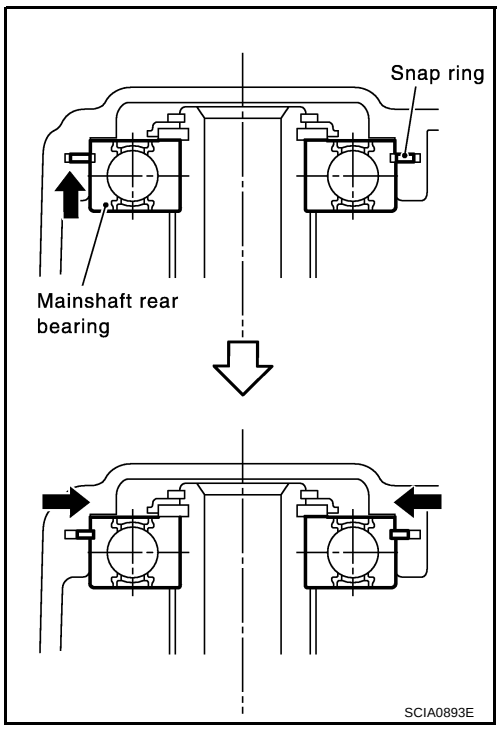


d. With snap ring of mainshaft rear bearing temporarily installed, place transaxle case over clutch housing.



e. Lift up mainshaft assembly from the control assembly mounting hole through the bore plug mounting hole with snap ring stretched.

f. Securely install snap ring onto mainshaft rear bearing.



g. Tighten mounting bolts to the specified torque.

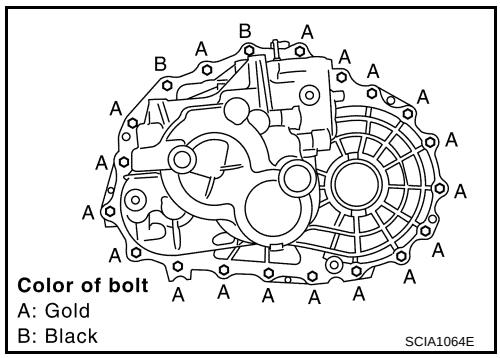
Bolt A:

: 52 N·m (5.3 kg-m, 38 ft-lb)

Bolt B:

: 65 N·m (6.6 kg-m, 48 ft-lb)

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



h. Apply gear oil to O-ring and install it to control assembly. Then install control assembly to transaxle case. Tighten bolts to the specified torque. Refer to MT-43, "Shift Control Components" .

CAUTION:
Do not reuse O-ring.

i. Install shift check to transaxle case, and then tighten shift check to the specified torque. Refer to MT-43, "Shift Control Components" .

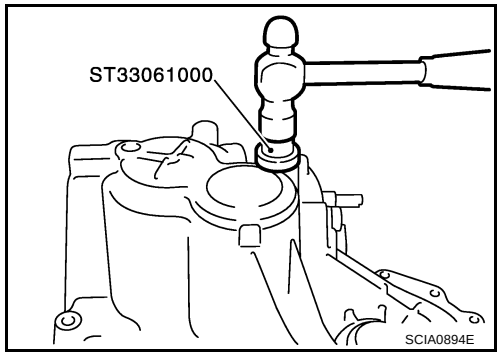
CAUTION:
Does not reuse shift check.

j. Install stopper bolt to transaxle case, and then tighten stopper bolt to the specified torque. Refer to MT-43, "Shift Control Components" .

CAUTION:
Do not reuse stopper bolt.

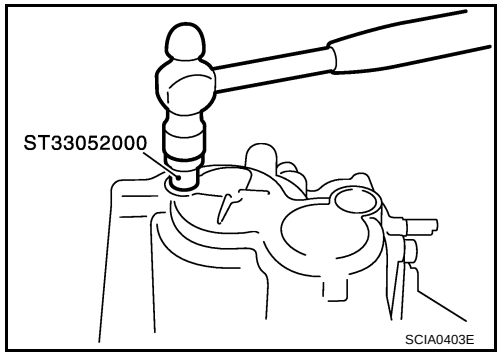
34. Install bore plug to transaxle case using the drift.

CAUTION:
Do not reuse bore plug.



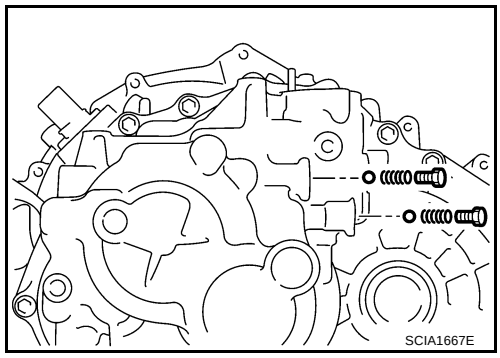
35. Install welch plug to transaxle case using the drift.

CAUTION:
Do not reuse welch plug.

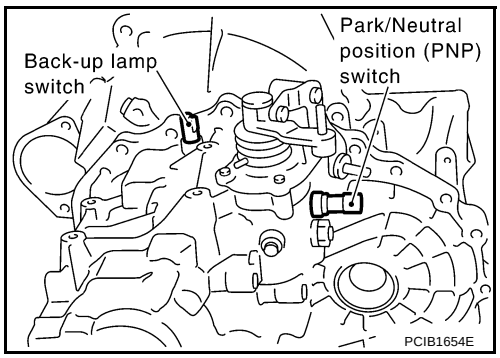


36. Install 2 check balls, 2 check springs and 2 check plugs to transaxle case, and then tighten check plug to the specified torque. Refer to MT-43, "Shift Control Components" .

CAUTION:
Do not reuse check plug.



37. Apply recommended sealant to threads of park/neutral position (PNP) switch and back-up lamp switch. Then install them to transaxle case and tighten to the specified torque. Refer to MT-40, "Case and Housing Components" .



38. Install gaskets onto drain plug and plug, and then install them into transaxle case. Tighten drain plug and plug to the specified torque. Refer to MT-40, "Case and Housing Components" .

CAUTION:
Do not reuse gasket.

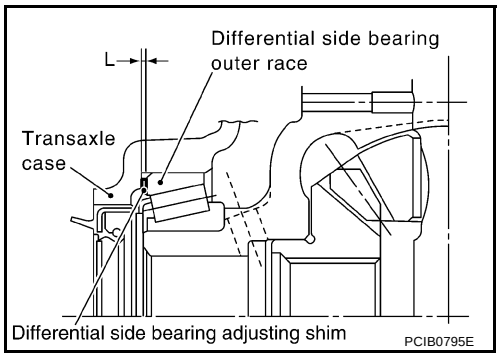
39. Install O-ring onto plug (for 2WD models) or gasket onto filler plug (for 4WD models), and then install it into clutch housing. Tighten plug mounting bolt (for 2WD models) or filler plug (for 4WD models) to the specified torque. Refer to MT-40, "Case and Housing Components" .

CAUTION:
- **Do not reuse O-ring or gasket.**
- **After oil is filled, tighten plug mounting bolt (for 2WD models) or filler plug (for 4WD models) to the specified torque.**

ADJUSTMENT

Differential Side Bearing Preload

- When adjusting differential side bearing preload, select adjusting shim for differential side bearing. To select adjusting shim, measure the clearance “L” between transaxle case and differential side bearing outer race. Refer to MT-109, "DIFFERENTIAL SIDE BEARING ADJUSTING SHIM(S)" .



CAUTION:
Up to 2 adjusting shims can be selected.

- Calculate the 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)

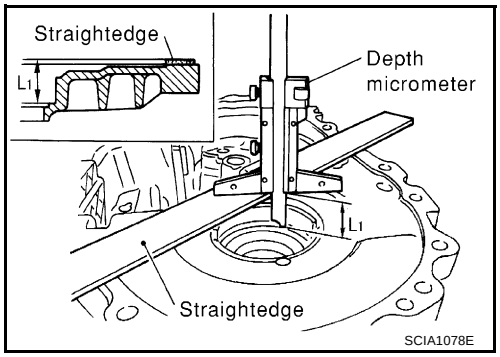
Dimension “L” = (L_1 - L_2) + Preload

L: Thickness of adjusting shim

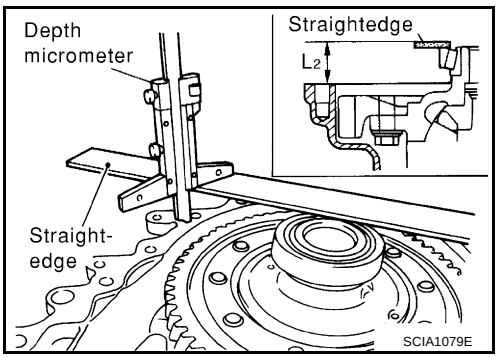
L_1 : Distance between transaxle case end face and mounting face of adjusting shim

L_2 : Distance between differential side bearing outer race and clutch housing end face

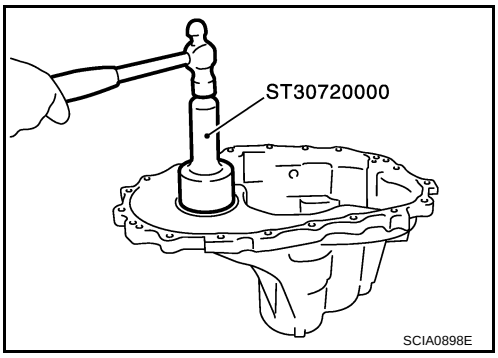
1. Using depth micrometer and straightedge, measure the dimension “L_1 ” between transaxle case end face and mounting face of adjusting shim.
2. Install differential side bearing outer race onto differential side bearing on final gear side. Holding lightly differential side bearing outer race horizontally by hand, rotate final gear five times or more (for smooth movement of bearing roller).



3. Using depth micrometer and straightedge as shown in the figure, measure the dimension “L_2 ” between differential side bearing outer race and clutch housing end face.



4. Install selected differential side bearing adjusting shim, and then install differential side bearing outer race using the drift.

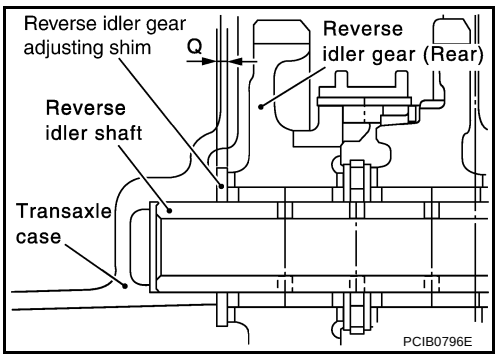


Reverse Idler Gear End Play

- When adjusting reverse idler gear end play, select adjusting shim for reverse idler gear. To select adjusting shim, measure the clearance between transaxle case and reverse idler gear. Refer to MT-108, "REVERSE IDLER GEAR ADJUSTING SHIM" .

  CAUTION:
  Only 1 adjusting shim can be selected.

- Calculate the 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)

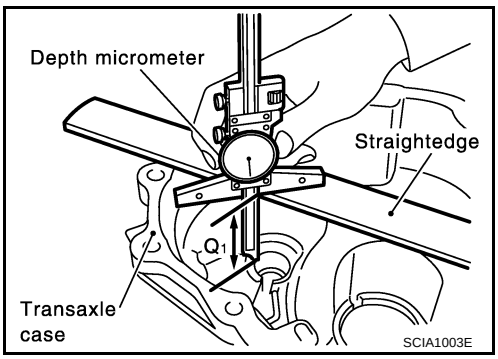
Dimension “Q” = (Q_1 - Q_2) - End play

Q: Thickness of adjusting shim

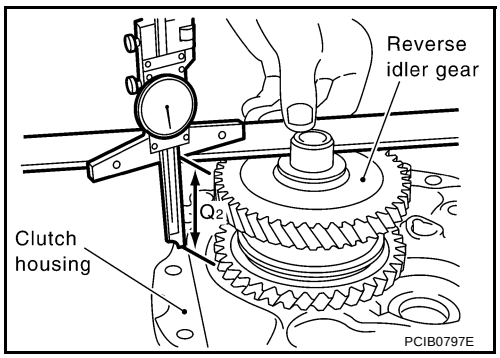
Q_1 : Distance between transaxle case end face and mounting face of adjusting shim

Q_2 : Distance between clutch housing end face and end face of reverse idler gear (Rear)

1. Using depth micrometer and straightedge, measure the dimension “Q_1 ” between transaxle case end face and mounting face of adjusting shim.



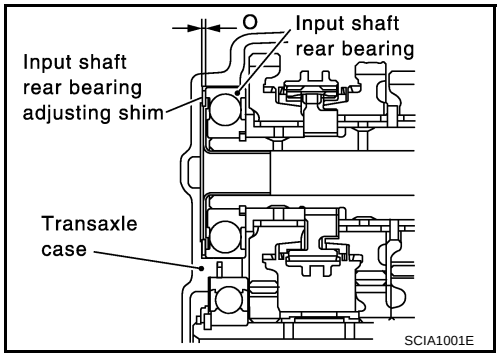
2. Using depth micrometer and straightedge as shown in the figure, measure the dimension “Q_2 ” between clutch housing end face and end face of reverse idler gear (Rear).
3. Install selected reverse idler gear adjusting shim onto reverse idler gear assembly.



Input Shaft End Play

- When adjusting input shaft end play, select adjusting shim for input shaft rear bearing. To select adjusting shim, measure the clearance between transaxle case and input shaft rear bearing. Refer to MT-108, "INPUT SHAFT REAR BEARING ADJUSTING SHIM" .

  CAUTION:
  Only 1 adjusting shim can be selected.
- Calculate the 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)

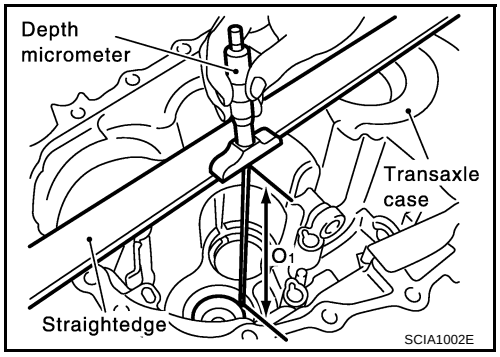
Dimension “O” = (O_1 - O_2) - End play

O: Thickness of adjusting shim

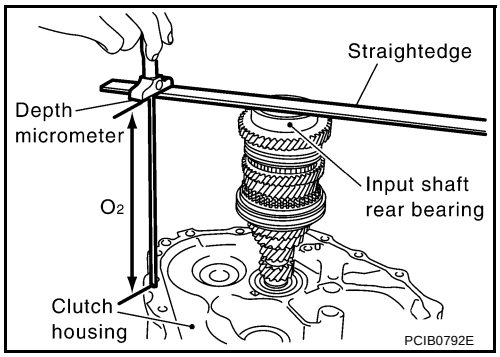
O_1 : Distance between transaxle case end face and mounting face of adjusting shim

O_2 : Distance between clutch housing end face and end face of input shaft rear bearing

1. Using depth micrometer and straightedge, measure the dimension “O_1 ” between transaxle case end face and mounting face of adjusting shim.



2. Using depth micrometer and straightedge as shown in the figure, measure the dimension “O_2 ” between clutch housing end face and end face of input shaft rear bearing.
3. Install selected input shaft rear bearing adjusting shim onto input shaft.

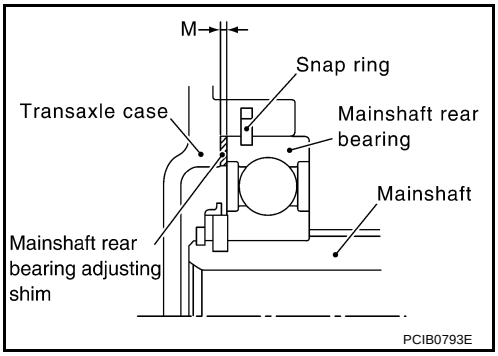


Mainshaft End Play

- When adjusting mainshaft end play, select adjusting shim for mainshaft rear bearing. To select adjusting shim, measure the clearance “M” between transaxle case and mainshaft rear bearing. Refer to MT-108, "MAINSHAFT REAR BEARING ADJUSTING SHIM" .

  CAUTION:

  Only 1 adjusting shim can be selected.



- Calculate the dimension “P” (thickness of adjusting shim) using the following procedure to satisfy specification of end play for mainshaft rear bearing.

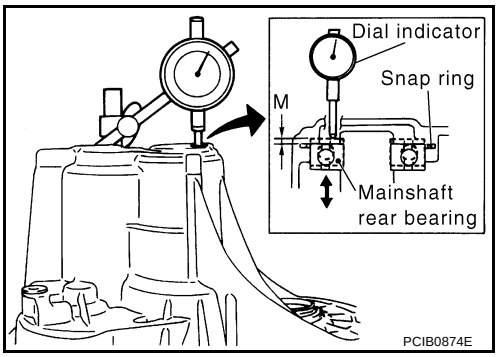
  End play: 0 - 0.06 mm (0 - 0.0024 in)

  Dimension “P” = “M” - End play

  P: Thickness of adjusting shim

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

1. 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 indicator to bore plug mounting 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 rear bearing, becomes “M”.



INPUT SHAFT AND GEARS

PFP:32200

Disassembly and Assembly (RS5F51A)

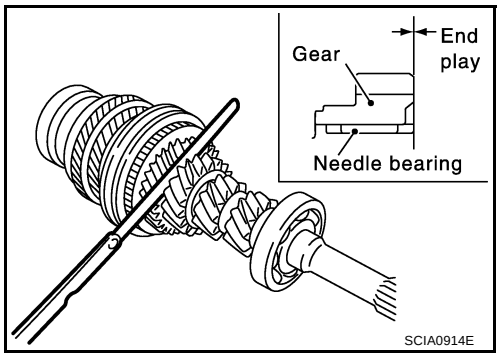
BCS000A9

DISASSEMBLY

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

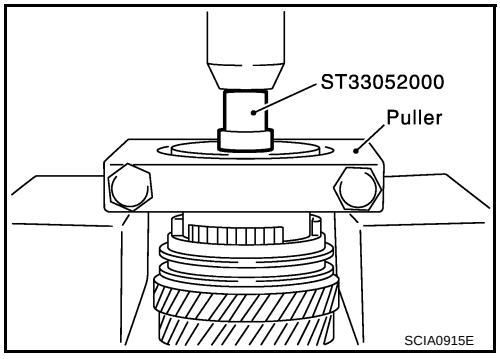
End play standard value

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

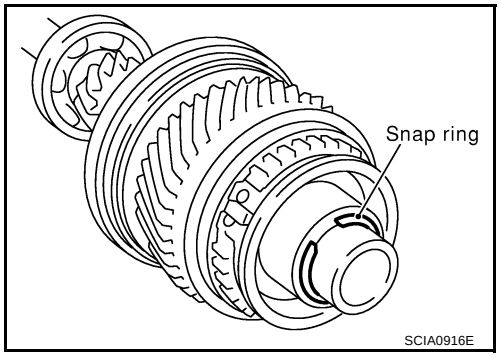


2. Remove oil channel.

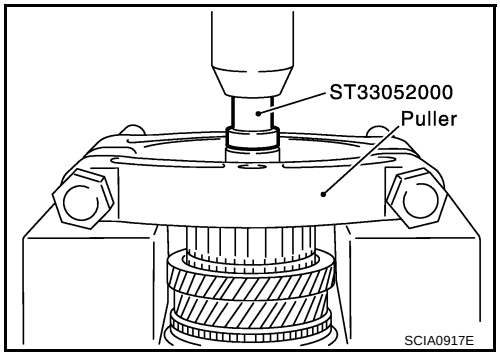
3. Press out input shaft rear bearing using the drift and a puller.



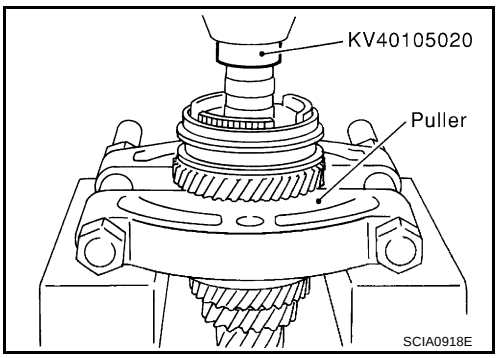
4. Remove snap ring.



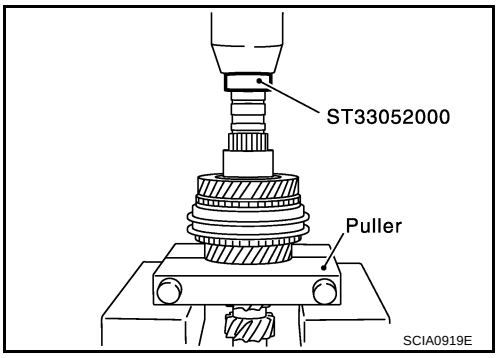
5. Press out input shaft bearing spacer and 5th stopper using the drift and a puller.



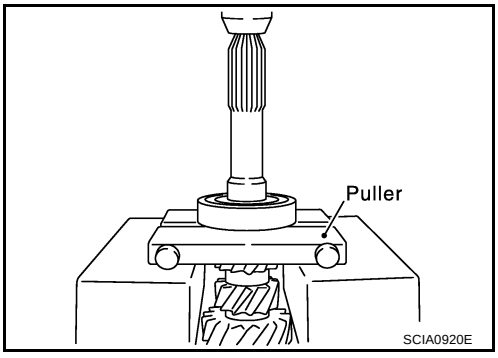
6. Press out 5th input gear and 5th synchronizer hub assembly using the drift and a puller.
7. Remove 5th needle bearing.



8. Press out 5th input gear bushing, thrust washer, 4th input gear, 4th needle bearing, 4th input gear bushing, 3rd-4th synchronizer hub assembly and 3rd input gear using the drift and a puller.
9. Remove 3rd needle bearing.



10. Press out input shaft front bearing using a puller.

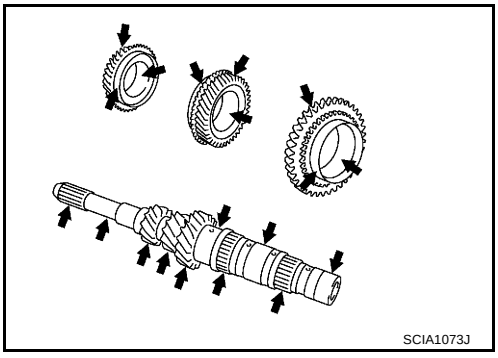


INSPECTION AFTER DISASSEMBLY

Input Shaft and Gears

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

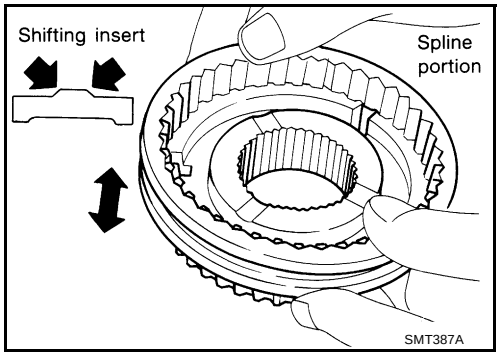
- Damage, peeling, dent, uneven wear, bending, and other non-standard conditions of the shaft.
- Excessive wear, damage, peeling, and other non-standard conditions of the gears.



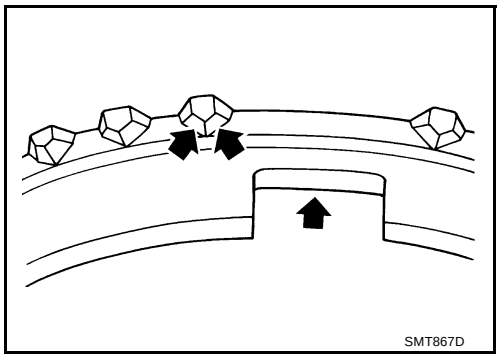
Synchronizer

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

- Damage and 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

- **Single-cone synchronizer (4th and 5th)**
  Push baulk ring on the cone, and measure the clearance between baulk ring and cone. If the measurement is below limit, replace it with a new one.

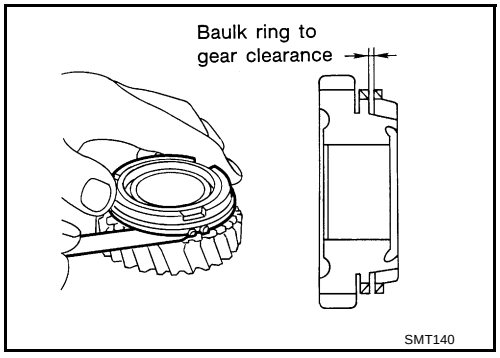
  Clearance

  Standard value

  4th: **0.9 - 1.45 mm (0.035 - 0.057 in)**

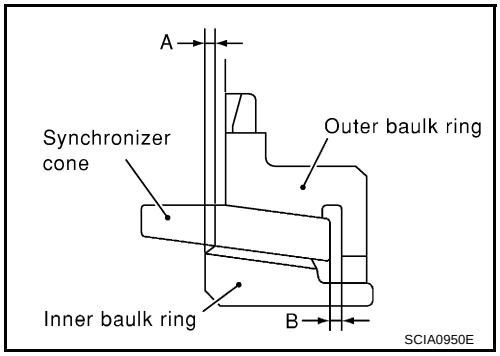
  5th: **0.95 - 1.4 mm (0.037 - 0.055 in)**

  Limit value: **0.7 mm (0.028 in)**



- **Double-cone synchronizer (3rd)**
  Check the clearance between outer baulk ring, synchronizer cone and inner baulk ring as follows.

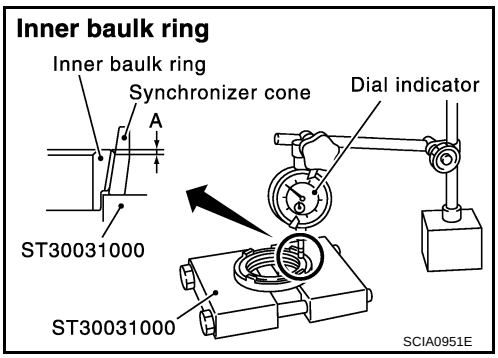
  CAUTION:
  The clearances “A” and “B” are controlled with outer baulk ring, synchronizer cone and inner baulk ring as a set. Replace them as a set if the clearances are outside the limit value.



1. Measure the clearance “A” at 2 points or more diagonally opposite using a dial indicator. And then calculate mean value.

Clearance “A”

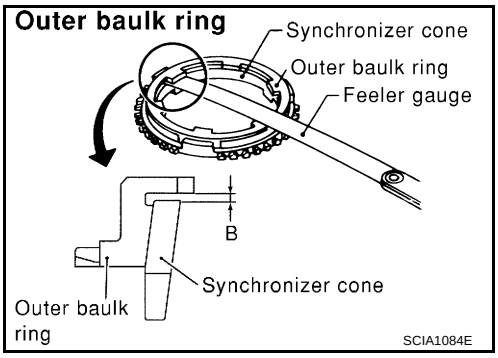
Standard value:	**0.6 - 0.8 mm (0.024 - 0.031 in)**
Limit value:	**0.2 mm (0.008 in)**



2. Measure the clearance “B” at 2 points or more diagonally opposite using a feeler gauge. And then calculate mean value.

Clearance “B”

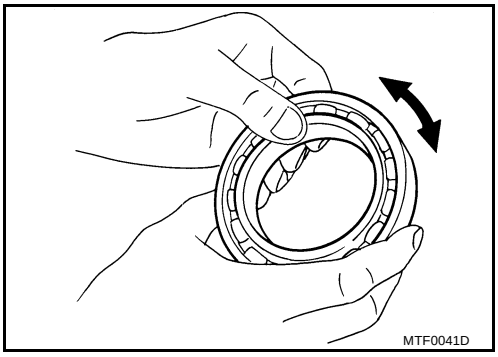
Standard value:	**0.6 - 1.1 mm (0.024 - 0.043 in)**
Limit value:	**0.2 mm (0.008 in)**



Bearing

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

- Damage and rough rotation of bearing

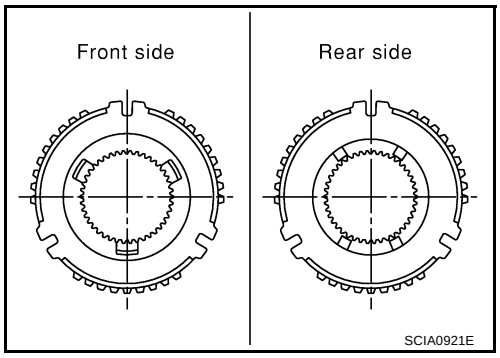


ASSEMBLY

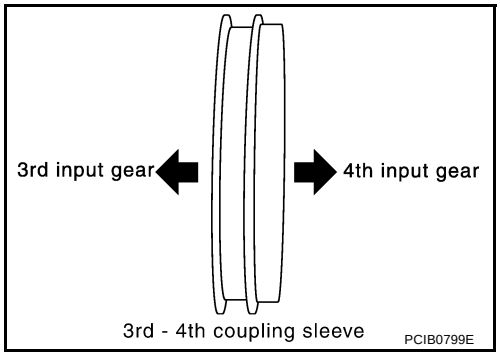
1. Install 3rd needle bearing to input shaft.
2. Install 3rd input gear, 3rd inner baulk ring, 3rd synchronizer cone and 3rd outer baulk ring to input shaft.
3. Install 3rd-4th spread spring, 3rd-4th shifting insert and 3rd-4th synchronizer hub onto 3rd-4th coupling sleeve.

CAUTION:

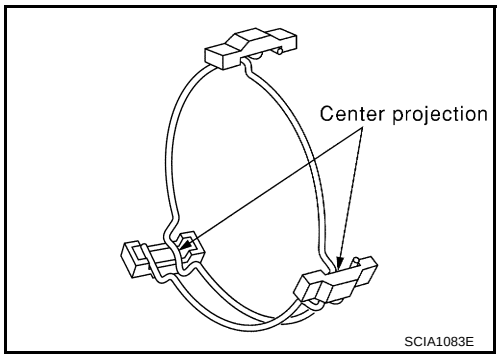
- **Be careful with the orientation of 3rd-4th synchronizer hub.**
- **Do not reuse 3rd-4th synchronizer hub.**



- **Be careful with the orientation of 3rd-4th coupling sleeve.**
- **Do not reuse 3rd-4th coupling sleeve.**



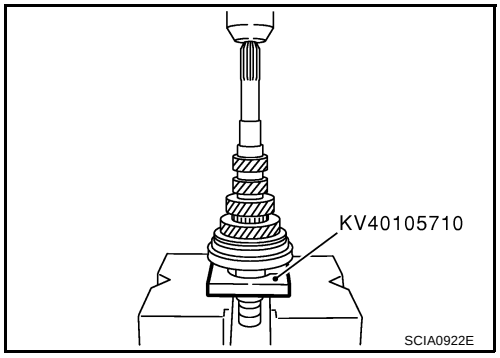
- **Be sure not to hook center projection of 2 spread springs on same shifting insert.**



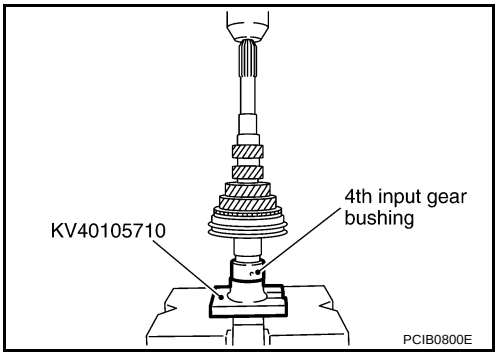
4. Press in 3rd-4th synchronizer hub assembly using the press stand.

CAUTION:

Align grooves of 3rd-4th shifting insert and 3rd outer baulk ring.



5. Press in 4th input gear bushing using the press stand.
6. Install 4th baulk ring.
7. Install 4th needle bearing and 4th input gear to input shaft.

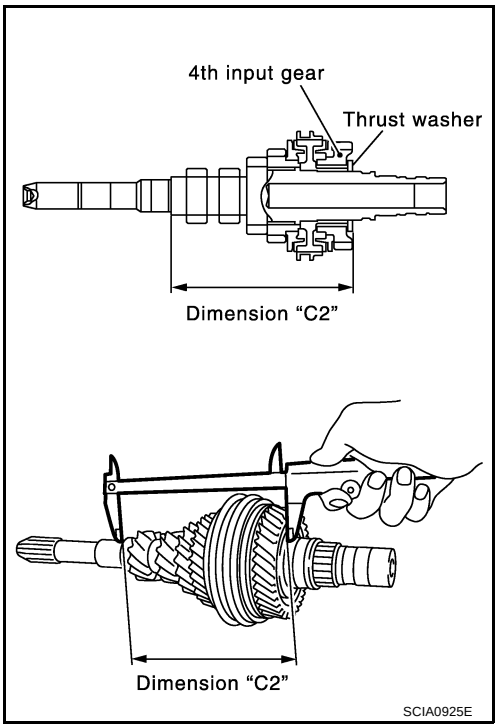


8. Select thrust washer so that the dimension “C2” satisfies the standard value below. Then install thrust washer onto input shaft. Refer to MT-107, "INPUT SHAFT THRUST WASHER" .

Standard for dimension “C2”:

154.7 - 154.8 mm (6.091 - 6.094 in)

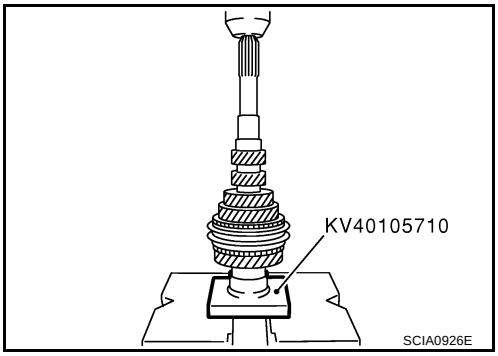
CAUTION:
Only one thrust washer can be selected.



9. Press in 5th input gear bushing using the press stand.

CAUTION:
Do not reuse 5th input gear bushing.

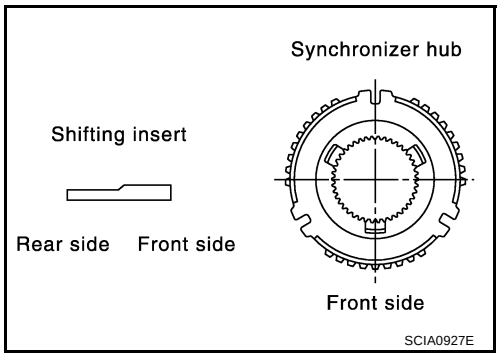
10. Install 5th needle bearing and 5th input gear to input shaft.
11. Install 5th baulk ring.



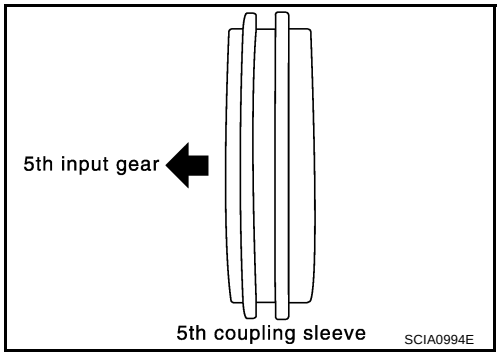
12. Install 5th synchronizer hub and 5th spread spring, 5th shifting insert onto 5th coupling sleeve.

CAUTION:

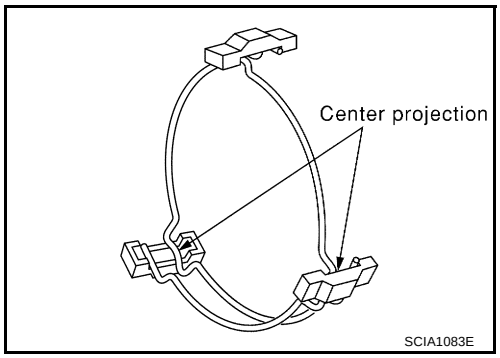
- **Be careful with the orientation of 5th synchronizer hub and shifting insert.**
- **Do not reuse 5th synchronizer hub.**



- **Be careful with the orientation of 5th coupling sleeve.**
- **Do not reuse 5th coupling sleeve.**



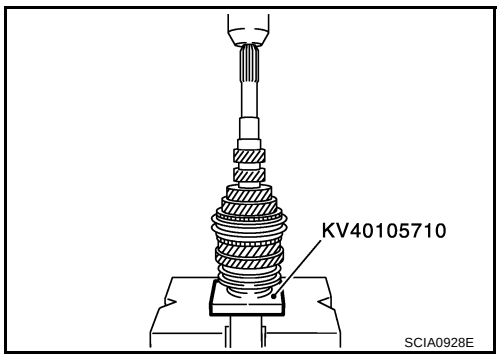
- **Be sure not to hook center projection of 2 spread springs on same shifting insert.**



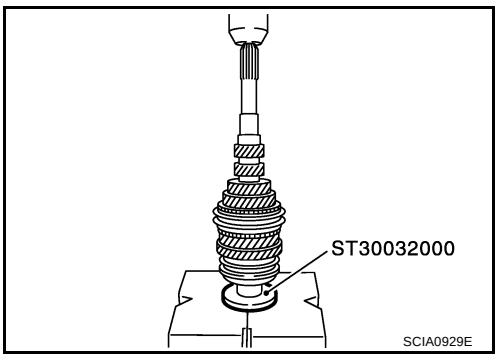
13. Press in 5th synchronizer hub assembly using the press stand.

CAUTION:

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



14. Press in 5th stopper and then input shaft bearing spacer using the drift.

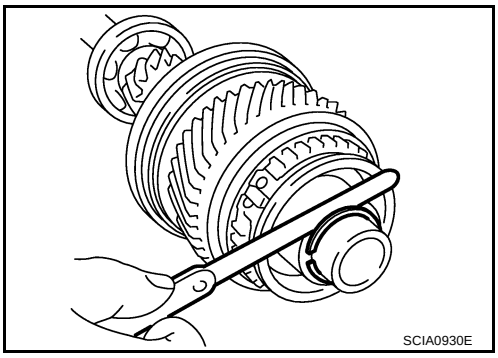


15. Install snap ring onto input shaft, and make sure that end play (gap between snap ring and groove) of input shaft bearing spacer satisfies the standard value.

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

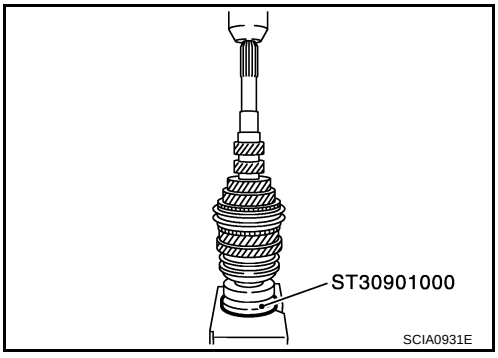
- If the measurement is outside the standard range, select snap ring. Refer to MT-106, "INPUT SHAFT BEARING SPACER" .

CAUTION:
Do not reuse snap ring.

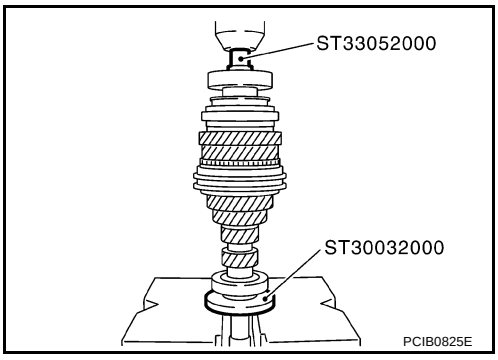


16. Press in input shaft rear bearing using the drift.

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



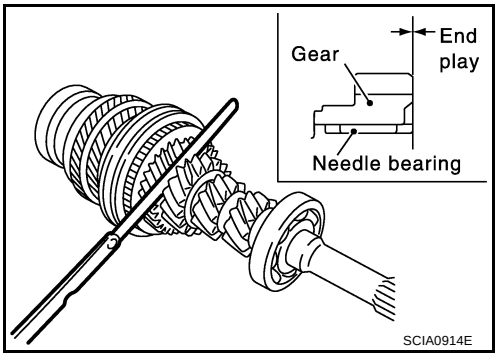
17. Press in input shaft front bearing using the drifts.
18. Install oil channel onto input shaft.



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

End play standard value

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



Disassembly and Assembly (RS6F51A)

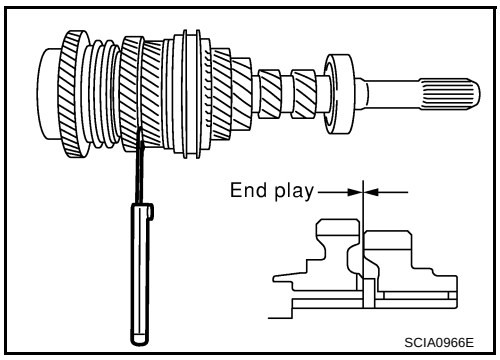
BCS000AA

DISASSEMBLY

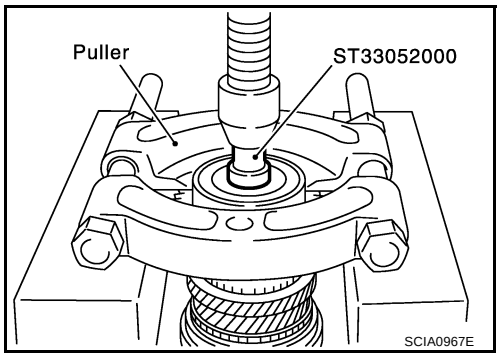
1. Before disassembling, measure end play for 3rd, 4th, 5th and 6th input gears.

End play standard value

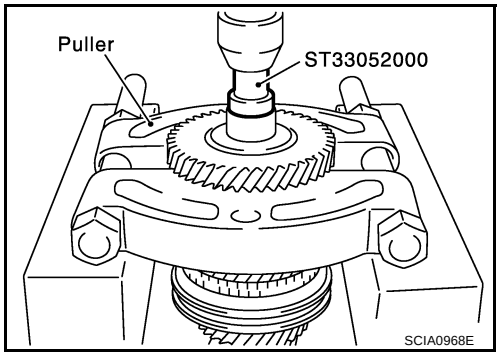
3rd input gear:	**0.18 - 0.31 mm (0.0071 - 0.0122 in)**
4th input gear:	**0.20 - 0.30 mm (0.0079 - 0.0118 in)**
5th input gear:	**0.06 - 0.16 mm (0.0024 - 0.0063 in)**
6th input gear:	**0.06 - 0.16 mm (0.0024 - 0.0063 in)**



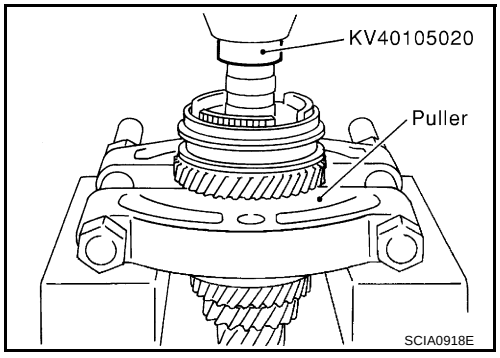
2. Remove oil channel.
3. Press out input shaft rear bearing using the drift and a puller.
4. Remove snap ring.



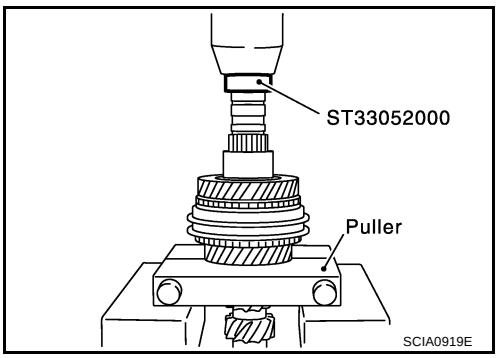
5. Press out 6th input gear, 6th needle bearing and 6th input gear bushing using the drift and a puller.
6. Remove 6th baulk ring.



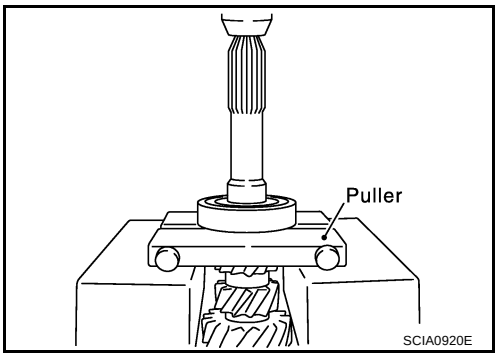
7. Press out 5th input gear and 5th-6th synchronizer hub assembly using the drift and a puller.
8. Remove 5th needle bearing.



9. Press out 5th input gear bushing, thrust washer, 4th input gear, 4th needle bearing, 4th input gear bushing, 3rd-4th synchronizer hub assembly and 3rd input gear using the drift and a puller.
10. Remove 3rd needle bearing.



11. Press out input shaft front bearing using a puller.

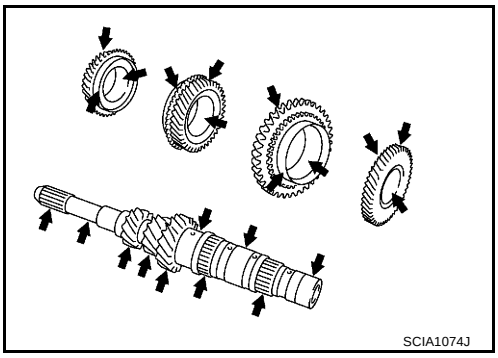


INSPECTION AFTER DISASSEMBLY

Input Shaft and Gears

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

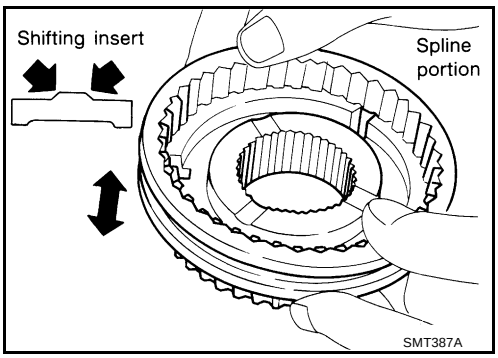
- Damage, peeling, dent, uneven wear, bending, and other non-standard conditions of the shaft.
- Excessive wear, damage, peeling, and other non-standard conditions of the gears.



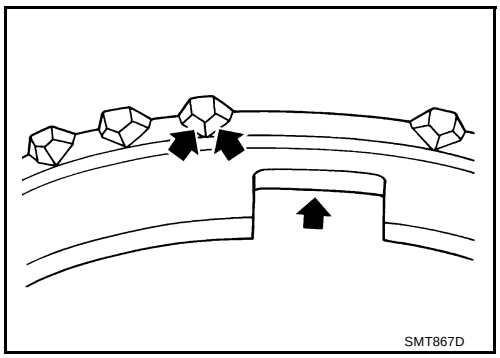
Synchronizer

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

- Damage and 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

- **Single-cone synchronizer (4th, 5th and 6th)**
  Push baulk ring on the cone, and measure the clearance between baulk ring and cone. If the measurement is below limit, replace it with a new one.

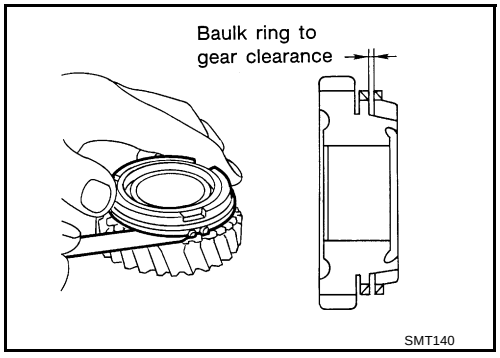
  Clearance

  Standard value

  4th: 0.9 - 1.45 mm (0.035 - 0.057 in)

  5th and 6th: 0.95 - 1.4 mm (0.037 - 0.055 in)

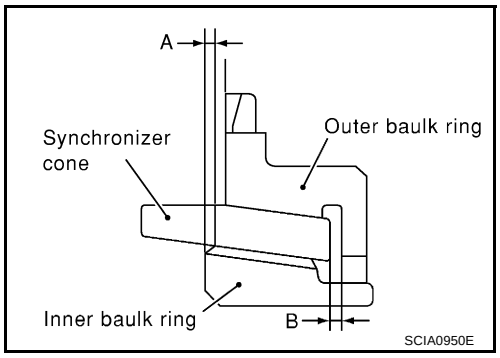
  Limit value: 0.7 mm (0.028 in)



- **Double-cone synchronizer (3rd)**
  Check the clearance between outer baulk ring, synchronizer cone and inner baulk ring as follows.

  CAUTION:

  The clearances “A” and “B” are controlled with outer baulk ring, synchronizer cone and inner baulk ring as a set. Replace them as a set if the clearances are outside the limit value.

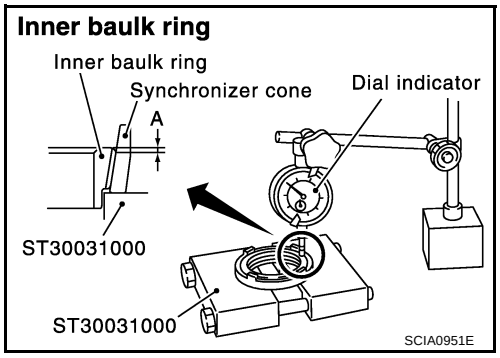


1. Measure the clearance “A” at 2 points or more diagonally opposite using a dial indicator. And then calculate mean value.

   Clearance “A”

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

   Limit value: 0.2 mm (0.008 in)

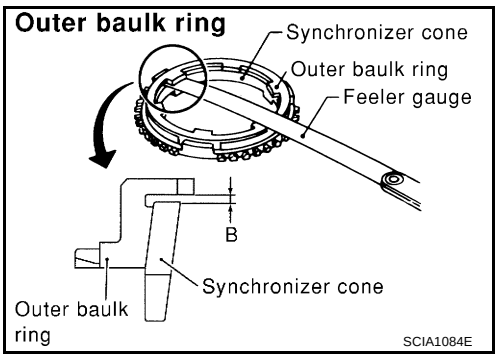


2. Measure the clearance “B” at 2 points or more diagonally opposite using a feeler gauge. And then calculate mean value.

Clearance “B”

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

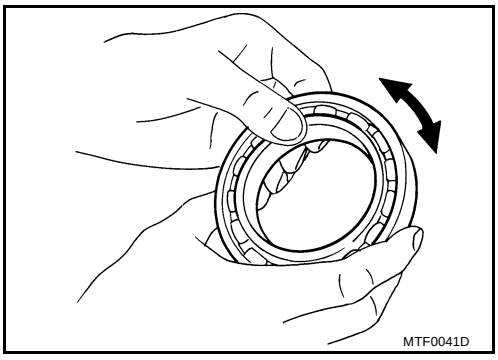
Limit value: **0.2 mm (0.008 in)**



Bearing

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

- Damage and rough rotation of bearing

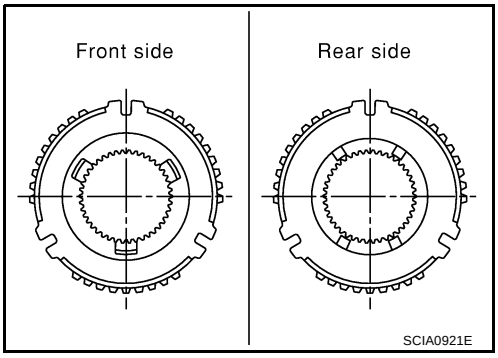


ASSEMBLY

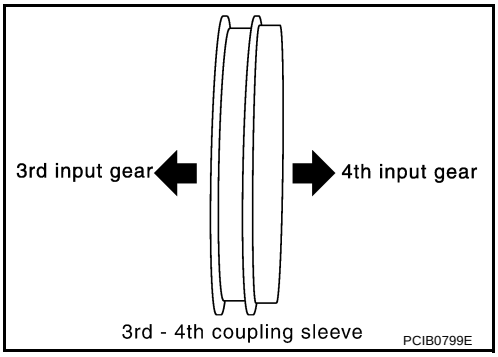
1. Install 3rd needle bearing to input shaft.
2. Install 3rd input gear, 3rd inner baulk ring, 3rd synchronizer cone and 3rd outer baulk ring to input shaft.
3. Install 3rd-4th spread spring,3rd-4th shifting insert and 3rd-4th synchronizer hub onto 3rd-4th coupling sleeve.

CAUTION:

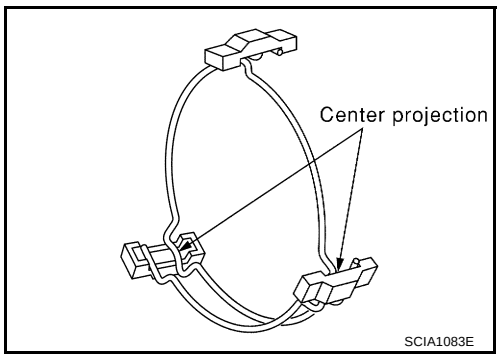
- **Be careful with the orientation of 3rd-4th synchronizer hub.**
- **Do not reuse 3rd-4th synchronizer hub.**



- **Be careful with the orientation of 3rd-4th coupling sleeve.**
- **Do not reuse 3rd-4th coupling sleeve.**

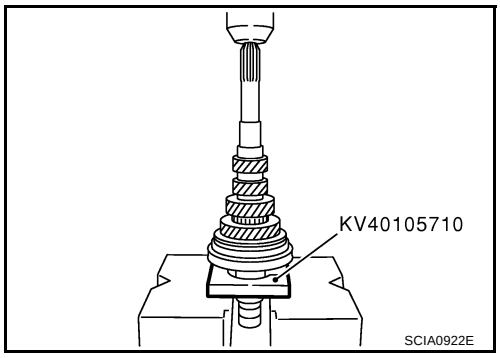


- **Be sure not to hook center projection of 2 spread springs on same shifting insert.**

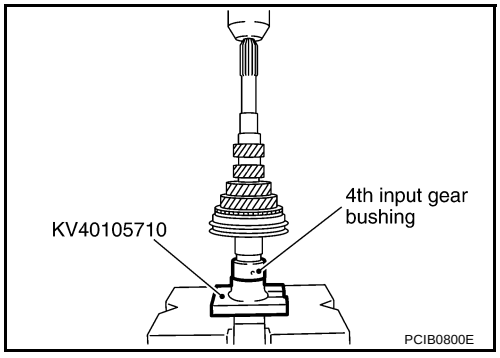


4. Press in 3rd-4th synchronizer hub assembly using the press stand.

   CAUTION:
   Align grooves of 3rd-4th shifting insert and 3rd outer baulk ring.



5. Press in 4th input gear bushing using the press stand.
6. Install 4th baulk ring.
7. Install 4th needle bearing and 4th input gear to input shaft.

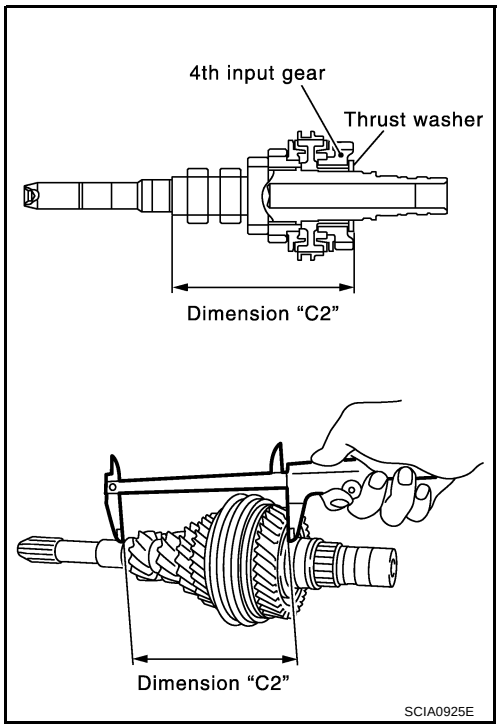


8. Select thrust washer so that the dimension “C2” satisfies the standard value below. Then install thrust washer onto input shaft. Refer to MT-107, "INPUT SHAFT THRUST WASHER" .

   Standard for dimension “C2”:

   154.7 - 154.8 mm (6.091 - 6.094 in)

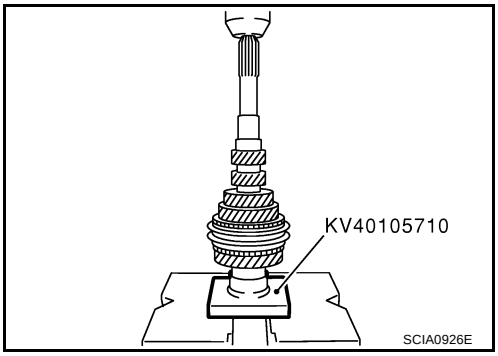
   CAUTION:
   Only one thrust washer can be selected.



9. Press in 5th input gear bushing using the press stand.

CAUTION:
Do not reuse 5th input gear bushing.

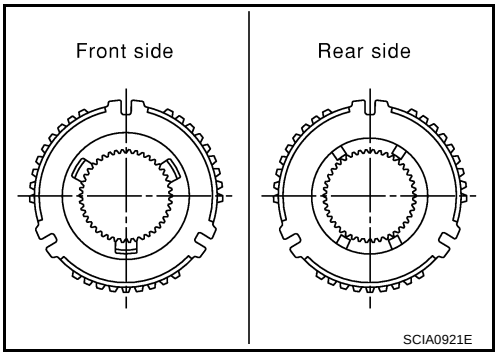
10. Install 5th needle bearing and 5th input gear to input shaft.
11. Install 5th baulk ring.



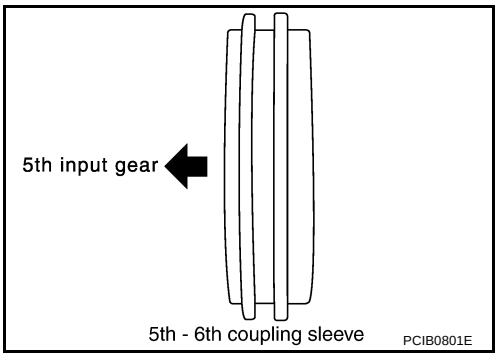
12. Install 5th-6th synchronizer hub, 5th-6th spread spring and 5th-6th shifting insert onto 5th-6th coupling sleeve.

CAUTION:

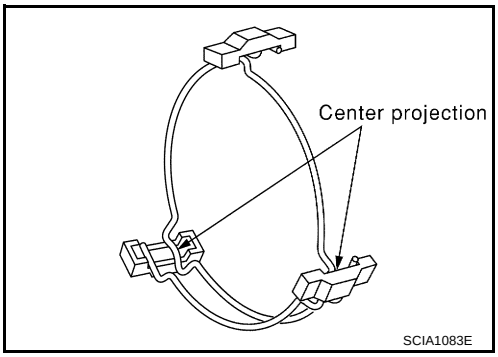
- **Be careful with the orientation of 5th-6th synchronizer hub.**
- **Do not reuse 5th-6th synchronizer hub.**



- **Be careful with the orientation of 5th-6th coupling sleeve.**
- **Do not reuse 5th-6th coupling sleeve.**

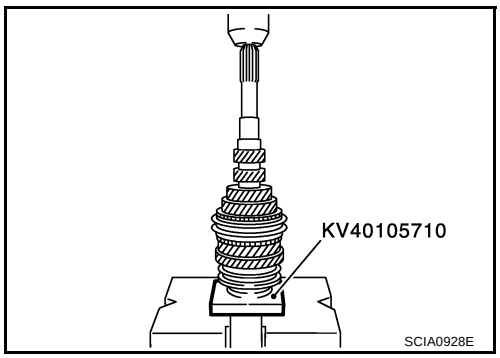


- **Be sure not to hook center projection of 2 spread springs on same shifting insert.**

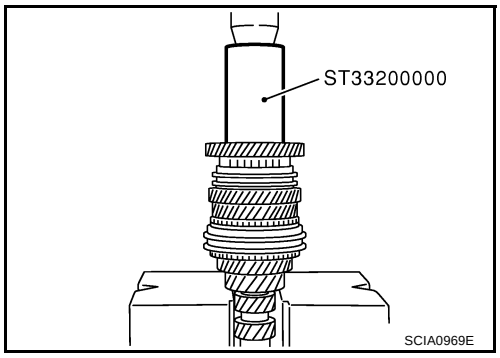


13. Press in 5th-6th synchronizer hub assembly using the press stand.

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



14. Install 6th needle bearing, 6th input gear, 6th baulk ring onto 6th input gear bushing, and then press in 6th bushing onto input shaft using the drift.

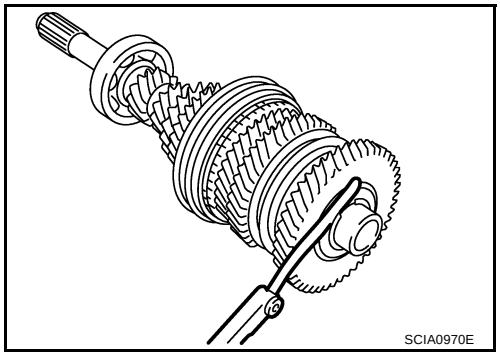


15. Install snap ring onto input shaft, and make sure that end play (gap between snap ring and groove) of 6th input gear bushing satisfies the standard value.

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

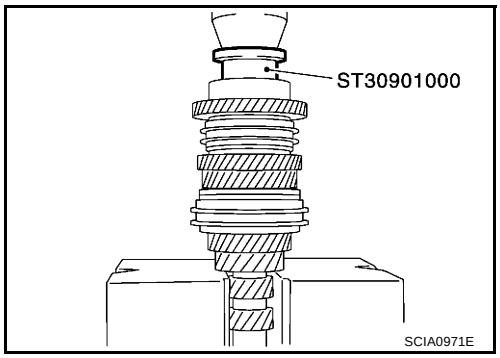
- If the measurement is outside the standard range, select snap ring. Refer to MT-106, "6TH INPUT GEAR BUSHING" .

CAUTION:
Do not reuse snap ring.

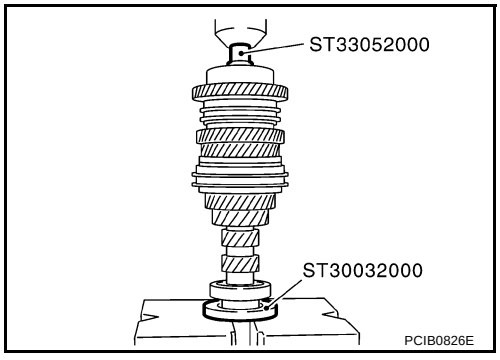


16. Press in input shaft rear bearing using the drift.

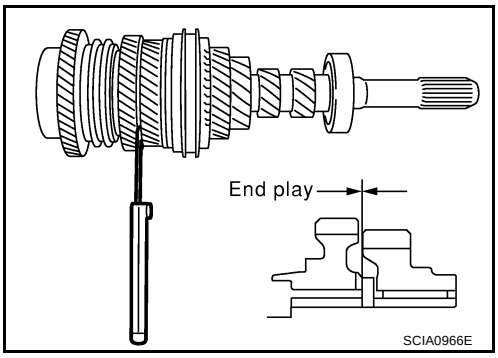
CAUTION:
Install input shaft rear bearing with its brown surface facing the 6th input gear side.



17. Press in input shaft front bearing using the drifts.
18. Install oil channel onto input shaft.



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



End play standard value

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

MAINSHAFT AND GEARS

PFP:32241

Disassembly and Assembly (RS5F51A)

BCS000AB

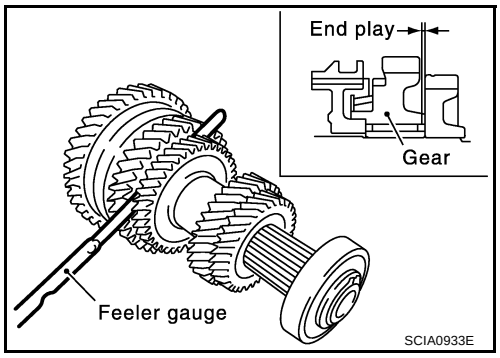
DISASSEMBLY

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

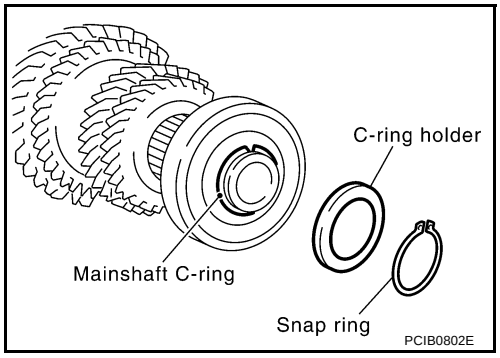
End play standard value

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

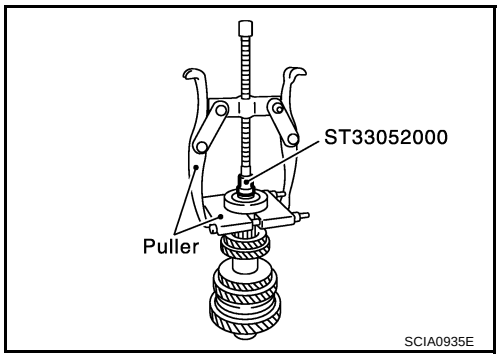
2nd main gear: 0.06 - 0.16 mm (0.0024 - 0.0063 in)



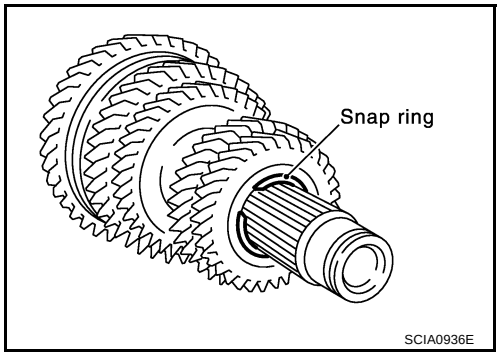
2. Remove snap ring.
3. Remove C-ring holder, and then remove mainshaft C-ring.



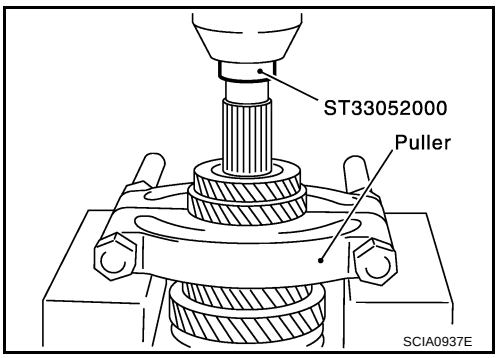
4. Remove mainshaft rear bearing using the drift and pullers.



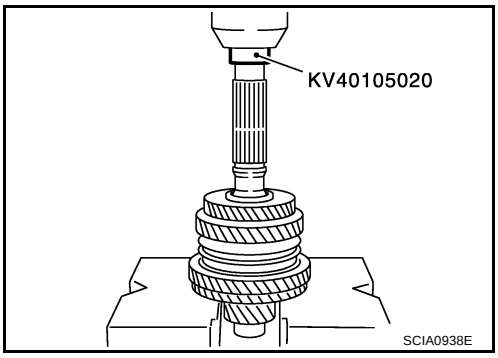
5. Remove snap ring.



6. Press out 4th main gear and 5th main gear using the drift and a puller.
7. Remove 4th main gear adjusting shim.
8. Remove 3rd-4th mainshaft spacer.



9. Press out 3rd main gear, 2nd main gear, 2nd needle bearing, 2nd main gear bushing, 1st-2nd synchronizer hub assembly, 1st main gear, 1st needle bearing, and 1st main gear bushing reverse main gear using the drift.

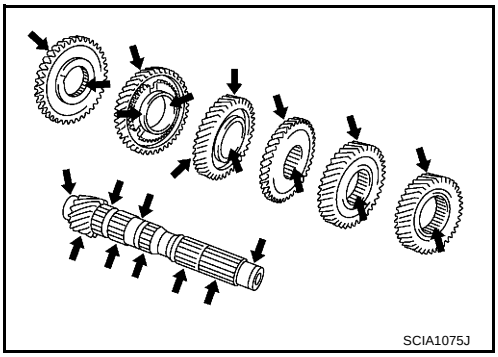


INSPECTION AFTER DISASSEMBLY

Mainshaft and Gears

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

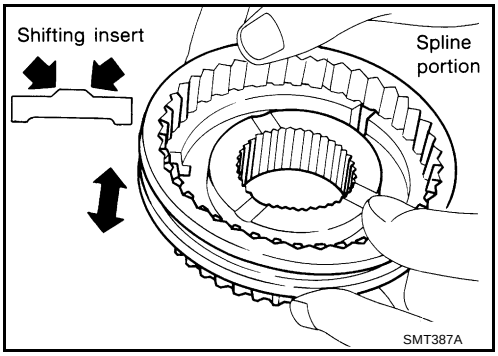
- Damage, peeling, dent, uneven wear, bending, and other non-standard conditions of the shaft.
- Excessive wear, damage, peeling, and other non-standard conditions of the gears.



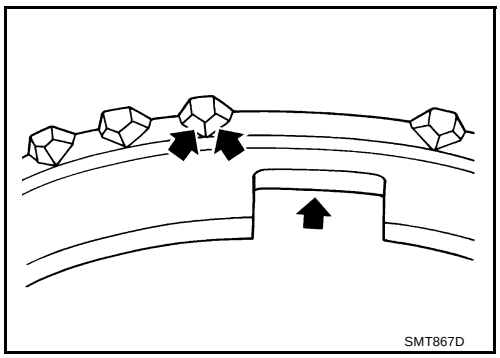
Synchronizer

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.



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



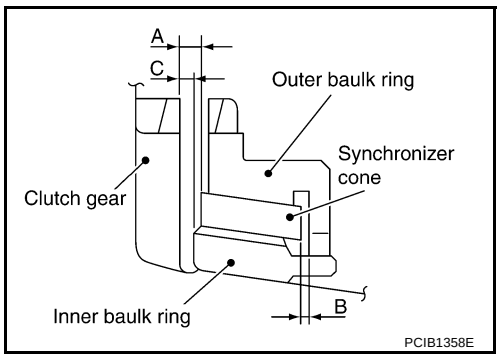
BAULK RING CLEARANCE

Triple-cone synchronizer (1st and 2nd)

- Check the clearance between outer baulk ring, synchronizer cone and inner baulk ring as follows.

  CAUTION:

  The clearances “A”, “B” and “C” are controlled with outer baulk ring, synchronizer cone and inner baulk ring as a set. Replace them as a set if the clearances are outside the limit value.

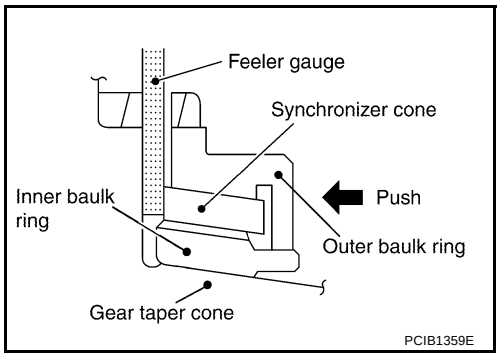


1. Measure the clearance “A” at 2 points or more diagonally opposite using a feeler gauge when pressing baulk ring toward clutch gear taper cone. And then calculate mean value.

   Clearance “A”

   Standard value: 0.6 - 1.2 mm (0.024 - 0.047 in)

   Limit value: 0.3 mm (0.012 in)

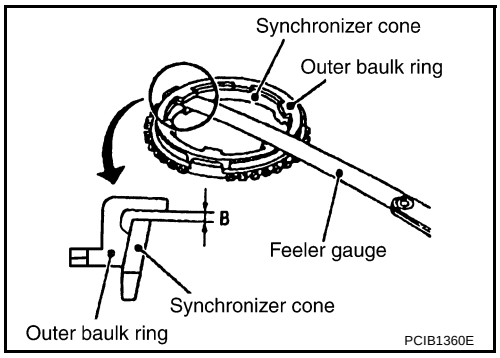


2. Measure the clearance “B” at 2 points or more diagonally opposite using a feeler gauge. And then calculate mean value.

   Clearance “B”

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

   Limit value: 0.2 mm (0.008 in)

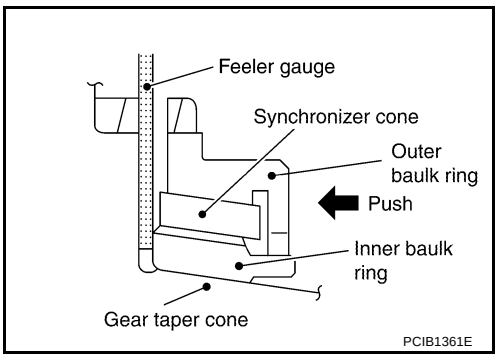


3. Measure the clearance “C” at 2 points or more diagonally opposite using a feeler gauge when pressing baulk ring toward clutch gear taper cone. And then calculate mean value.

Clearance “C”

Standard value: **0.7 - 1.1 mm (0.028 - 0.043 in)**

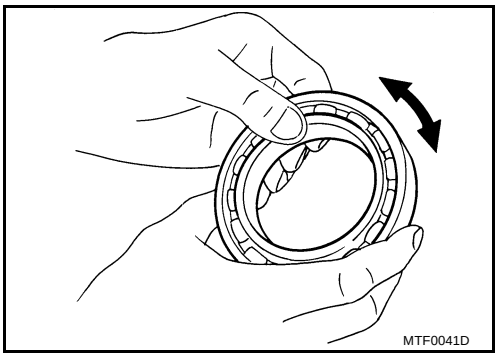
Limit value: **0.3 mm (0.012 in)**



Bearing

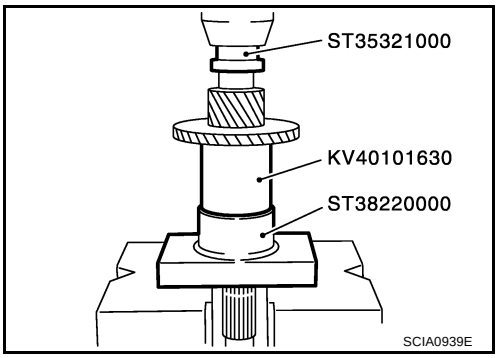
Check items below. If necessary, replace them with new ones.

- Damage and rough rotation of bearing



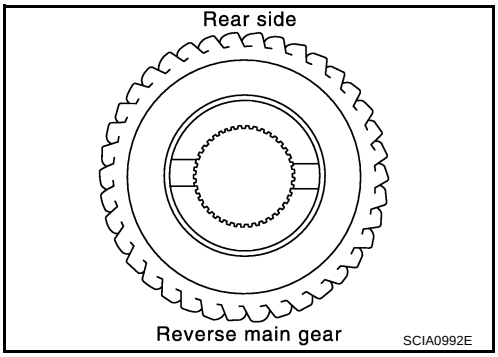
ASSEMBLY

1. Press in reverse main gear using the drifts and the press stand.

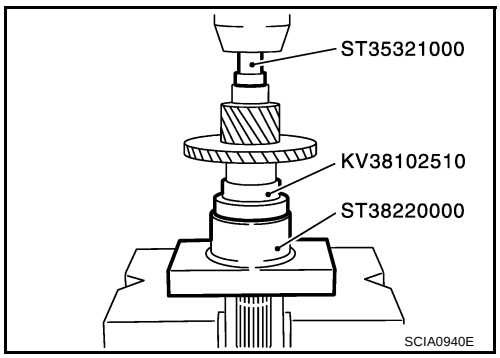


CAUTION:

- **Be careful with the orientation of reverse main gear.**
- **Do not reuse reverse main gear.**



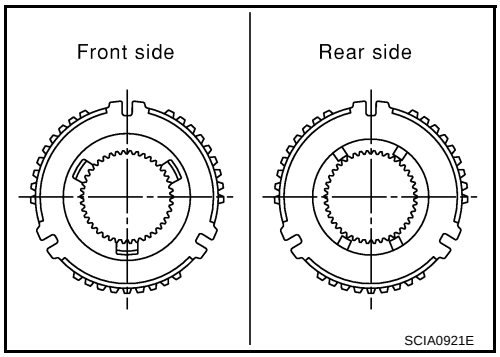
2. Press in 1st main gear bushing using the drifts and the press stand.
3. Install 1st needle bearing, and then 1st main gear.



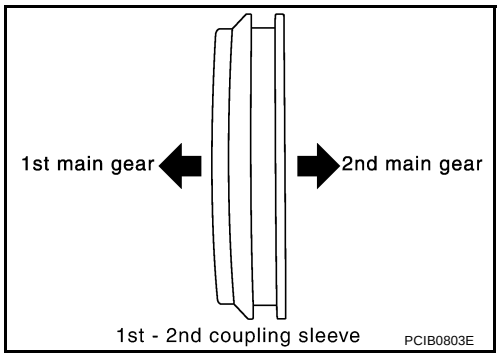
4. Install 1st-2nd spread spring, 1st-2nd shifting insert and 1st-2nd synchronizer hub onto 1st-2nd coupling sleeve.

CAUTION:

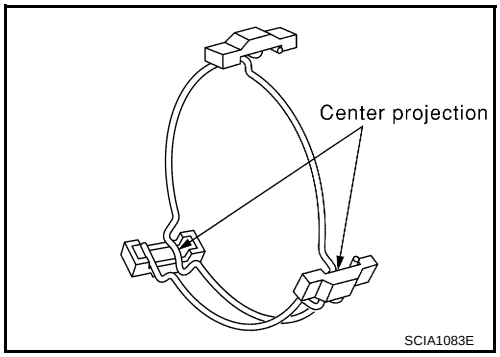
- **Be careful with the orientation of 1st-2nd synchronizer hub.**
- **Do not reuse 1st-2nd synchronizer hub.**



- **Be careful with the orientation of 1st-2nd coupling sleeve.**
- **Do not reuse 1st-2nd coupling sleeve.**



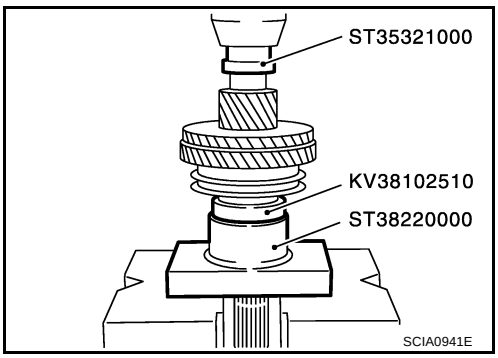
- **Be sure not to hook center projection of 2 spread springs on same 1st-2nd shifting insert.**



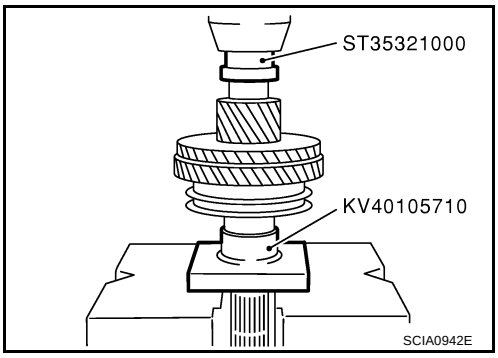
5. Install 1st inner baulk ring, 1st synchronizer cone, 1st outer baulk ring onto mainshaft, and then press in 1st-2nd synchronizer hub assembly onto mainshaft using the drifts and the press stand.

CAUTION:

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



6. Press in 2nd main gear bushing using the drift and the press stand.
7. Install 2nd outer baulk ring, 2nd synchronizer cone, and 2nd inner baulk ring.
8. Install 2nd needle bearing and 2nd main gear.

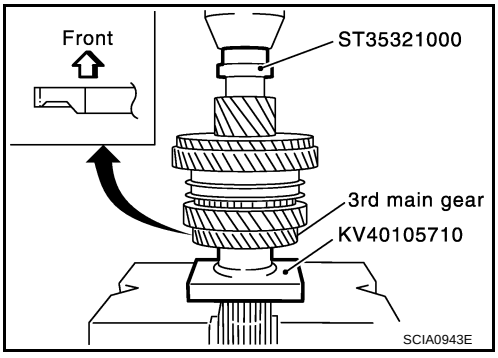


9. Press in 3rd main gear using the drift and the press stand.

CAUTION:

- **Be careful with the orientation of 3rd main gear.**
- **Do not reuse 3rd main gear.**

10. Install 3rd-4th mainshaft spacer.



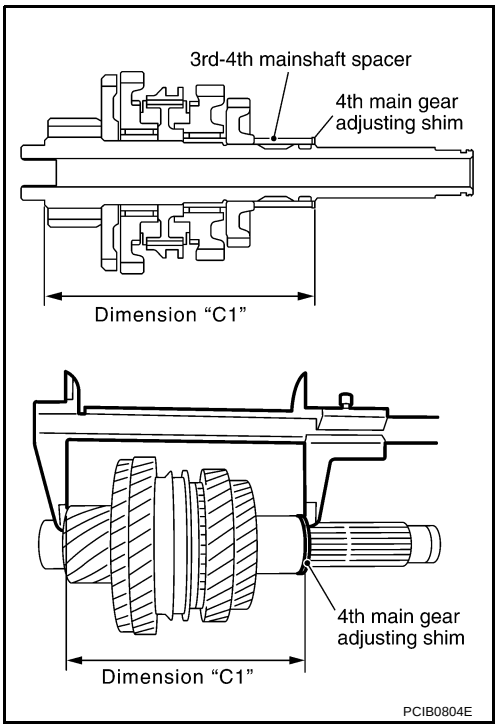
11. Select 4th main gear adjusting shim so that the dimension “C1” satisfies the standard value below, and install 4th main gear adjusting shim onto mainshaft. Refer to MT-107, "4TH MAIN GEAR ADJUSTING SHIM" .

Standard value for dimension “C1”:

173.85 - 173.95 mm (6.844 - 6.848 in)

CAUTION:

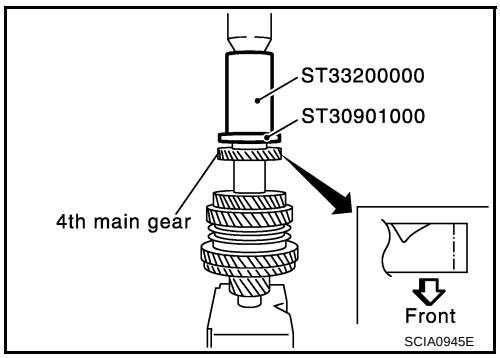
Only one adjusting shim can be selected.



12. Press in 4th main gear using the drifts.

CAUTION:

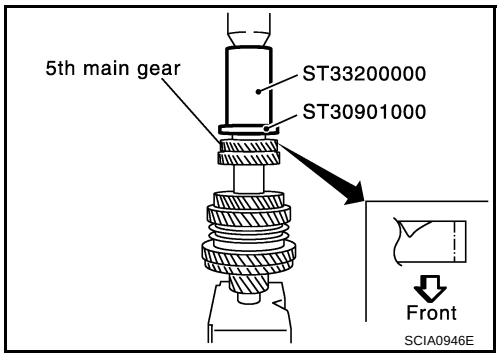
- **Be careful with the orientation of 4th main gear.**
- **Do not reuse 4th main gear.**



13. Press in 5th main gear using the drifts.

CAUTION:

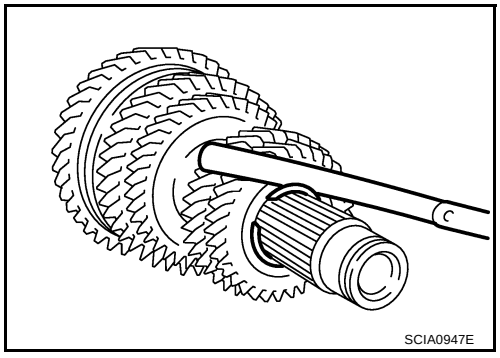
- **Be careful with the orientation of 5th main gear.**
- **Do not reuse 5th main gear.**



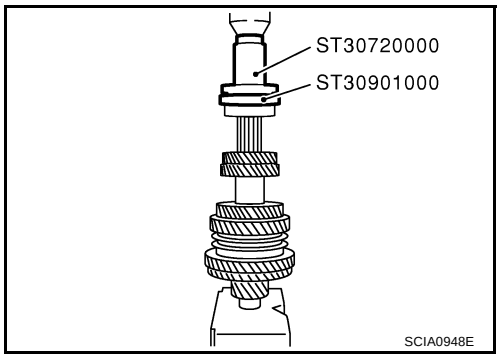
14. Install snap ring onto mainshaft, and make sure that end play of 5th main gear satisfies the standard value.

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

- If the measurement is outside the standard range, reselect snap ring. Refer to MT-106, "5TH MAIN GEAR" .



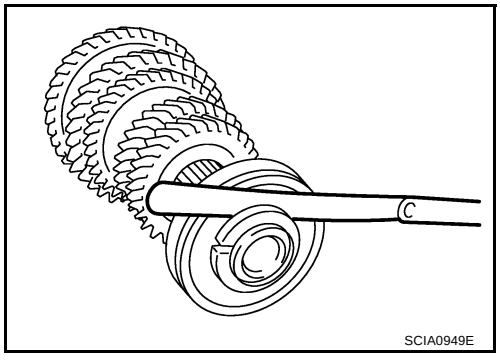
15. Press in mainshaft rear bearing using the drifts.



16. Install mainshaft C-ring onto mainshaft, and make sure that end play of mainshaft rear bearing satisfies the standard value.

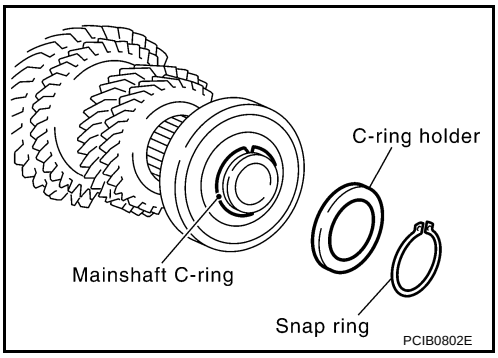
End play standard value: 0 - 0.06 mm (0 - 0.0024 in)

- If the measurement is outside the standard range, reselect mainshaft C-ring. Refer to MT-106, "MAINSHAFT C-RING" .



17. Install C-ring holder, and then install snap ring.

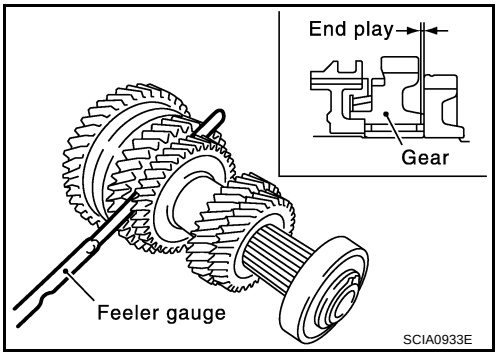
CAUTION:
Do not reuse snap ring.



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

End play standard value

1st main gear: 0.20 - 0.30 mm (0.0079 - 0.0118 in)
2nd main gear: 0.06 - 0.16 mm (0.0024 - 0.0063 in)



Disassembly and Assembly (RS6F51A)

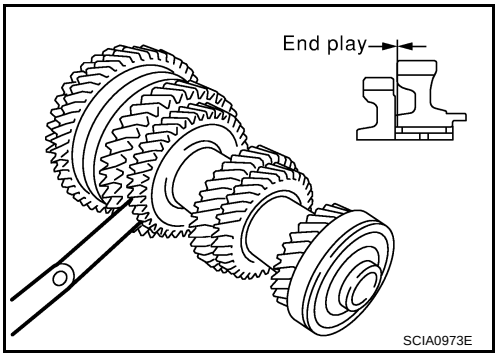
BCS000AC

DISASSEMBLY

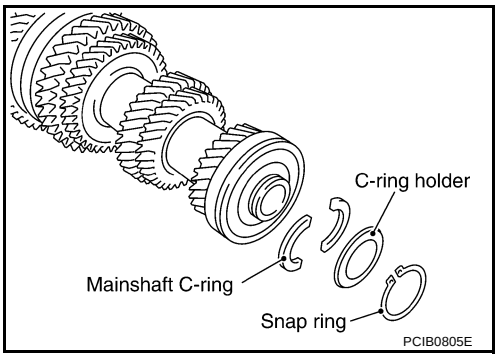
1. Before disassembling, measure the end play of 1st and 2nd main gears.

End play standard value

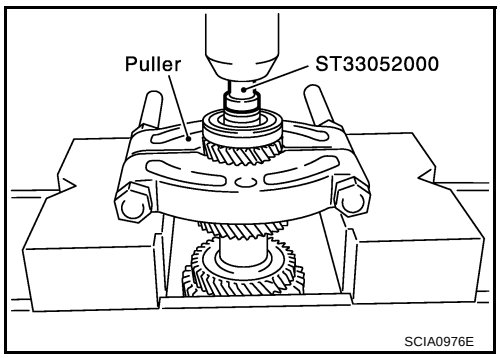
1st main gear: 0.20 - 0.30 mm (0.0079 - 0.0118 in)
2nd main gear: 0.06 - 0.16 mm (0.0024 - 0.0063 in)



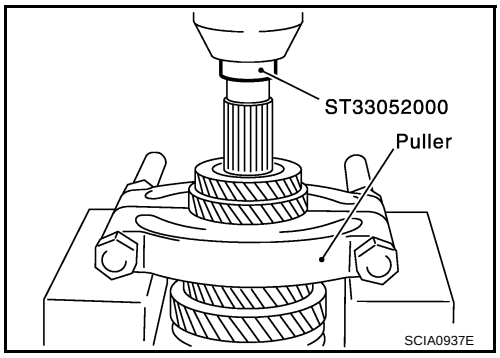
2. Remove snap ring.
3. Remove C-ring holder, and then remove mainshaft C-ring.



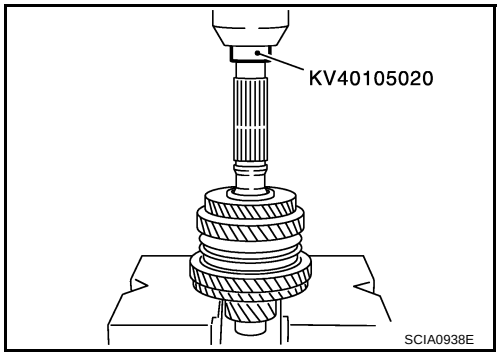
4. Press out mainshaft rear bearing, 6th main adjusting shim and 6th main gear using the drift and a puller.
5. Remove 5th-6th mainshaft spacer.



6. Press out 4th main gear and 5th main gear using the drift and a puller.
7. Remove 4th main gear adjusting shim.
8. Remove 3rd-4th mainshaft spacer.



9. Press out 3rd main gear, 2nd main gear, 2nd needle bearing, 2nd main gear bushing, 1st-2nd synchronizer hub assembly, 1st main gear, 1st needle bearing, and 1st main gear bushing reverse main gear using the drift.

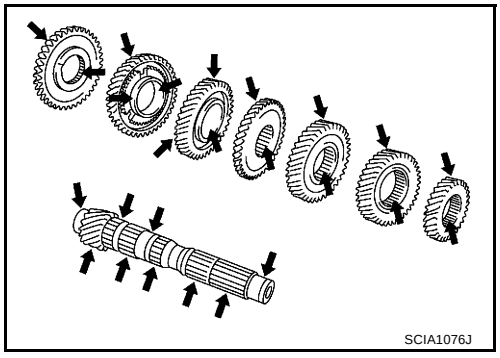


INSPECTION AFTER DISASSEMBLY

Mainshaft and Gears

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

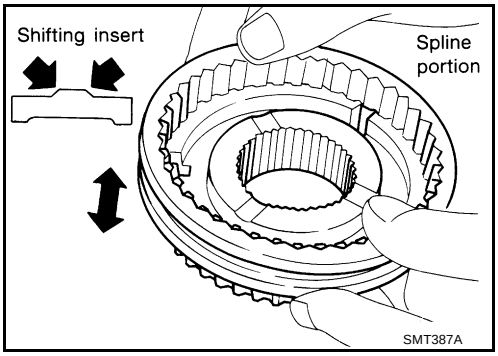
- Damage, peeling, dent, uneven wear, bending, and other non-standard conditions of the shaft.
- Excessive wear, damage, peeling, and other non-standard conditions of the gears.



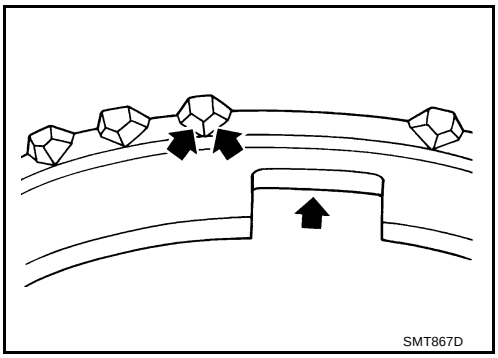
Synchronizer

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.



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



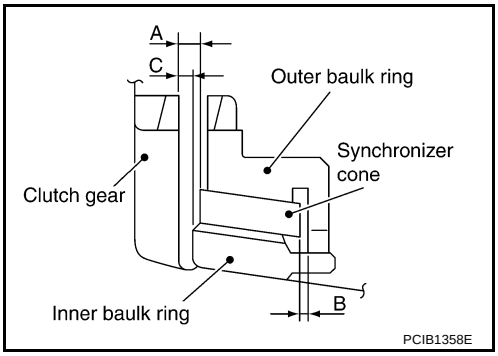
BAULK RING CLEARANCE

Triple-cone synchronizer (1st and 2nd)

- Check the clearance between outer baulk ring, synchronizer cone and inner baulk ring as follows.

  CAUTION:

  The clearances “A”, “B” and “C” are controlled with outer baulk ring, synchronizer cone and inner baulk ring as a set. Replace them as a set if the clearances are outside the limit value.

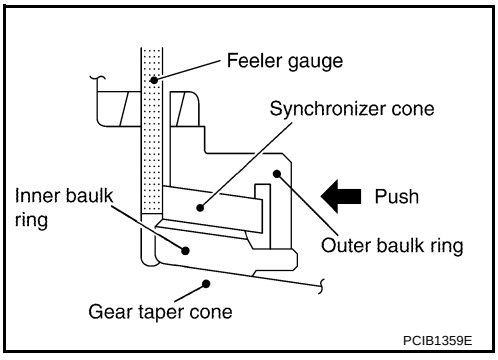


1. Measure the clearance “A” at 2 points or more diagonally opposite using a feeler gauge when pressing baulk ring toward clutch gear taper cone. And then calculate mean value.

   Clearance “A”

   Standard value: 0.6 - 1.2 mm (0.024 - 0.047 in)

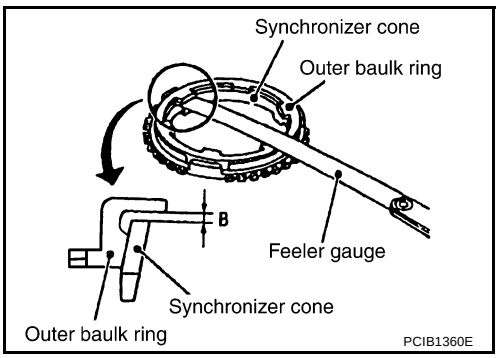
   Limit value: 0.3 mm (0.012 in)



2. Measure the clearance “B” at 2 points or more diagonally opposite using a feeler gauge. And then calculate mean value.

Clearance “B”

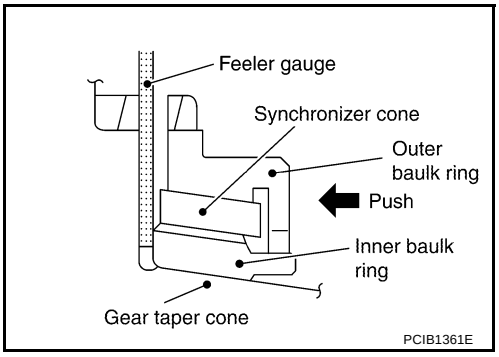
Standard value:	**0.6 - 1.1 mm (0.024 - 0.043 in)**
Limit value:	**0.2 mm (0.008 in)**



3. Measure the clearance “C” at 2 points or more diagonally opposite using a feeler gauge when pressing baulk ring toward clutch gear taper cone. And then calculate mean value.

Clearance “C”

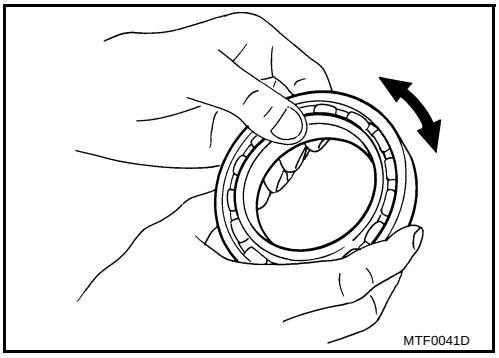
Standard value:	**0.7 - 1.1 mm (0.028 - 0.043 in)**
Limit value:	**0.3 mm (0.012 in)**



Bearing

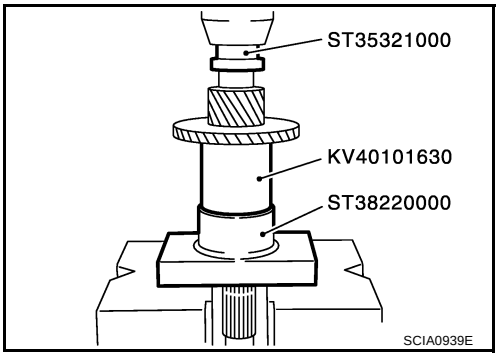
Check items below. If necessary, replace them with new ones.

- Damage and rough rotation of bearing



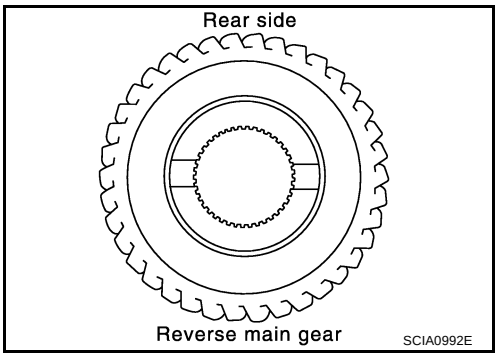
ASSEMBLY

1. Press in reverse main gear using the drifts and the press stand.

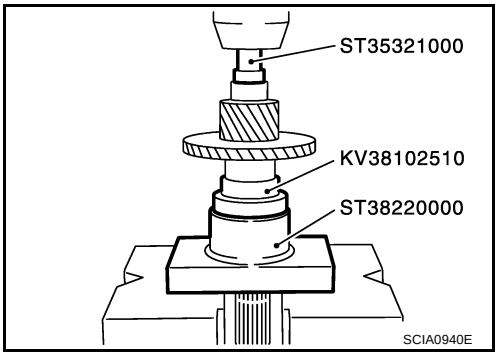


CAUTION:

- **Be careful with the orientation of reverse main gear.**
- **Do not reuse reverse main gear.**



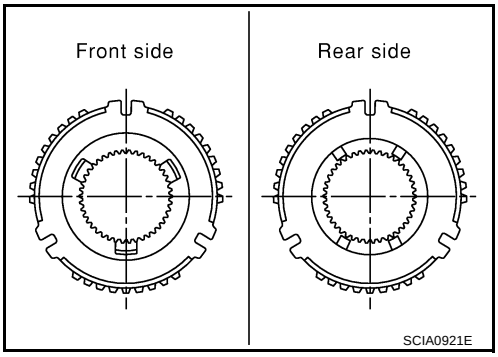
2. Press in 1st main gear bushing using the drifts and the press stand.
3. Install 1st needle bearing, and then 1st main gear.



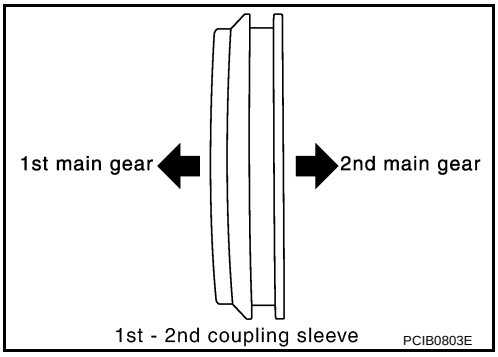
4. Install 1st-2nd spread spring, 1st-2nd shifting insert and 1st-2nd synchronizer hub onto 1st-2nd coupling sleeve.

CAUTION:

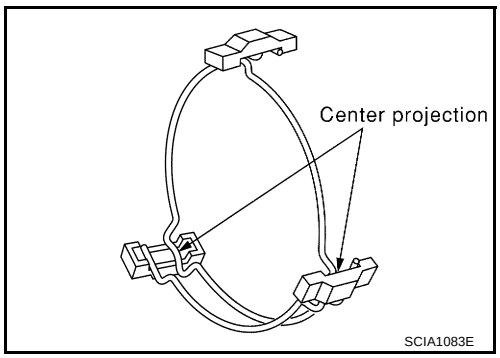
- **Be careful with the orientation of 1st-2nd synchronizer hub.**
- **Do not reuse 1st-2nd synchronizer hub.**



- **Be careful with the orientation of 1st-2nd coupling sleeve.**
- **Do not reuse 1st-2nd coupling sleeve.**

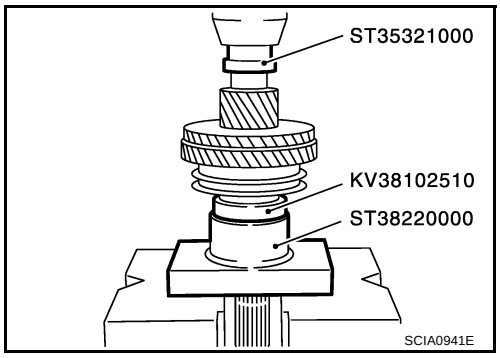


- **Be sure not to hook center projection of 2 spread springs on same 1st-2nd shifting insert.**

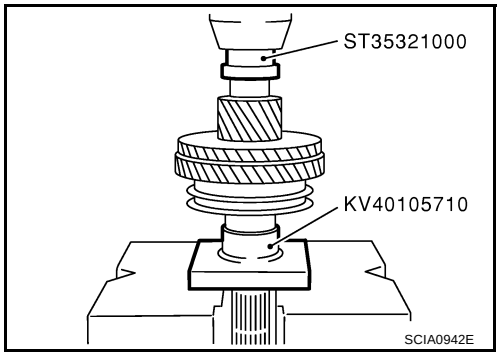


5. Install 1st inner baulk ring, 1st synchronizer cone, 1st outer baulk ring onto mainshaft, and then press in 1st-2nd synchronizer hub assembly onto mainshaft using the drifts and the press stand.

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

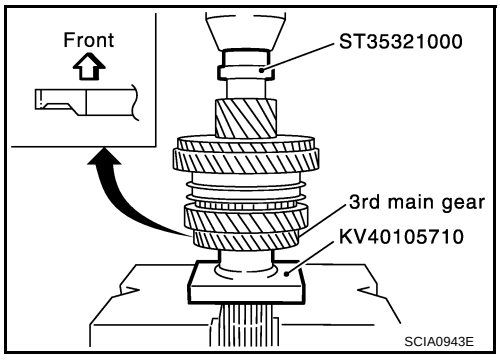


6. Press in 2nd main gear bushing using the drift and the press stand.
7. Install 2nd outer baulk ring, 2nd synchronizer cone, and 2nd inner baulk ring.
8. Install 2nd needle bearing and 2nd main gear.



9. Press in 3rd main gear using the drift and the press stand.

   CAUTION:
   - **Be careful with the orientation of 3rd main gear.**
   - **Do not reuse 3rd main gear.**
10. Install 3rd-4th mainshaft spacer.



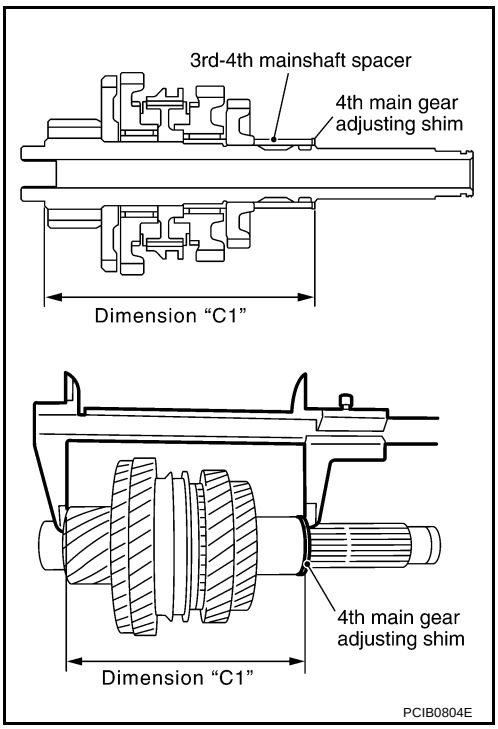
11. Select 4th main gear adjusting shim so that the dimension “C1” satisfies the standard value below, and install 4th main gear adjusting shim onto mainshaft. Refer to MT-107, "4TH MAIN GEAR ADJUSTING SHIM" .

    Standard value for dimension “C1”:

    173.85 - 173.95 mm (6.844 - 6.848 in)

    CAUTION:

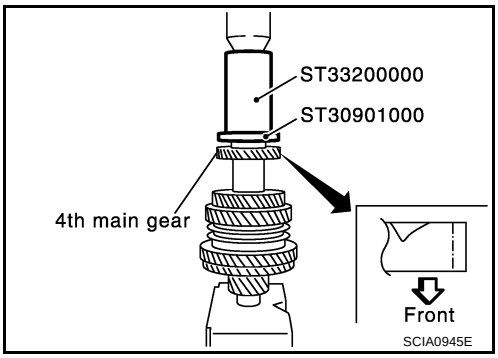
    Only one adjusting shim can be selected.



12. Press in 4th main gear using the drifts.

    CAUTION:

    - **Be careful with the orientation of 4th main gear.**
    - **Do not reuse 4th main gear.**

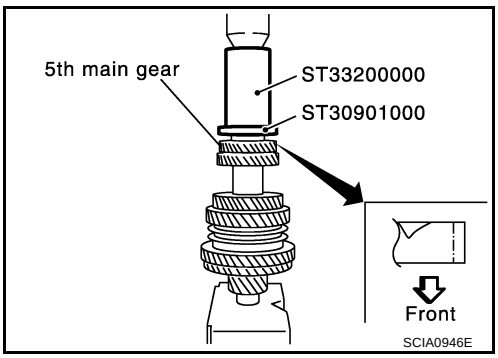


13. Press in 5th main gear using the drifts.

    CAUTION:

    - **Be careful with the orientation of 5th main gear.**
    - **Do not reuse 5th main gear.**

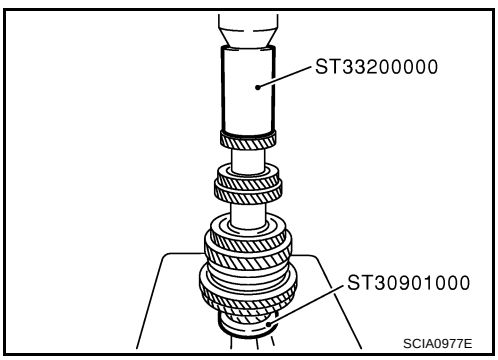
14. Install 5th-6th mainshaft spacer.



15. Press in 6th main gear using the drifts.

    CAUTION:

    Do not reuse 6th main gear.



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

- Calculate thickness “S” of 6th main adjusting shim following the procedure below so that end play dimension between 6th main gear and mainshaft rear bearing becomes the dimension shown below. Refer to MT-108, "6TH MAIN GEAR ADJUSTING SHIM" .

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

Dimension “S” = (S_1 - S_2) - End play

S: Thickness of adjusting shim

S_1 : Dimension from mainshaft standard face to mainshaft rear bearing press-fit end face

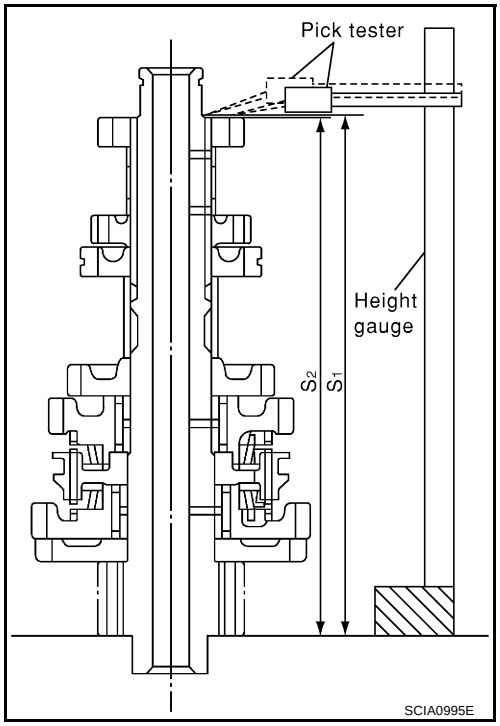
S_2 : Dimension from mainshaft standard face to 6th main gear end face

CAUTION:

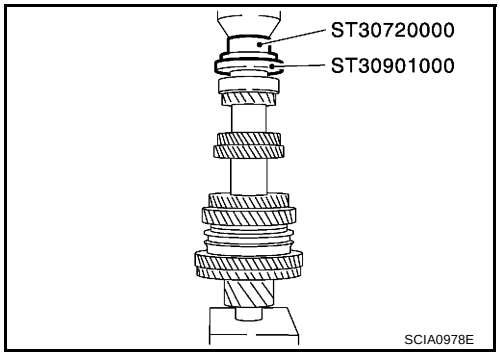
Only one adjusting shim can be selected.

a. Using height gauge, measure the dimension “S_1 ” and “S_2 ”.

b. Install selected 6th main adjusting shim to mainshaft.



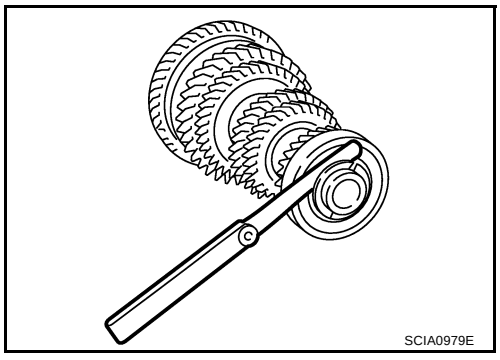
17. Press in mainshaft rear bearing using the drifts.



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

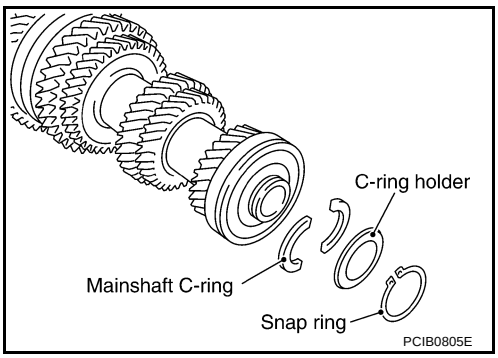
End play standard value: 0 - 0.06 mm (0 - 0.0024 in)

- If the measurement is outside the standard range, reselect mainshaft C-ring. Refer to MT-106, "MAINSHAFT C-RING" .



19. Install C-ring holder, and then install snap ring.

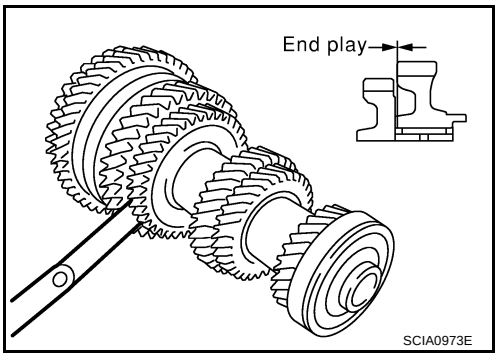
CAUTION:
Do not reuse snap ring.



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

End play standard value

1st main gear:	**0.20 - 0.30 mm (0.0079 - 0.0118 in)**
2nd main gear:	**0.06 - 0.16 mm (0.0024 - 0.0063 in)**



REVERSE IDLER SHAFT AND GEARS

PFP:32281

Disassembly and Assembly (RS5F51A)

BCS000AD

DISASSEMBLY

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

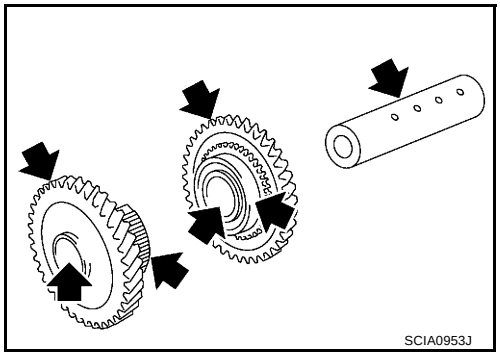
CAUTION:
Do not reuse retaining pin.

INSPECTION AFTER DISASSEMBLY

Reverse Idler Shaft and Gears

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

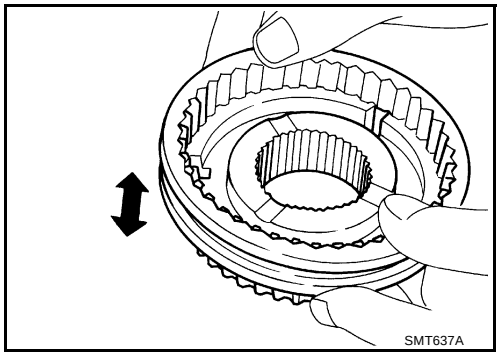
- Damage, peeling, dent, uneven wear, bending, and other non-standard conditions of the shaft.
- Excessive wear, damage, peeling, and other non-standard conditions of the gears.


SCIA0953J

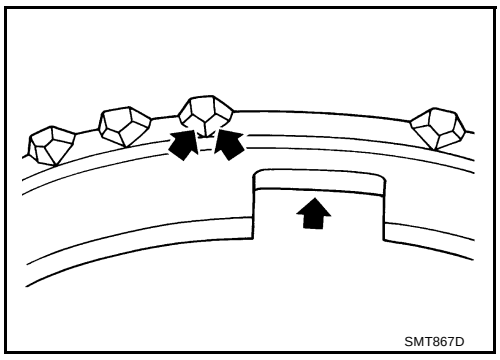
Synchronizer

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

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


SMT637A

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

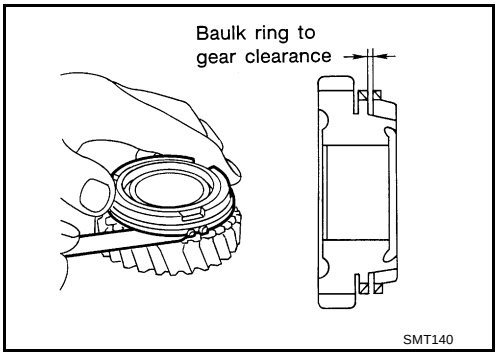

SMT867D

BAULK RING CLEARANCE

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

Clearance

Standard value:	**0.95 - 1.4 mm (0.037 - 0.055 in)**
Limit value:	**0.7 mm (0.028 in)**



Bearing

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

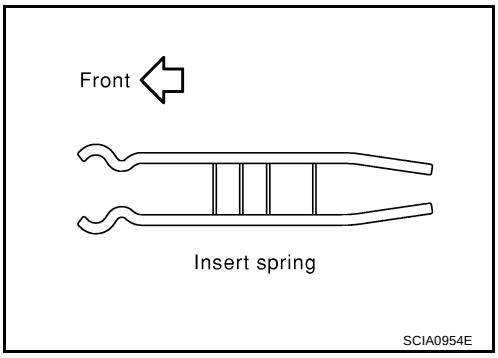
- Damage and rough rotation of bearing.

ASSEMBLY

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

CAUTION:

- **Be careful with the orientation of reverse insert spring.**



Disassembly and Assembly (RS6F51A)

BCS000AE

DISASSEMBLY

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

CAUTION:

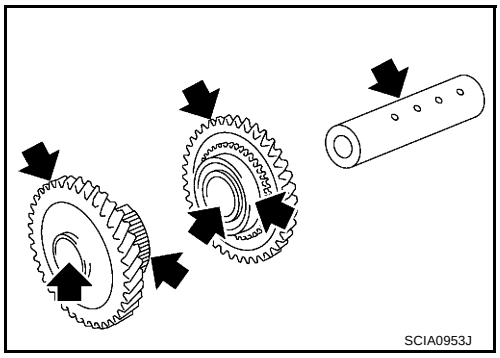
Do not reuse retaining pin.

INSPECTION AFTER DISASSEMBLY

Reverse Idler Shaft and Gears

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

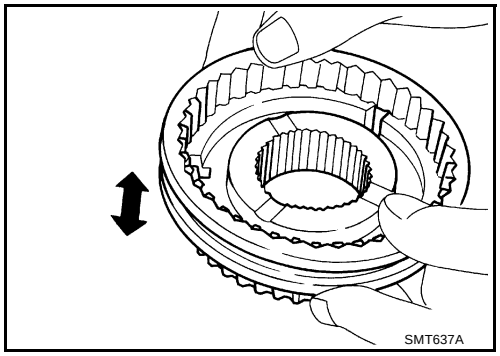
- Damage, peeling, dent, uneven wear, bending, and other non-standard conditions of the shaft.
- Excessive wear, damage, peeling, and other non-standard conditions of the gears.



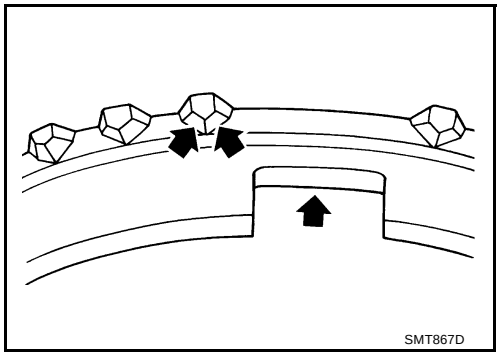
Synchronizer

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

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



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

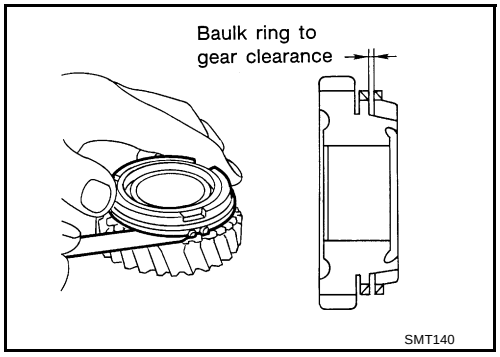


BAULK RING CLEARANCE

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

Clearance

Standard value:	**0.95 - 1.4 mm (0.037 - 0.055 in)**
Limit value:	**0.7 mm (0.028 in)**



Bearing

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

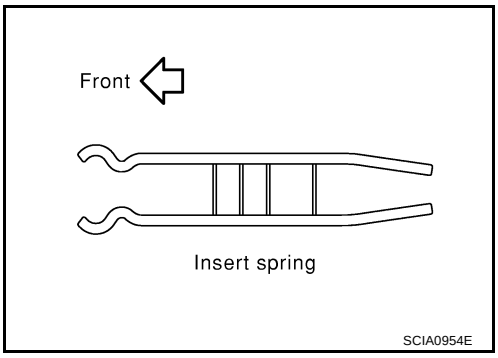
- Damage and rough rotation of bearing.

ASSEMBLY

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

CAUTION:

- **Be careful with the orientation of reverse insert spring.**



FINAL DRIVE

PFP:38411

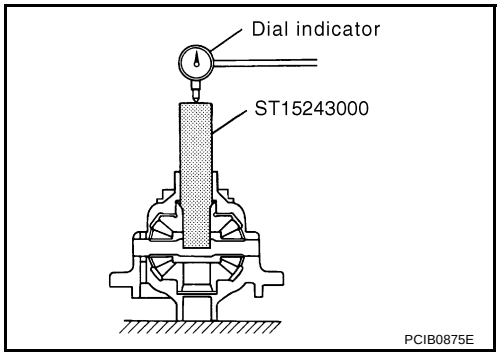
Disassembly and Assembly (RS5F51A)

BCS000AF

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.



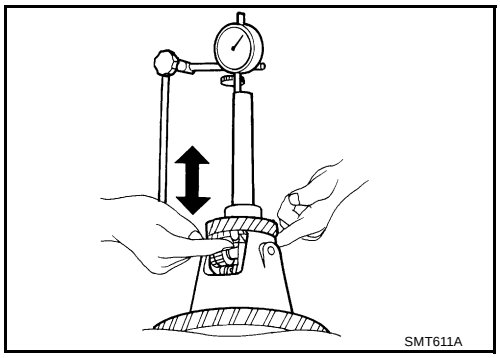
2. Put differential case vertically so that side gear to be measured faces upward.
3. Place the drift and a dial indicator onto side gear. Move side gear up and down, and measure the clearance.

Clearance between side gear and differential case:

0.1 - 0.2 mm (0.004 - 0.008 in)

CAUTION:

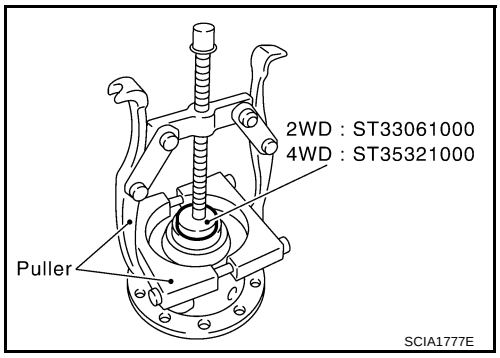
There should be no resistance and gears should rotate freely.



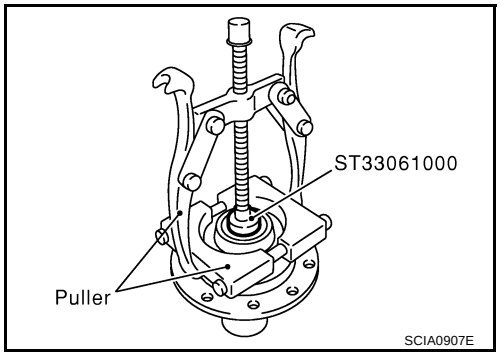
4. If not within specification, adjust the clearance by changing side gear thrust washer thickness.
5. Turn differential case upside down, and measure the clearance between side gear and differential case on the other side in the same way.

DISASSEMBLY

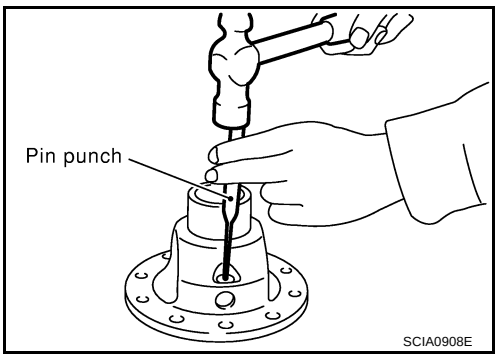
1. Remove final gear mounting bolts, and then separate the final gear from differential case.
2. Remove differential side bearing (clutch housing side) using the drift and pullers.



3. Remove differential side bearing (transaxle case side) using the drift and pullers.
4. Remove speedometer drive gear (for 2WD models).



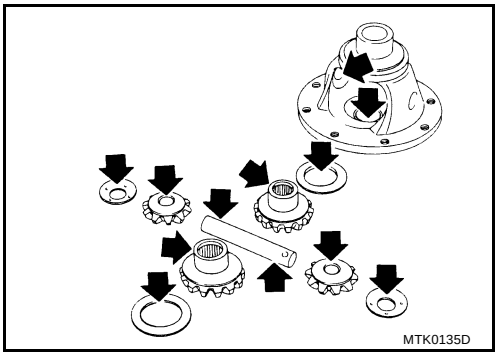
5. Remove retaining pin from differential case using a pin punch, and then remove pinion mate shaft.
6. Rotate pinion mate gears, and remove pinion mate gears, pinion mate thrust washers, side gears, and side gear thrust washers from differential case.



INSPECTION AFTER DISASSEMBLY

Gear, Washer, Shaft and Case

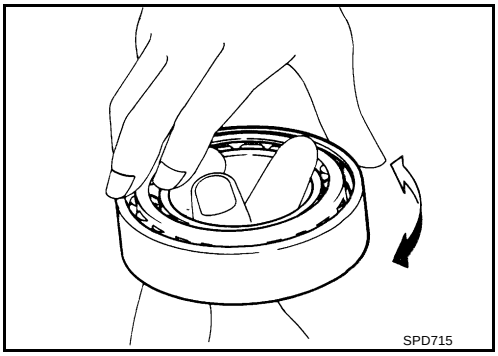
- Check side gears, side gear thrust washers, pinion mate shaft, pinion mate gears, pinion mate thrust washers and differential case. If necessary, replace with a new one.



Bearing

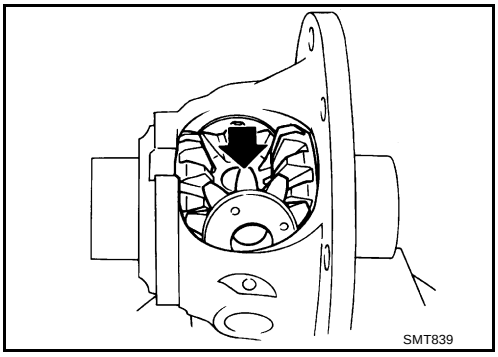
- Check for bearing damage and rough rotation. If necessary, replace with a new one.

CAUTION:
When replacing tapered roller bearing, replace outer and inner races as a set.



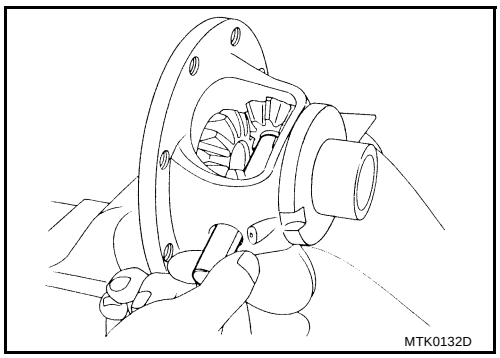
ASSEMBLY

1. Apply gear oil to sliding area of differential case, each gear, and thrust washer.
2. Install side gear thrust washers 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.

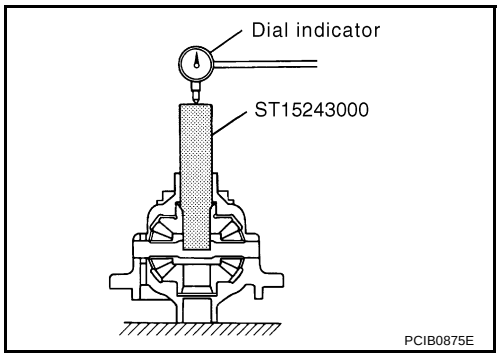
CAUTION:
Be sure not to damage pinion mate thrust washers.



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

a. Put differential case vertically so that its side gear to be measured faces upward.

b. Place the drift and a dial indicator onto side gears.



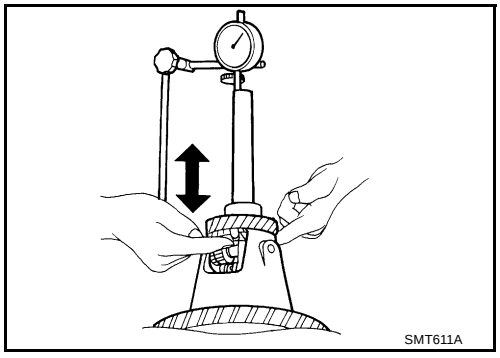
c. Move side gears up and down to measure end play, and select thrust washer so that it satisfies the standard value. Refer to MT-107, "DIFFERENTIAL SIDE GEAR THRUST WASHER" .

End play standard value:

0.1 - 0.2 mm (0.004 - 0.008 in)

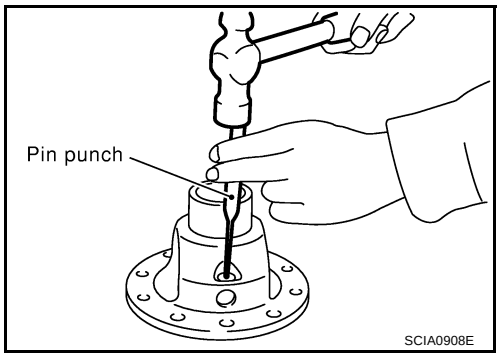
CAUTION:

- **There should be no resistance and gears should rotate freely.**
- **Place differential case upside down. Measure the end play for opposite side-gears likewise securely.**
- **Only one thrust washer can be selected.**

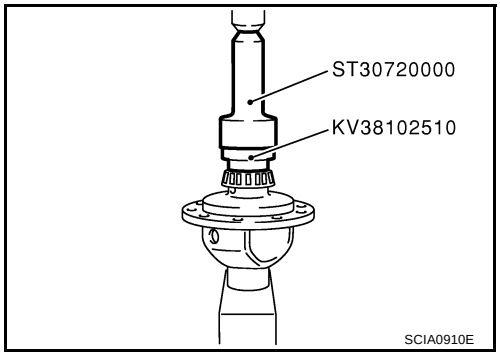


6. Install retaining pin into pinion mate shaft using a pin punch.

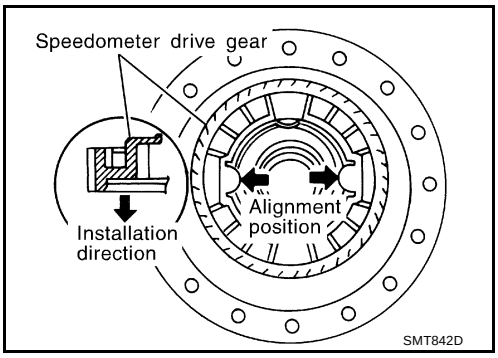
CAUTION:
Do not reuse retaining pin.



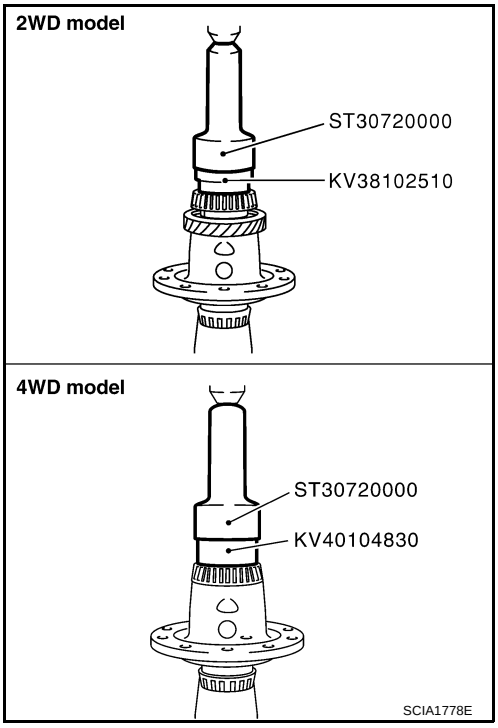
7. Press in differential side bearing (transaxle case side) to differential case using the drifts.



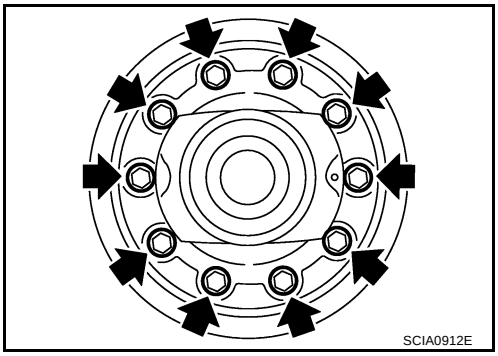
8. Align and install speedometer drive gear onto differential case (for 2WD models).



9. Press in differential side bearing (clutch housing side) to differential case using the drifts.



10. Install final gear into differential case, and tighten final gear mounting bolts to the specified torque. Refer to MT-26, "Final Drive Components" .



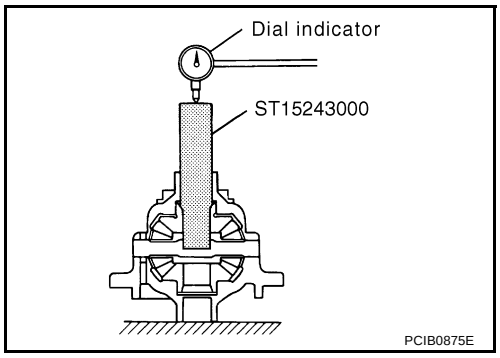
Disassembly and Assembly (RS6F51A)

BCS000AG

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. Put differential case vertically so that side gear to be measured faces upward.
3. Place the drift and a dial indicator onto side gear. Move side gear up and down, and measure the clearance.

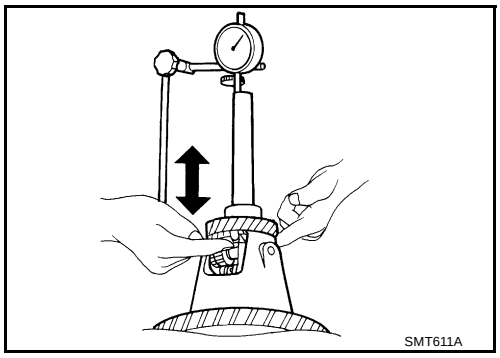
Clearance between side gear and differential case:

0.1 - 0.2 mm (0.004 - 0.008 in)

CAUTION:

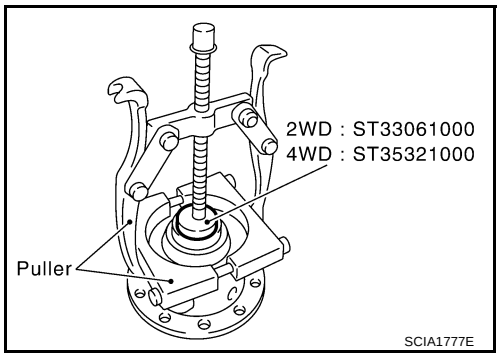
There should be no resistance and gears should rotate freely.

4. If not within specification, adjust the clearance by changing side gear 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.

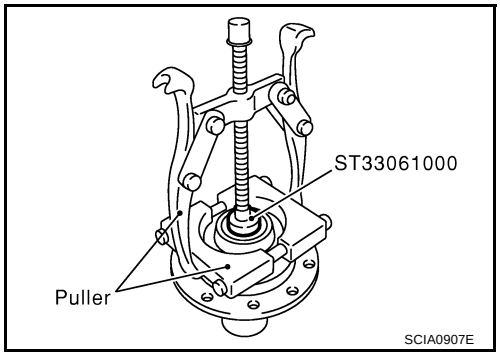


DISASSEMBLY

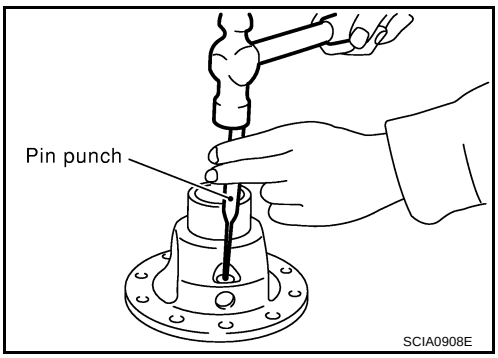
1. Remove final gear mounting bolts, and then separate the final gear from differential case.
2. Remove differential side bearing (clutch housing side) using the drift and pullers.



3. Remove differential side bearing (transaxle case side) using the drift and pullers.
4. Remove speedometer drive gear (for 2WD models).



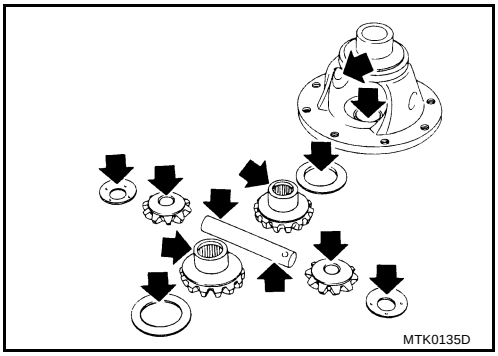
5. Remove retaining pin from differential case using a pin punch, and then remove pinion mate shaft.
6. Rotate pinion mate gears, and remove pinion mate gears, pinion mate thrust washers, side gears, and side gear thrust washers from differential case.



INSPECTION AFTER DISASSEMBLY

Gear, Washer, Shaft and Case

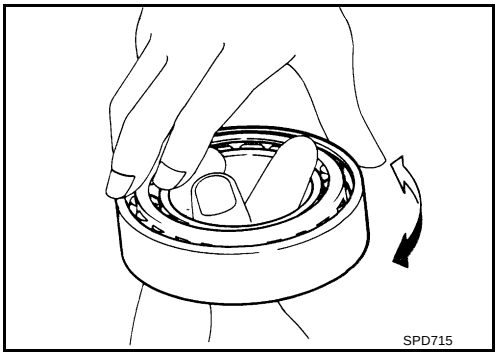
- Check side gears, side gear thrust washers, pinion mate shaft, pinion mate gears, pinion mate thrust washers and differential case. If necessary, replace with a new one.



Bearing

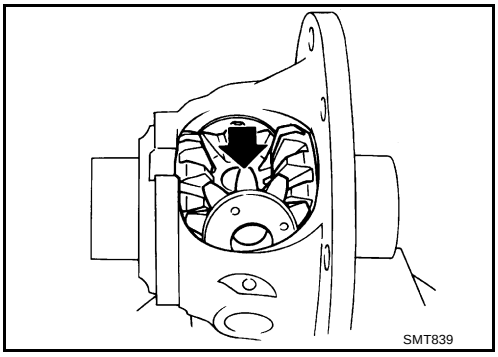
- Check for bearing damage and rough rotation. If necessary, replace with a new one.

CAUTION:
When replacing tapered roller bearing, replace outer and inner races as a set.



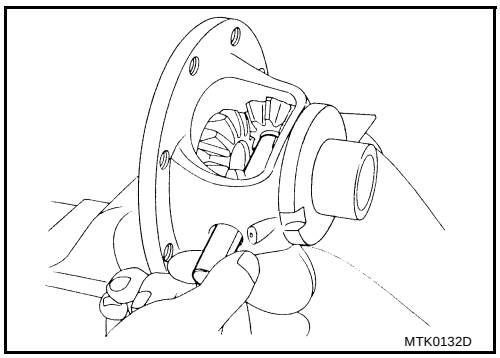
ASSEMBLY

1. Apply gear oil to sliding area of differential case, each gear, and thrust washer.
2. Install side gear thrust washers 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.

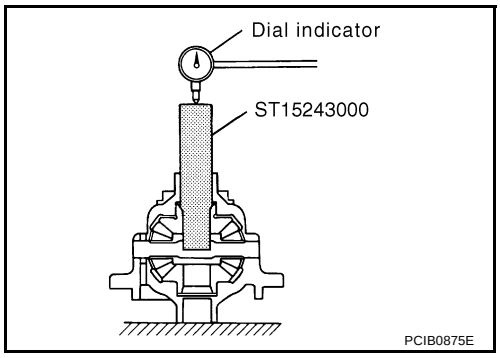
CAUTION:
Be sure not to damage pinion mate thrust washers.



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

a. Put differential case vertically so that its side gear to be measured faces upward.

b. Place the drift and a dial indicator onto side gears.

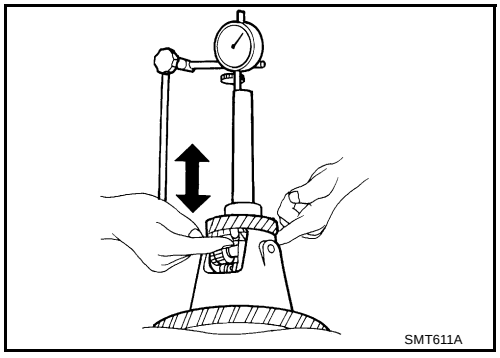


c. Move side gears up and down to measure end play, and select thrust washer so that it satisfies the standard value. Refer to MT-107, "DIFFERENTIAL SIDE GEAR THRUST WASHER" .

End play standard value:

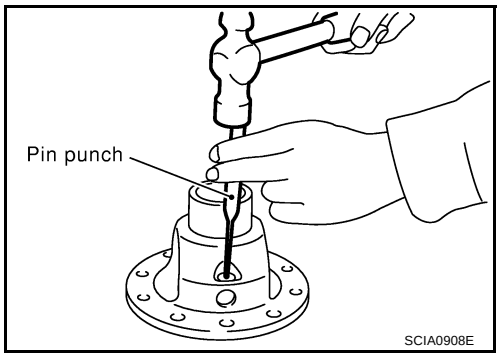
0.1 - 0.2 mm (0.004 - 0.008 in)

CAUTION:
- **There should be no resistance and gears should rotate freely.**
- **Place differential case upside down. Measure the end play for opposite side-gears likewise securely.**
- **Only one thrust washer can be selected.**

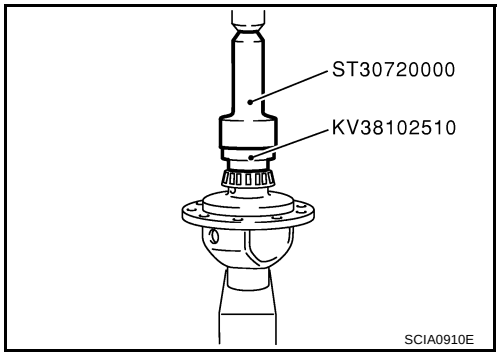


6. Install retaining pin into pinion mate shaft using a pin punch.

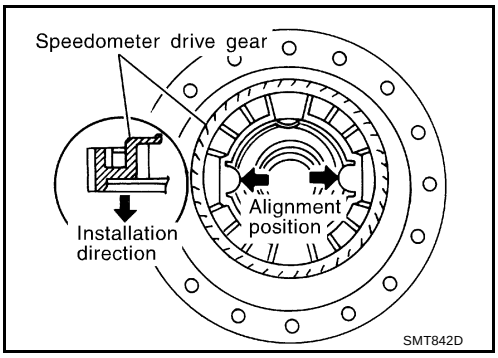
CAUTION:
Do not reuse retaining pin.



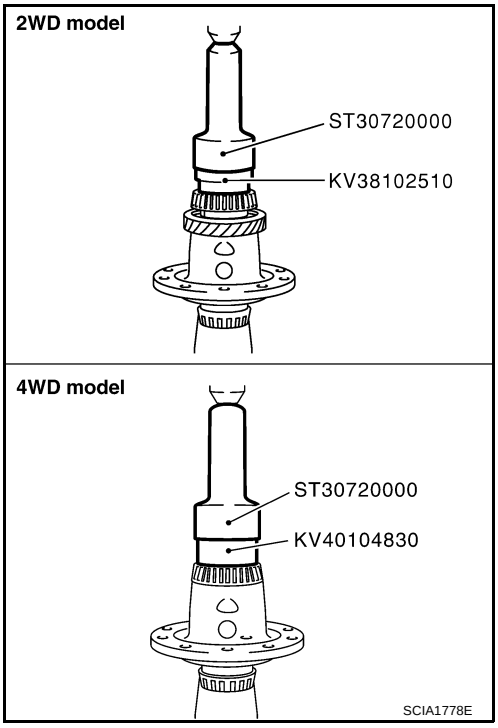
7. Press in differential side bearing (transaxle case side) to differential case using the drifts.



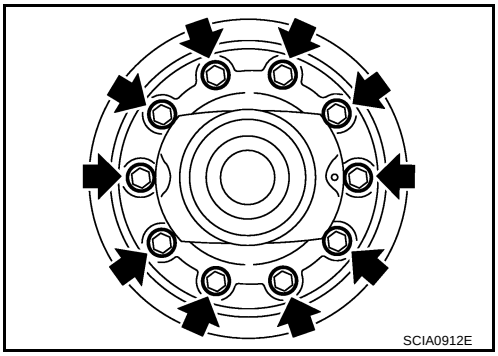
8. Align and install speedometer drive gear onto differential case (for 2WD models).



9. Press in differential side bearing (clutch housing side) to differential case using the drifts.



10. Install final gear into differential case, and tighten final gear mounting bolts to the specified torque. Refer to MT-44, "Final Drive Components" .



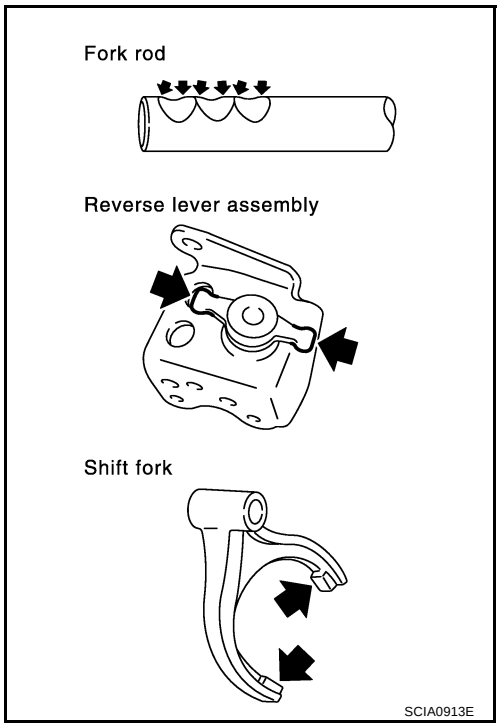
SHIFT CONTROL

PFP:32982

Inspection (RS5F51A)

BCS000AH

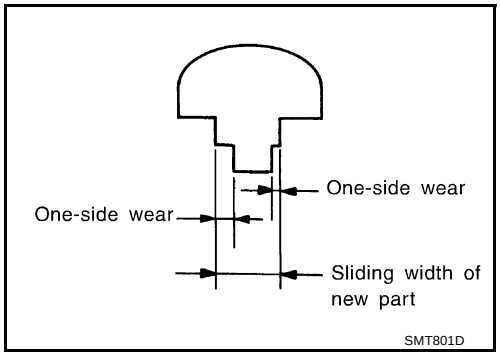
- Check contact surfaces and sliding area for wear, damage, bending, etc. If necessary, replace parts.



SHIFT FORK

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

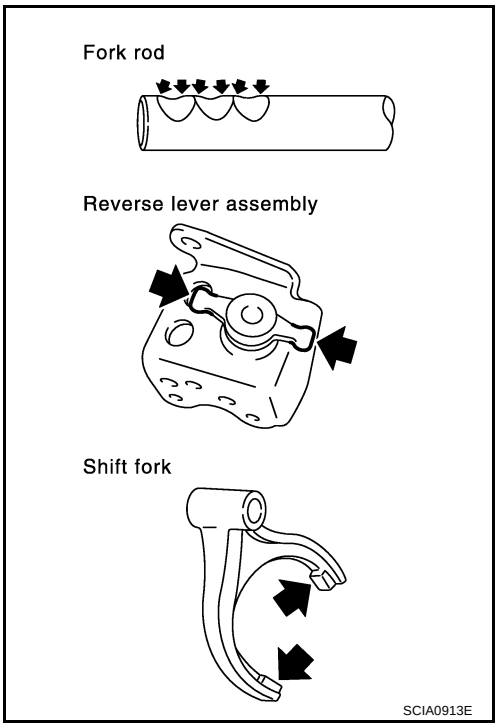
Item	One-side wear specification	Sliding width of new part
1st-2nd	0.2 mm (0.008 in)	7.80 - 7.93 mm (0.3071 - 0.3122 in)
3rd-4th	0.2 mm (0.008 in)	7.80 - 7.93 mm (0.3071 - 0.3122 in)
5th	0.2 mm (0.008 in)	6.10 - 6.23 mm (0.2402 - 0.2453 in)
Reverse	0.2 mm (0.008 in)	12.80 - 12.93 mm (0.5039 - 0.5091 in)



Inspection (RS6F51A)

BCS000AI

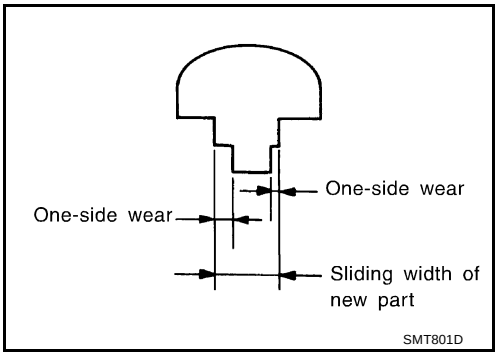
- Check contact surfaces and sliding area for wear, damage, bending, etc. If necessary, replace parts.



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)



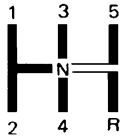
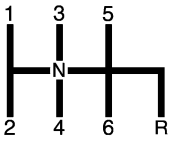
SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications

BCS000AJ

TRANSAXLE

Engine type			QR20DE		QR25DE	YD22DDTi	
Transaxle model			RS5F51A			RS6F51A	
Axle type			2WD	4WD		2WD	4WD
Model code number			EQ500	EQ000	EQ008	EQ078	EQ068
Number of speed			5			6	
Synchromesh type			Warner				
Shift pattern		5 speed	 SCIA0821E				
		6 speed	 SCIA0955E				
Gear ratio	1st		3.500		3.416	3.500	
	2nd		1.944				
	3rd		1.258				
	4th		0.947				
	5th		0.772		0.733	0.772	
	6th		—			0.630	
	Reverse		3.374		3.252	3.374	
	Final gear		4.750		4.428		
Number of teeth	Input gear	1st	14		12	14	
		2nd	18				
		3rd	31				
		4th	38				
		5th	44		45	44	
		6th	—			46	
		Reverse	14		12	14	
	Main gear	1st	49		41	49	
		2nd	35				
		3rd	39				
		4th	36				
		5th	34		33	34	
		6th	—			29	
		Reverse	38				

Engine type			QR20DE		QR25DE	YD22DDTi	
Transaxle model			RS5F51A			RS6F51A	
Axle type			2WD	4WD		2WD	4WD
Model code number			EQ500	EQ000	EQ008	EQ078	EQ068
Number of teeth	Reverse idler gear	Front	37				
		Rear	46		38	46	
	Final gear	Final gear/ Pinion	76/16		62/14		
		Side gear/ Pinion mate gear	14/10				
Oil level mm (in)			55.0 - 61.0 (2.17 - 2.40)	168.0 - 174.0 (6.61 - 6.85)		55.0 - 61.0 (2.17 - 2.40)	168.0 - 174.0 (6.61 - 6.85)
Oil capacity (Reference) ℓ (Imp pt)			Approx. 2.2 (3-7/8)				
Remarks	Reverse synchronizer		Installed				
	Double-cone synchronizer		3rd				
	Triple-cone synchronizer		1st and 2nd				

Gear End Play

BCS000AK

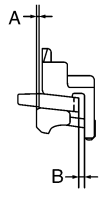
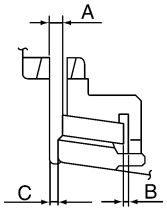
Unit: mm (in)

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 (For RS6F51A models)	0.06 - 0.16 (0.0024 - 0.0063)

Baulk Ring Clearance

BCS000AL

Unit: mm (in)

Measurement point		Standard value	Limit value
3rd (Double-cone synchronizer)  PCIB0249E	Clearance between synchronizer cone and inner baulk ring end face “A”	0.6 - 0.8 (0.024 - 0.031)	0.2 (0.008)
	Clearance between outer baulk ring pawl and synchronizer cone “B”	0.6 - 1.1 (0.024 -0.043)	0.2 (0.008)
1st and 2nd (Triple-cone synchronizer)  PCIB0835J	Clearance between synchronizer cone and clutch gear end face “A”	0.6 - 1.2 (0.024 - 0.047)	0.3 (0.012)
	Clearance between outer baulk ring pawl and synchronizer cone “B”	0.6 - 1.1 (0.024 - 0.043)	0.2 (0.008)
	Clearance between inner baulk ring and clutch gear end face “C”	0.7 - 1.1 (0.028 - 0.043)	0.3 (0.012)

Measurement point	Standard value	Limit value
4th	0.9 - 1.45 (0.035 - 0.057)	0.7 (0.028)
5th	0.95 - 1.4 (0.037 - 0.055)	
6th (For RS6F51A models)	0.95 - 1.4 (0.037 - 0.055)	
Reverse	0.95 - 1.4 (0.037 - 0.055)	

Available Snap Rings

BCS000AM

INPUT SHAFT BEARING SPACER

—For RS5F51A Models—

End play		0 - 0.1 mm (0 - 0.004 in)	
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
1.71 (0.0673)	32204 8H510	2.01 (0.0791)	32204 8H516
1.76 (0.0693)	32204 8H511	2.06 (0.0811)	32204 8H517
1.81 (0.0713)	32204 8H512	2.11 (0.0831)	32204 8H518
1.86 (0.0732)	32204 8H513	2.16 (0.0850)	32204 8H519
1.91 (0.0752)	32204 8H514	2.21 (0.0870)	32204 8H520
1.96 (0.0772)	32204 8H515	2.26 (0.0890)	32204 8H521

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

6TH INPUT GEAR BUSHING

—For RS6F51A Models—

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

5TH MAIN GEAR

—For RS5F51A Models—

End play		0 - 0.1 mm (0 - 0.004 in)	
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
1.85 (0.0728)	32204 8H500	2.05 (0.0807)	32204 8H504
1.90 (0.0748)	32204 8H501	2.10 (0.0827)	32204 8H505
1.95 (0.0768)	32204 8H502	2.15 (0.0846)	32204 8H506
2.00 (0.0787)	32204 8H503	2.20 (0.0866)	32204 8H507

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

Available C-Rings

BCS000AN

MAINSHAFT C-RING

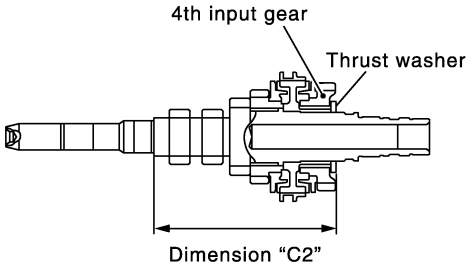
End play		0 - 0.06 mm (0 - 0.0024 in)	
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
2.535 (0.0998)	32348 8H800	2.835 (0.1116)	32348 8H810
2.565 (0.1010)	32348 8H801	2.865 (0.1128)	32348 8H811
2.595 (0.1022)	32348 8H802	2.895 (0.1140)	32348 8H812
2.625 (0.1033)	32348 8H803	2.925 (0.1152)	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

BCS000AO

INPUT SHAFT THRUST WASHER



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) 3.90 (0.1535) 3.96 (0.1559)	32347 8H500 32347 8H501 32347 8H502	4.02 (0.1583) 4.08 (0.1606) 4.14 (0.1630)	32347 8H503 32347 8H504 32347 8H505

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

DIFFERENTIAL SIDE GEAR THRUST WASHER

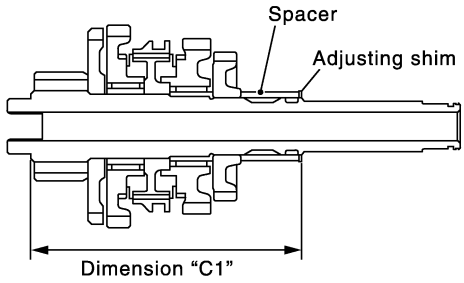
Allowable clearance between side gear and differential case with washer	0.1 - 0.2 mm (0.004 - 0.008 in)
Thickness mm (in)	Part number*
0.75 (0.0295) 0.80 (0.0315) 0.85 (0.0335) 0.90 (0.0354) 0.95 (0.0374)	38424 81X00 38424 81X01 38424 81X02 38424 81X03 38424 81X04

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

Available Adjusting Shims

BCS000AP

4TH MAIN GEAR ADJUSTING SHIM



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) 0.60 (0.0236) 0.68 (0.0268) 0.76 (0.0299)	32238 8H500 32238 8H501 32238 8H502 32238 8H503	0.84 (0.0331) 0.92 (0.0362) 1.00 (0.0394) 1.08 (0.0425)	32238 8H504 32238 8H505 32238 8H506 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	1.68 (0.0661)	32225 8H567**
0.76 (0.0299)	32225 8H509	1.24 (0.0488)	32225 8H521	1.72 (0.0677)	32225 8H568**
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 parts information.
**: RS5F51A models only.

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)	
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

—For RS6F51A Models—

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

BCS000AQ

— Differential Side Bearing Preload and Adjusting Shim

BEARING PRELOAD

Differential side bearing preload: L*	0.15 - 0.21 mm (0.0059 - 0.0083 in)

*: 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.