

MANUAL TRANSAXLE

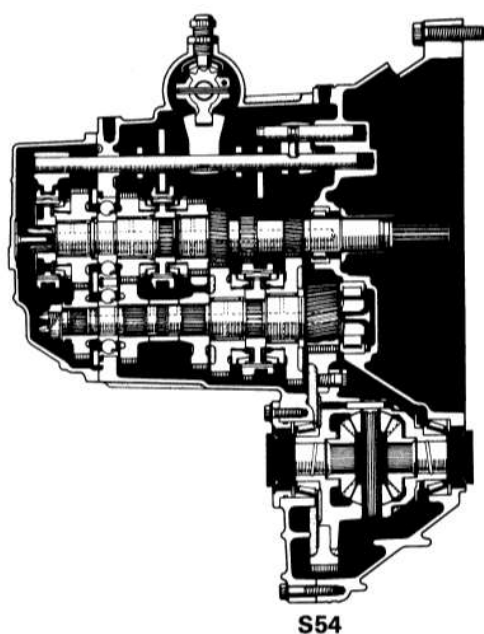
	Page
DESCRIPTION	MT-2
PRECAUTIONS	MT-4
TROUBLESHOOTING	MT-4
REMOVAL AND INSTALLATION OF TRANSAXLE	MT-5
(S54 TRANSAXLE/SW21 series)	
REMOVAL OF COMPONENT PARTS	MT-7
COMPONENT PARTS	MT-21
Input Shaft Assembly	MT-21
Output Shaft Assembly	MT-27
Shift and Select Lever Assembly	MT-34
Differential	MT-37
INSTALLATION OF COMPONENT PARTS	MT-47
(E153 TRANSAXLE/SW20 series)	
REMOVAL OF COMPONENT PARTS	MT-57
COMPONENT PARTS	MT-73
Input Shaft Assembly	MT-73
Output Shaft Assembly	MT-79
Oil Pump	MT-85
Shift and Select Lever Shaft	MT-90
Differential	MT-94
INSTALLATION OF COMPONENT PARTS	MT-104
SHIFT LEVER AND CONTROL CABLE	MT-116

DESCRIPTION

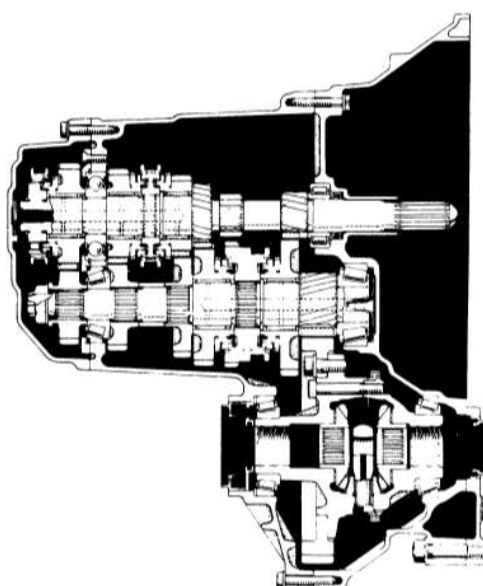
General

- Transaxle types S54 and E153 are constant mesh synchronizers for forward gears, and a sliding mesh reverse gear.
- The input shaft is composed of the 1st and 2nd speed gears and the reverse drive gear, and the output shaft is composed of the drive gear (for use with the ring gear).
- The oil used in the transaxles are as follows:
 S51 ATF type DEXRON® II
 E153 Transaxle oil E50 (08885 – 80206) or equivalent

Sectional View



S54



E153

CD0007 MT0718

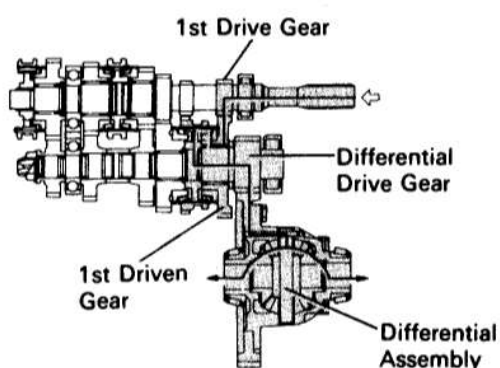
General Specifications

Type of Transmission		S54	E153
Type of Engine			
Items		5S-FE	3S-GTE
Gear Ratios	1st Gear	3.285	3.230
	2nd Gear	1.960	1.913
	3rd Gear	1.322	1.258
	4th Gear	1.028	0.918
	5th Gear	0.820	0.731
	Reverse Gear	3.153	3.545
Differential Gear Ratio		4.176	4.285
Oil Type		ATF DEXRON® II	Transaxle oil E50 or equivalent
Oil Capacity	liter (US qts, Imp. qts)	2.6 (2.7, 2.3)	4.2 (4.4, 3.7)

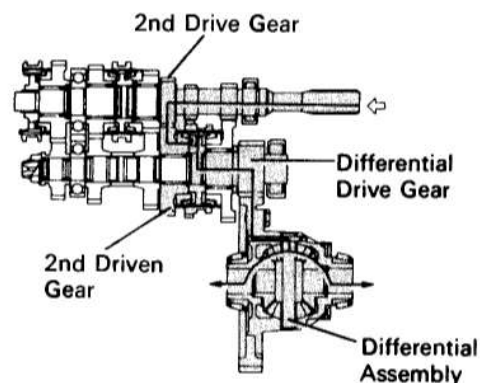
Function of Component Parts

S54 and E153 Transaxles

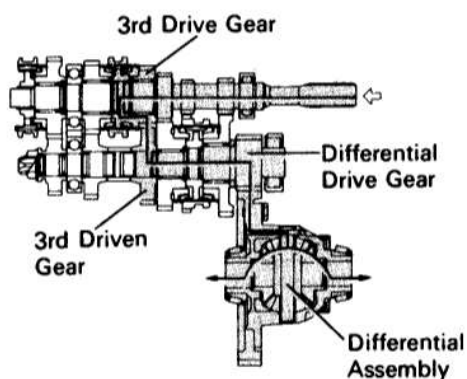
- The illustrations below show the engagements of transaxle gears.



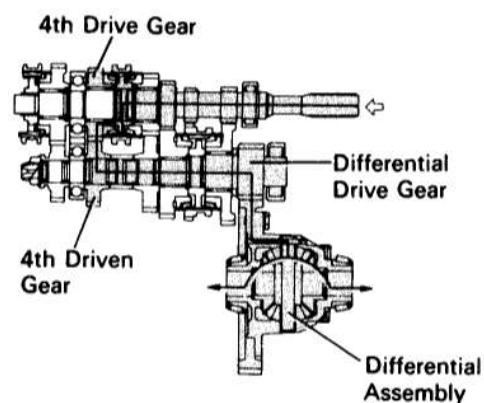
1st



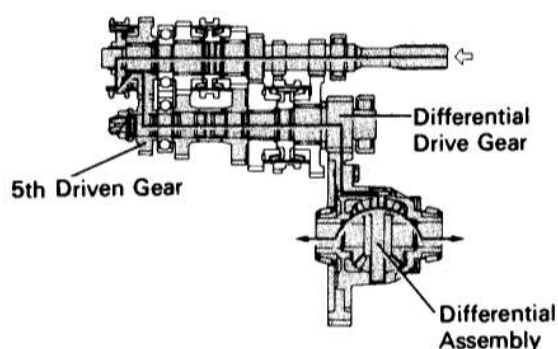
2nd



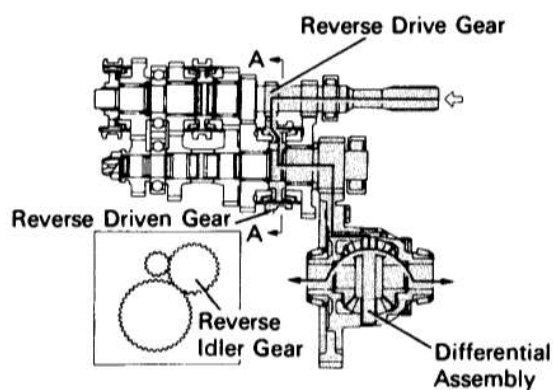
3rd



4th



5th



Rev.

PRECAUTIONS

When working with FIPG material, you must observe the following.

- Using a razor blade and gasket scraper, remove all the old packing (FIPG) material from the gasket surfaces.
- Thoroughly clean all components to remove all the loose material.
- Clean both sealing surfaces with a non-residue solvent.
- Apply the seal packing in approx. 1 mm (0.04 in.) bead along the sealing surface.
- Parts must be assembled within 10 minutes of application. Otherwise, the packing (FIPG) material must be removed and reapplied.

TROUBLESHOOTING

Problem	Possible cause	Remedy	Page	
			S54	E153
Noise	Transmission or differential faulty Wrong oil grade Oil level low	Disassemble and inspect transmission or differential Replace oil Add oil	MT-7, MT-37 MT-4 MT-4	MT-57, MT-94 ← ←
Oil leakage	Oil level too high Oil seal, O-ring or gasket worn or damaged	Drain oil Replace oil seal, O-ring or gasket	– MT-7	– MT-57
Hard to shift or will not shift	Control cable faulty Transmission faulty	Replace control cable Disassemble and inspect transmission	MT-116 MT-7	← MT-57
Jumps out of gear	Transmission faulty	Disassemble and inspect transmission	MT-7	MT-57

HOW TO REPLACE OR CHECK OIL

1. HOW TO REPLACE TRANSAXLE OIL

- Remove the drain plug and drain the oil.
- Reinstall drain plug securely.

Torque: 500 kg-cm (36 ft-lb, 49 N·m)

- Add new oil until it begins to run out of the filler hole.

(S54: 5S-FE)

ATF: DEXRON® II

Capacity: 2.6 liters (2.7 US qts, 2.3 Imp. qts)

(E153: 3S-GTE)

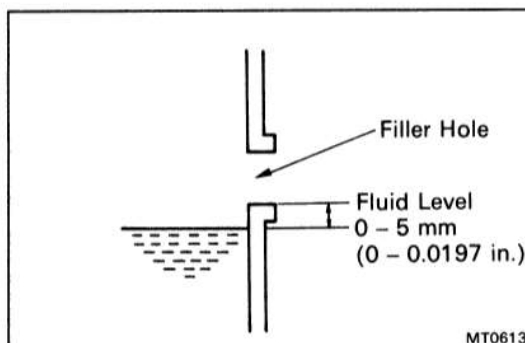
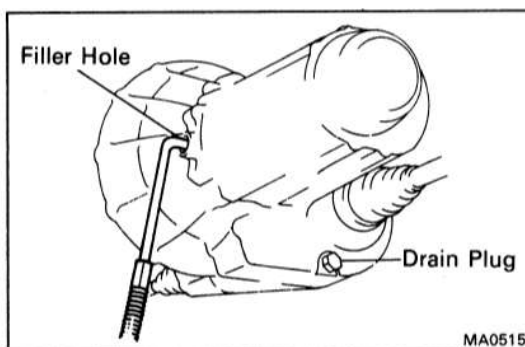
Oil: Transaxle oil E50 (08885-80206) or equivalent

Capacity: 4.2 liters (4.4 US qts, 3.7 Imp. qts)

2. HOW TO CHECK TRANSAXLE OIL

- Remove the filler plug and check transaxle oil level.
If the level is lower, add transaxle oil until it begins to run out of the filler hole.
- After checking, reinstall the filler plug securely.

Torque: 500 kg-cm (36 ft-lb, 49 N·m)



REMOVAL AND INSTALLATION OF TRANSAXLE

Remove and install the parts as shown.

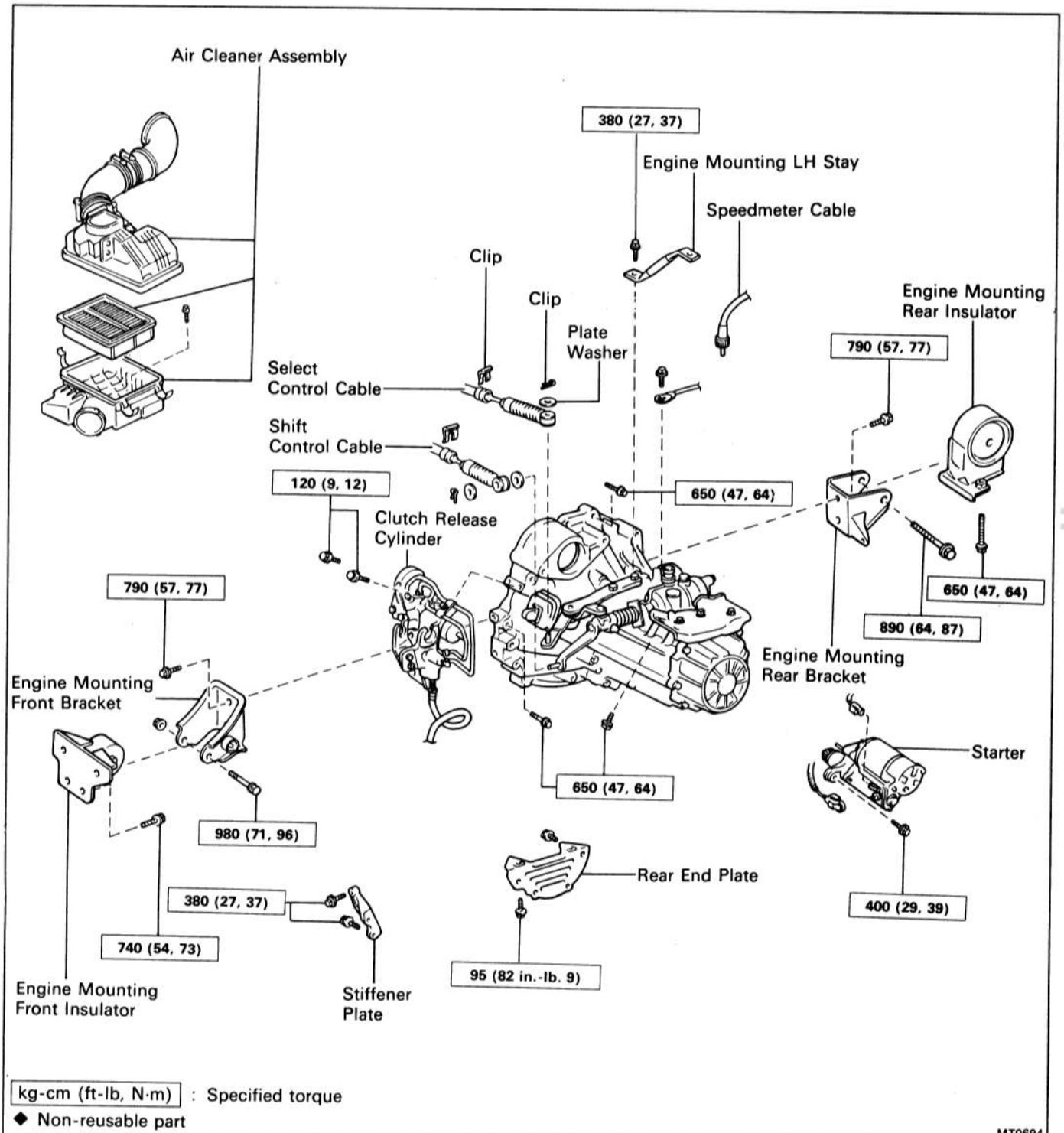
HINT: (S54)

ATF type : DEXRON® II

Capacity : 2.6 liter (2.7 US qts, 2.3 Imp. qts)
(E153)

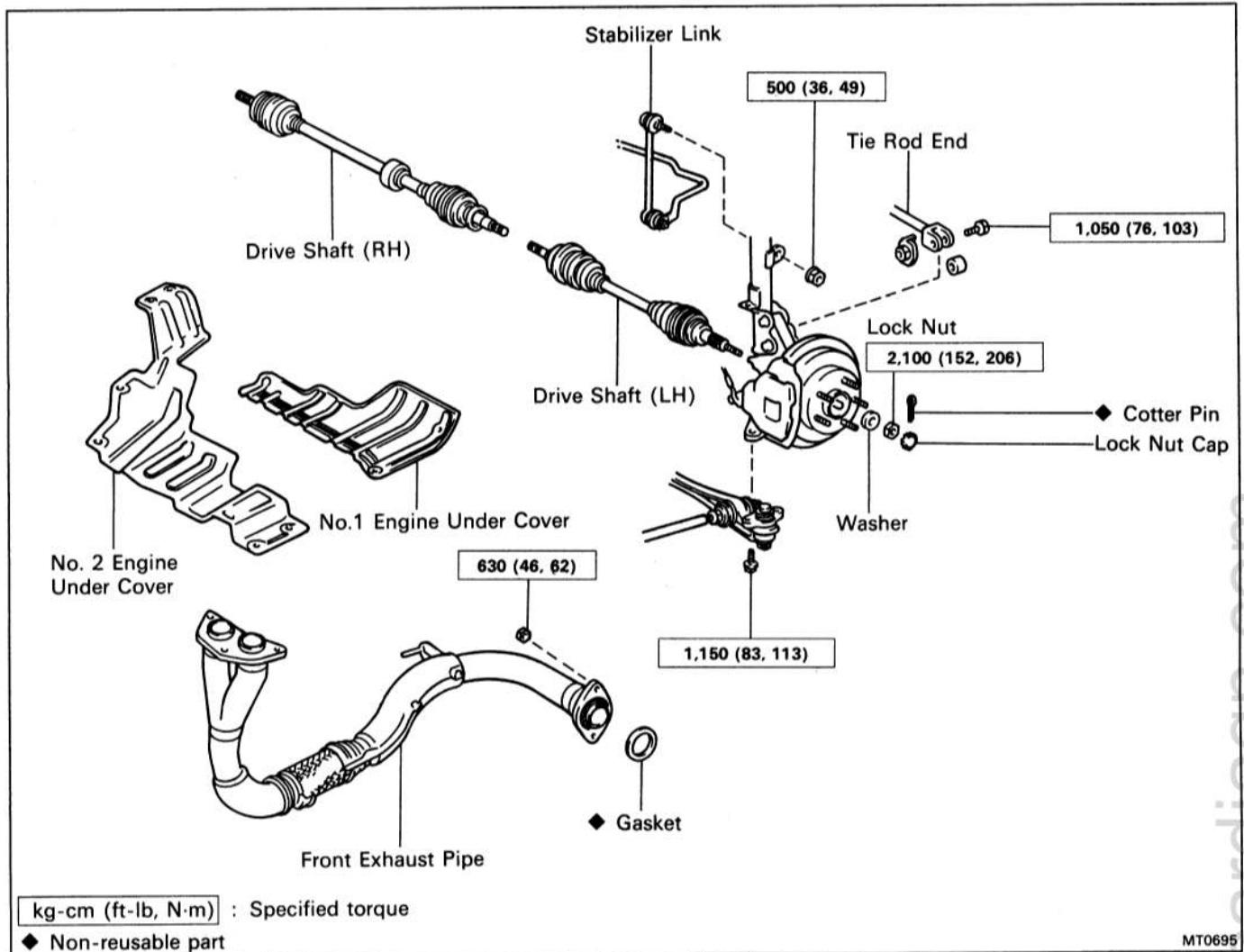
Oil : Transaxle oil E50 (08885-80206)
or equivalent

Capacity : 4.2 liter (4.4 US qts, 3.7 Imp. qts)

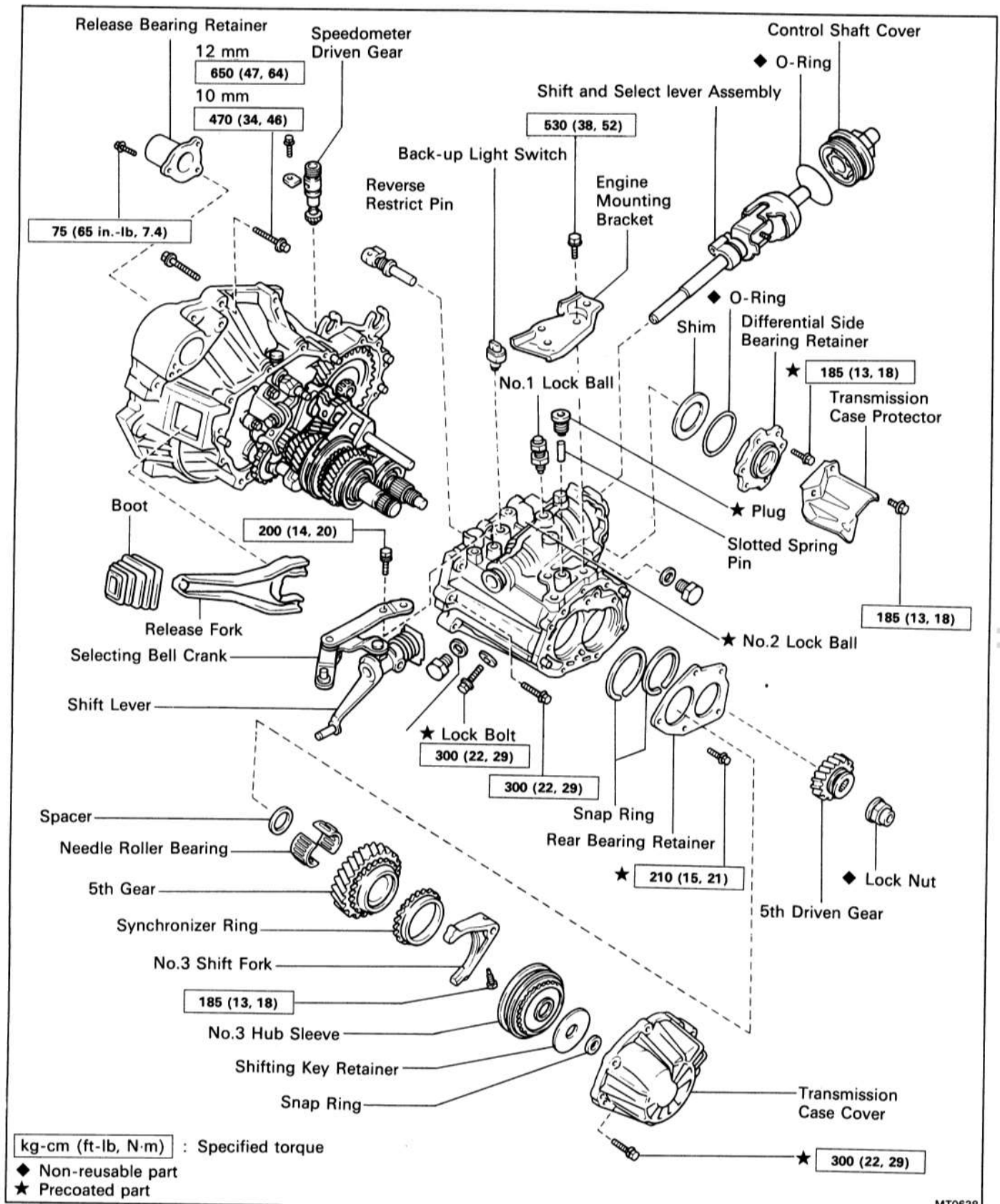


REMOVAL AND INSTALLATION OF TRANSAXLE (Cont'd)

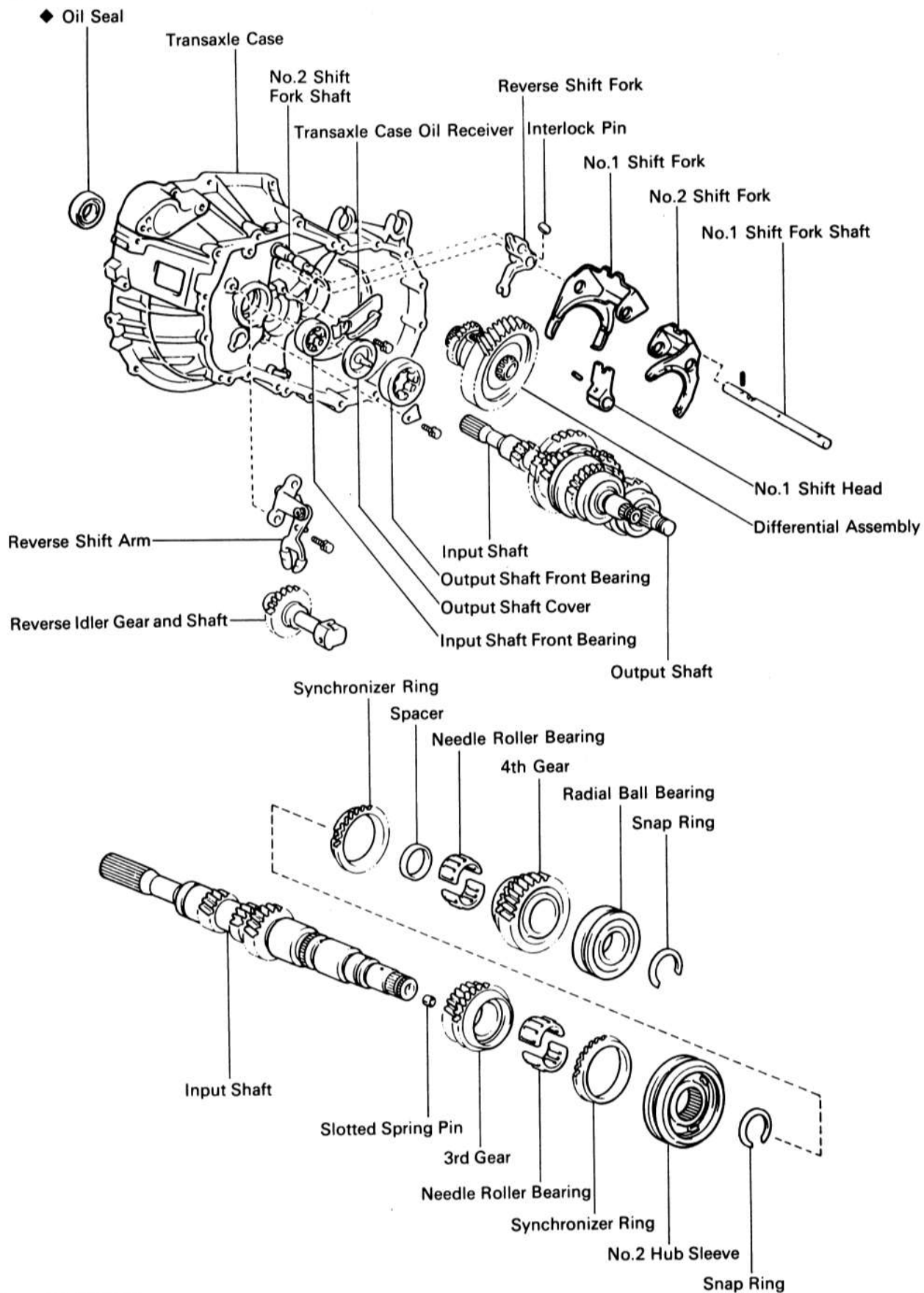
Remove and install the parts as shown.



(S54 TRANSAXLE) REMOVAL OF COMPONENT PARTS COMPONENTS



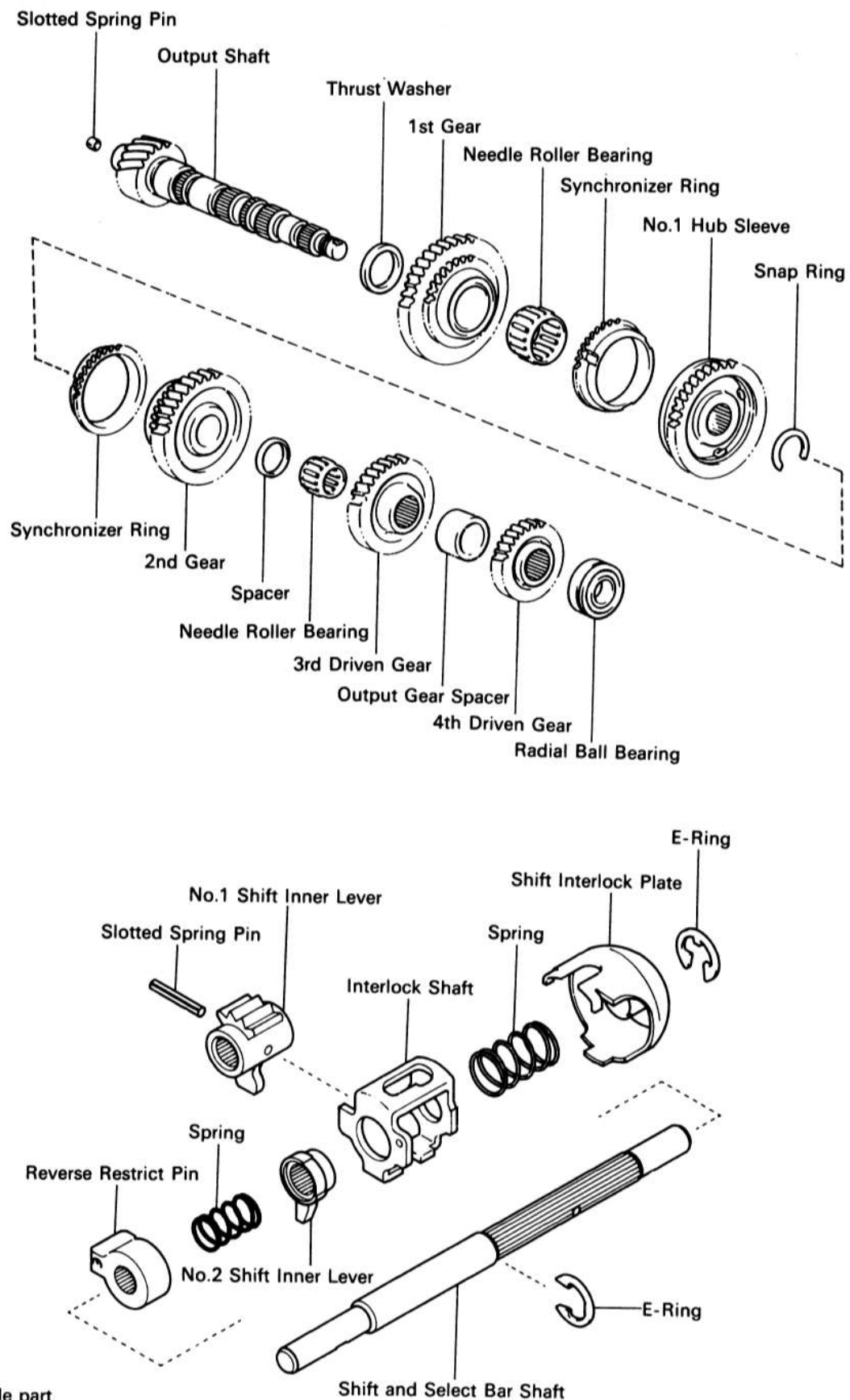
COMPONENTS (Cont'd)



◆ Non-reusable part

SM0101

COMPONENTS (Cont'd)



◆ Non-reusable part
★ Precoated part

SM0040
SM0147

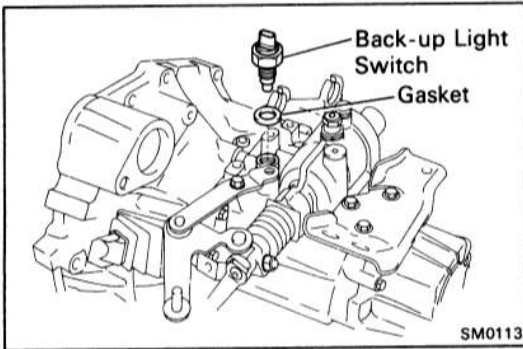
REMOVAL OF COMPONENT PARTS

(See pages MT-7 to 9)

1. REMOVE RELEASE FORK AND BEARING

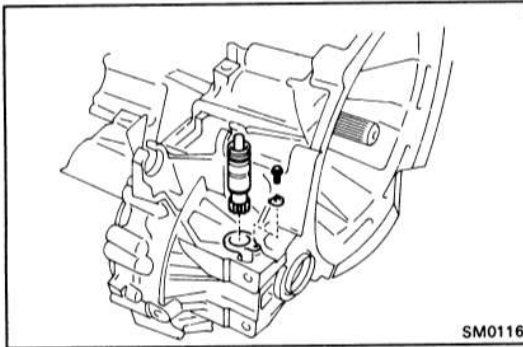
2. REMOVE BACK-UP LIGHT SWITCH

Remove the back-up light switch and gasket.



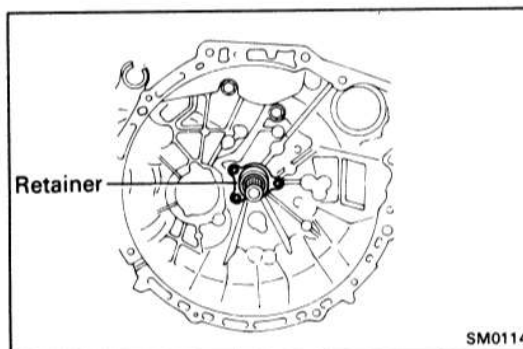
3. REMOVE SPEEDOMETER DRIVEN GEAR

- Remove the retaining bolt and plate.
- Pull out the speedometer driven gear.

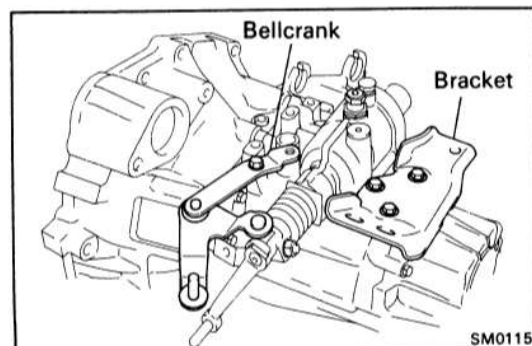


4. REMOVE RELEASE BEARING RETAINER

Remove the three bolts.

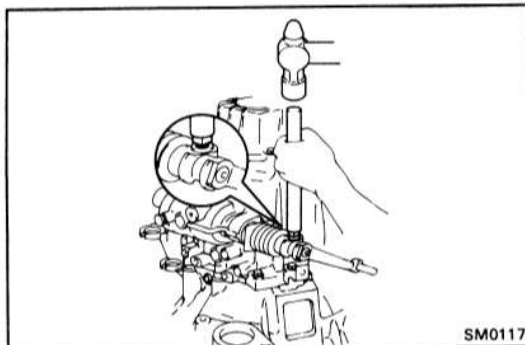


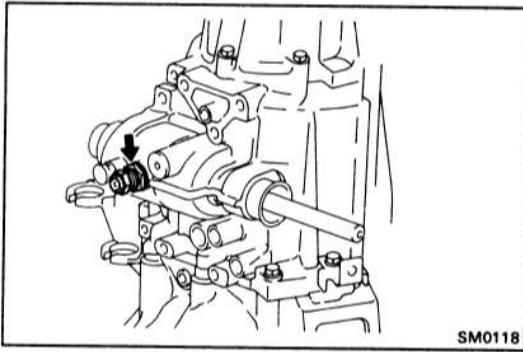
5. REMOVE SELECTING BELLCRANK ASSEMBLY AND ENGINE MOUNTING BRACKET



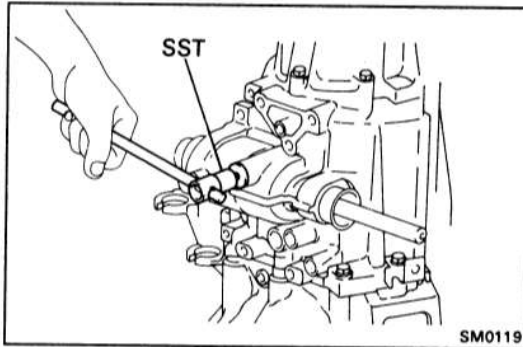
6. REMOVE SHIFT LEVER

- Loosen the lock nut as far as the tip of the lock pin.
- Using a brass bar and hammer, tap out the lock pin.
- Pull out the shift lever with dust boot from shift and select lever shaft.

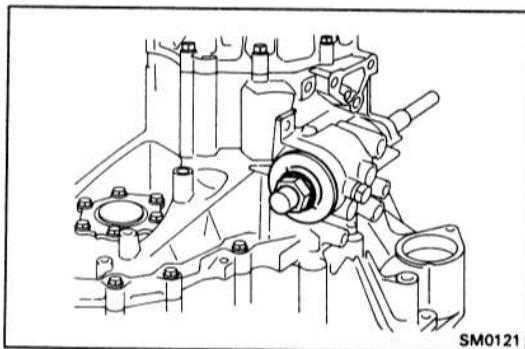




- 7. REMOVE NO.1 AND NO.2 LOCK BALL ASSEMBLIES**
(a) Loosen the lock nut and remove the No.1 lock ball.

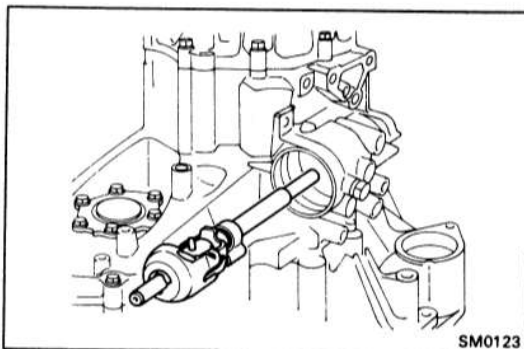


- (b) Using SST, remove the No.2 lock ball.
SST 09313-30021

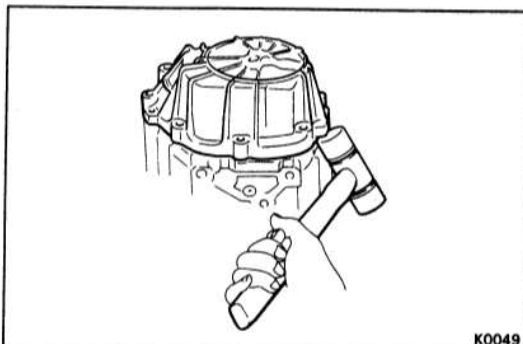


8. REMOVE SHIFT AND SELECT LEVER SHAFT ASSEMBLY

- (a) Remove the control shaft cover.
(b) Remove the O-ring from control shaft cover.

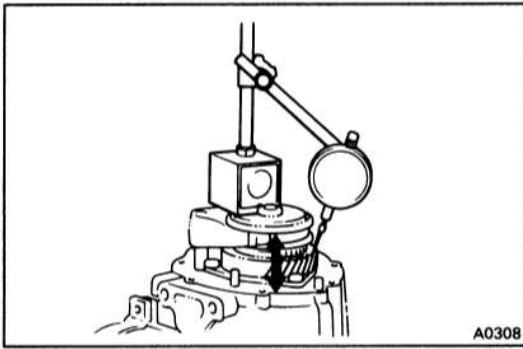


- (c) Pull out the shift and select lever shaft assembly.



9. REMOVE TRANSMISSION CASE COVER

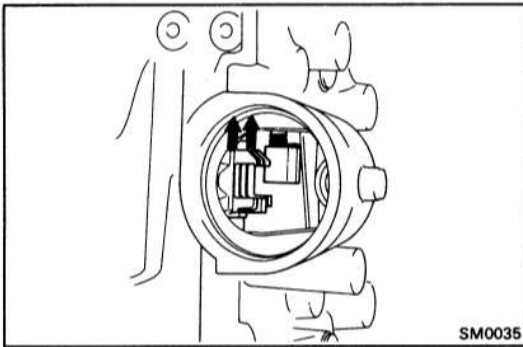
- (a) Remove the eight bolts.
(b) Tap on the circumference of the transmission case cover with a plastic hammer to remove the transmission case cover.

**10. MEASURE FIFTH GEAR THRUST CLEARANCE**

Using a dial indicator, measure the thrust clearance.

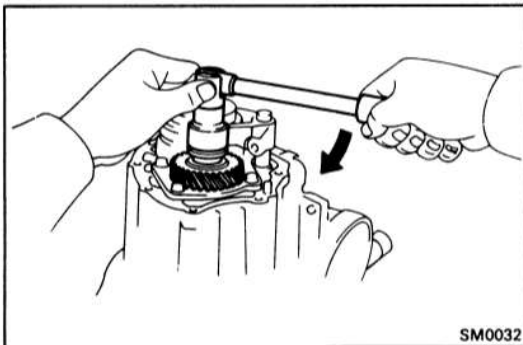
Standard clearance: 0.20 – 0.40 mm
(0.0079 – 0.0157 in.)

Maximum clearance: 0.45 mm (0.0177 in.)

**11. REMOVE OUTPUT SHAFT LOCK NUT**

(a) Engage the gear double meshing.

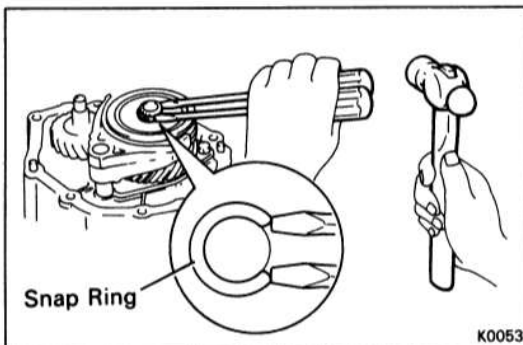
(b) Unstake the nut.



(c) Remove the lock nut.

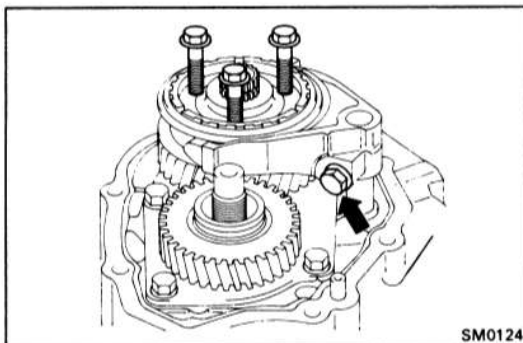
HINT: The lock nut has LH threads.

(d) Disengage the gear double meshing.

**12. REMOVE SHIFTING KEY RETAINER**

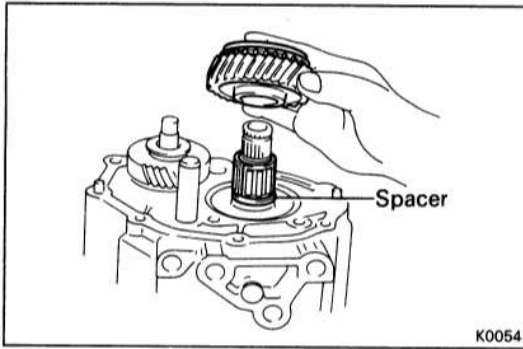
(a) Using two screwdrivers and a hammer, tap out the snap ring.

(b) Remove the shifting key retainer.

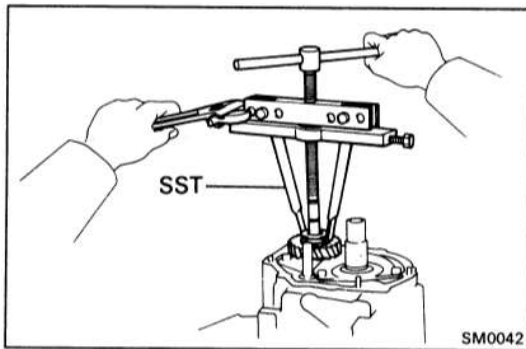
**13. REMOVE NO. 3 HUB SLEEVE AND NO. 3 SHIFT FORK**

(a) Remove the No. 3 shift fork set bolt.

(b) Using the three case cover bolts, tighten the three bolts a little at a time and remove No. 3 hub sleeve assembly.

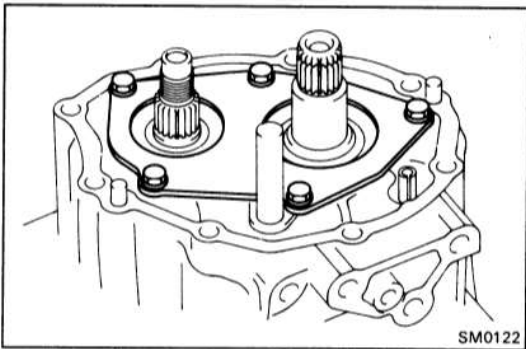


- 14. REMOVE FIFTH GEAR, SYNCHRONIZER RING, NEEDLE ROLLER BEARINGS AND SPACER**



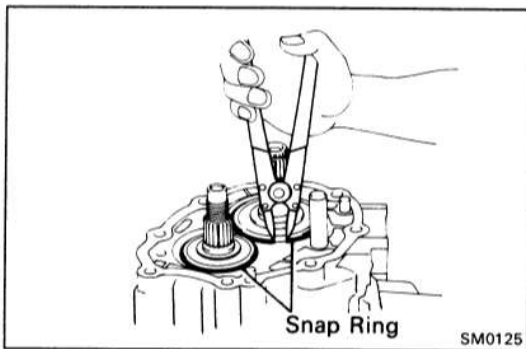
- 15. REMOVE FIFTH DRIVEN GEAR**

Using SST, remove the fifth driven gear.
SST 09950-20017



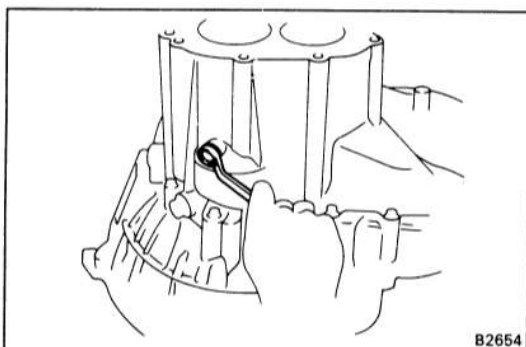
- 16. REMOVE REAR BEARING RETAINER**

Remove the five bolts and bearing retainer.

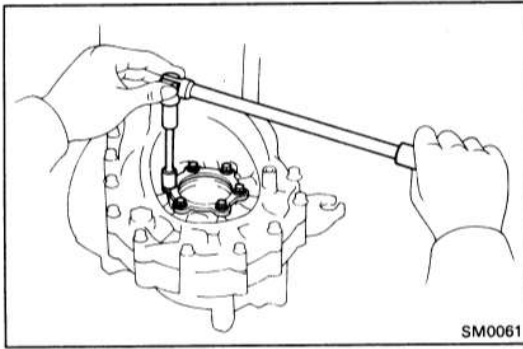


- 17. REMOVE SNAP RINGS**

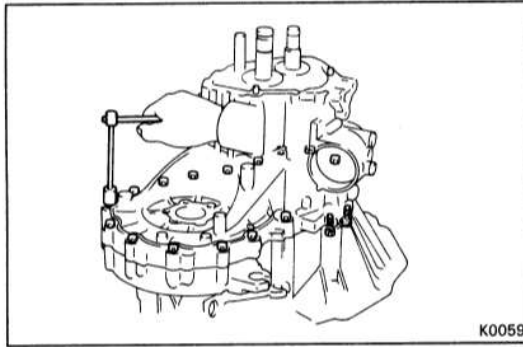
Using snap ring pliers, remove the two snap rings.



- 18. REMOVE REVERSE IDLER GEAR SHAFT LOCK BOLT**



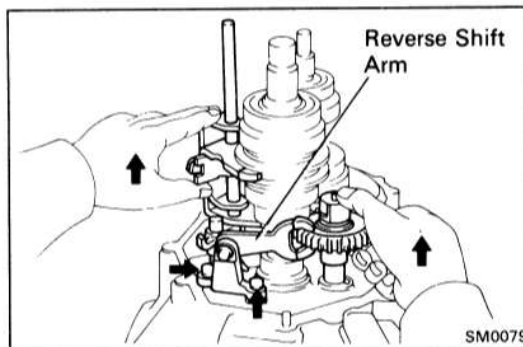
19. REMOVE DIFFERENTIAL SIDE BEARING RETAINER AND SHIM



20. REMOVE TRANSMISSION CASE

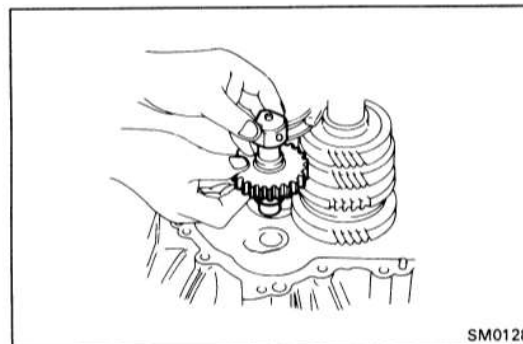
Remove the seventeen bolts and tap off the case with plastic hammer.

HINT: Remove the two bolts from the transaxle case side.

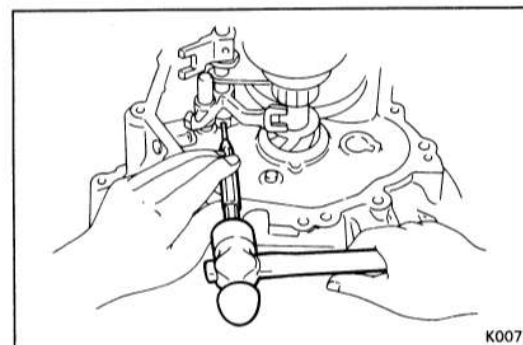


21. REMOVE REVERSE SHIFT ARM BRACKET ASSEMBLY

- Shift the shift fork shaft into reverse.
- Remove the two bolts and pull off the reverse shift arm.

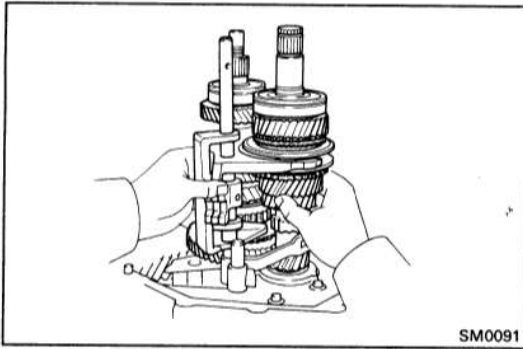


22. REMOVE REVERSE IDLER GEAR AND SHAFT

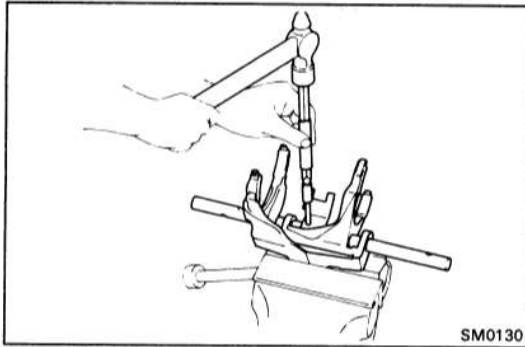


23. REMOVE NO. 1 SHIFT FORK SHAFT, NO. 1 SHIFT HEAD, NO. 1 AND NO. 2 SHIFT FORKS, INPUT SHAFT AND OUTPUT SHAFT

- Drive out the slotted spring pin from No. 1 fork shaft.

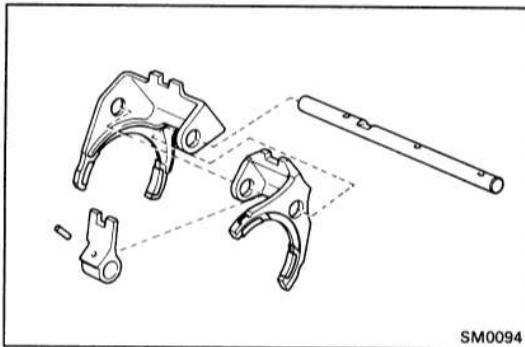


- (b) Remove the input shaft and output shaft together with No. 1 fork shaft and shift head and shift forks from the transaxle case.

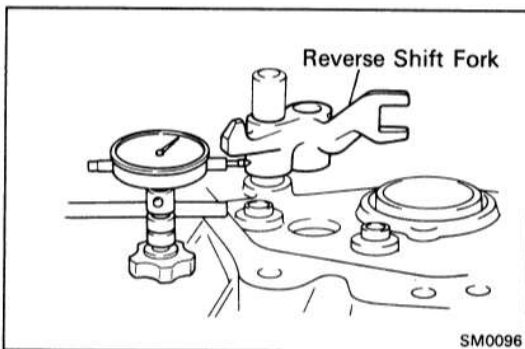


24. SEPARATE NO. 1 FORK SHAFT, NO. 1 SHIFT HEAD, NO. 1 AND NO. 2 SHIFT FORKS

- (a) Mount the shift forks in a vise.
 (b) Drive out the slotted spring pin from No. 1 fork shaft as shown.

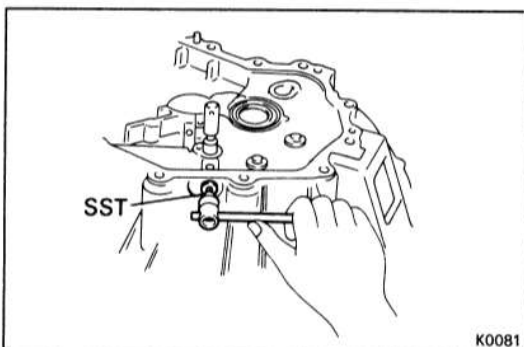


- (c) Separate the No. 1 shift fork shaft No. 1 shift head, No. 1 and No. 2 shift fork.



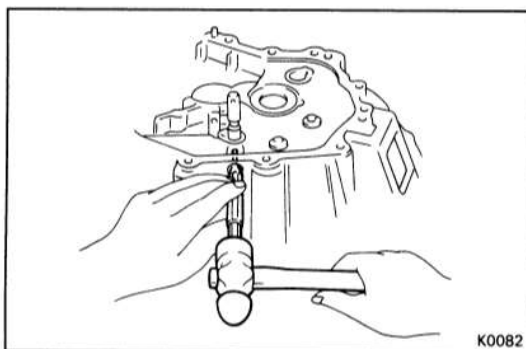
- 25. CHECK OIL CLEARANCE OF REVERSE SHIFT FORK**
 Maximum clearance: 0.70 mm (0.0276 in.)

26. REMOVE REVERSE SHIFT FORK AND INTERLOCK PIN

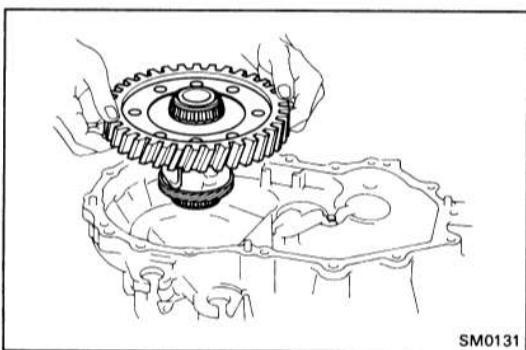


27. REMOVE NO. 2 FORK SHAFT

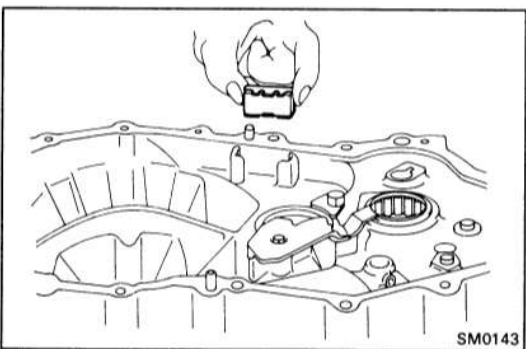
- (a) Using SST, remove the screw plug.
 SST 09313-30021



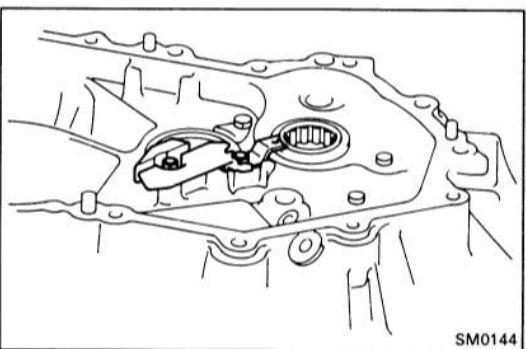
- (b) Using a pin punch and hammer, drive out the slotted spring pin.
- (c) Pull out the shaft.



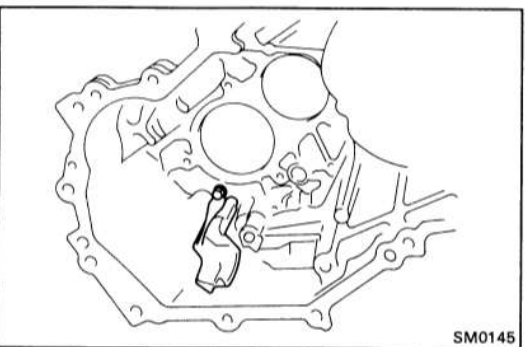
28. REMOVE DIFFERENTIAL ASSEMBLY



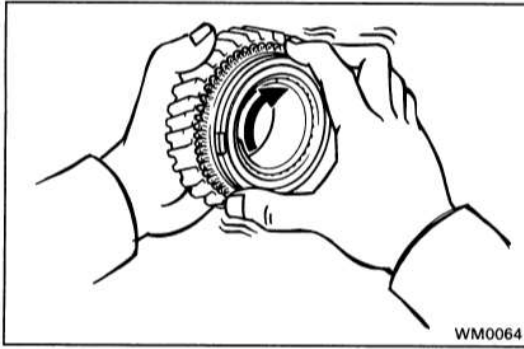
29. REMOVE MAGNET



30. REMOVE TRANSAXLE OIL RECEIVER AND PLATE



31. REMOVE NO. 1 OIL RECEIVER PIPE FROM TRANSMISSION CASE



INSPECTION OF COMPONENT PARTS

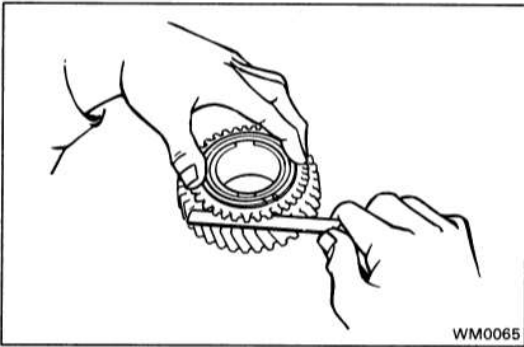
1. INSPECT SYNCHRONIZER RING NO. 3 FOR FIFTH GEAR

- (a) Check for wear or damage.
- (b) Turn the ring and push it in to check the braking action.

- (c) Measure the clearance between the synchronizer ring back and the gear spline end.

Minimum clearance: 0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer ring.

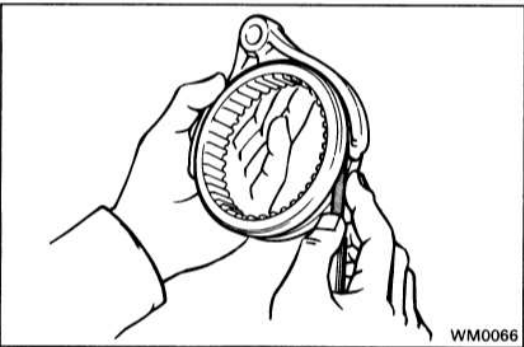


2. MEASURE CLEARANCE OF SHIFT FORKS AND HUB SLEEVE

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance: 1.0 mm (0.039 in.)

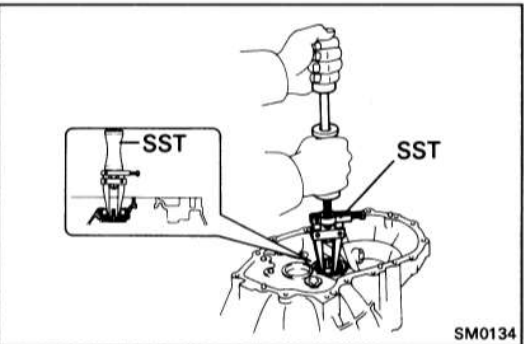
If the clearance exceeds the limit, replace the shift fork or hub sleeve.



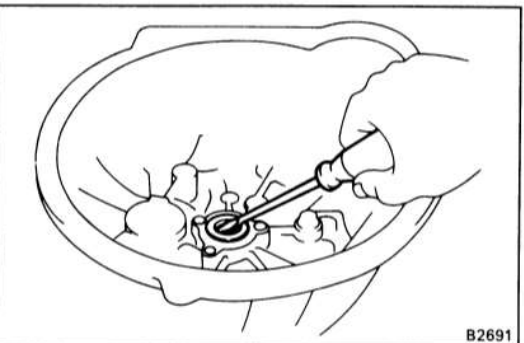
3. IF NECESSARY, REPLACE INPUT SHAFT FRONT BEARING AND OIL SEAL

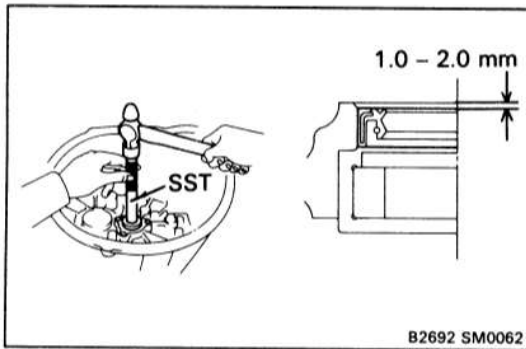
- (a) Using SST, pull out the bearing.

SST 09308-00010

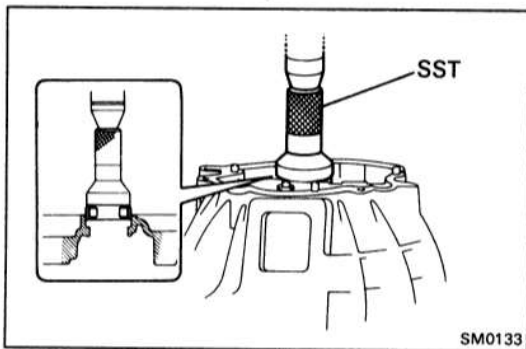


- (b) Using a screwdriver, remove the oil seal.

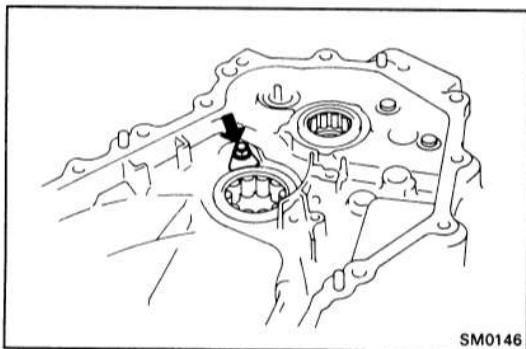




- (c) Using SST, drive in a new oil seal.
 SST 09608-20012 (09608-00080, 09608-03020)
Drive in depth: 1.0 – 2.0 mm (0.039 – 0.079 in.)
 (d) Coat the lip of the oil seal with MP grease.

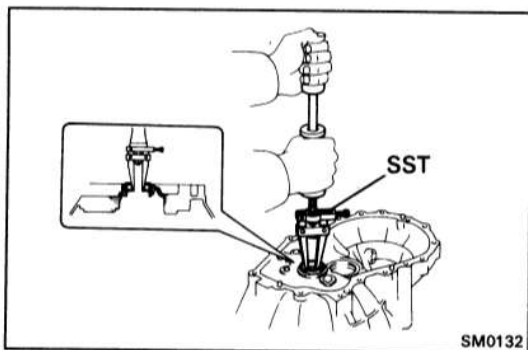


- (e) Using SST, press in a new bearing.
 SST 09310-35010

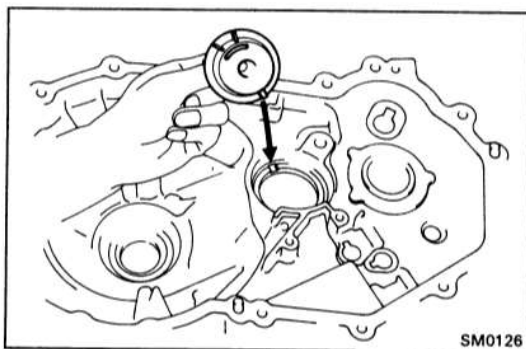


4. IF NECESSARY, REPLACE OUTPUT SHAFT FRONT BEARING AND OUTPUT SHAFT COVER

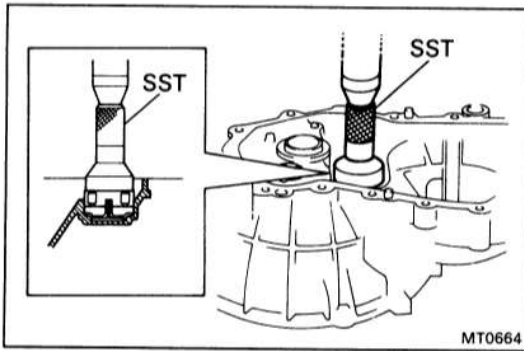
- (a) Remove the bolt and bearing lock plate.



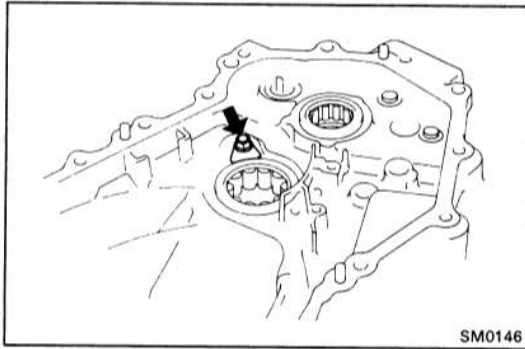
- (b) Using SST, pull out the bearing.
 SST 09308-00010
 (c) Remove the output shaft cover.



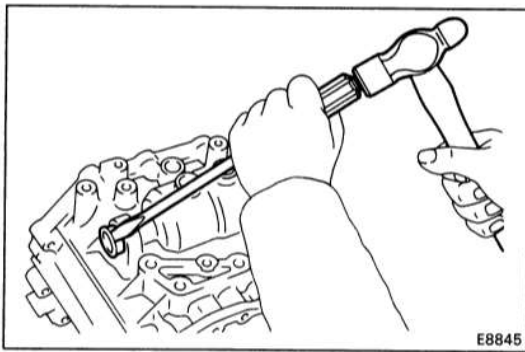
- (d) Install the output shaft cover.
HINT: Install the output shaft cover projection into the case side groove.



- (e) Using SST, press in a new bearing.
SST 09310-35010

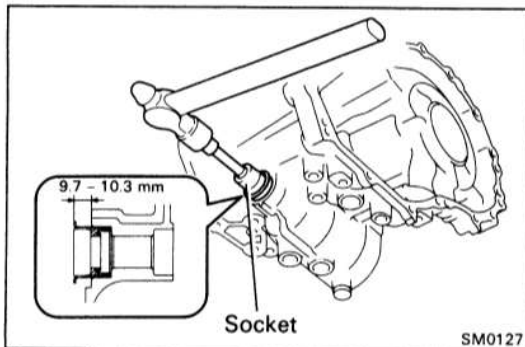


- (f) Install the bearing lock plate and torque the bolt.
Torque: 185 kg-cm (13 ft-lb, 18 N·m)



5. IF NECESSARY, REPLACE CONTROL SHAFT COVER OIL SEAL

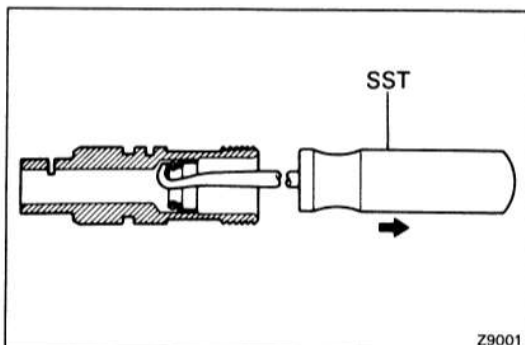
- (a) Using a screwdriver and hammer, remove the oil seal.



- (b) Using a 17 mm socket and extension bar, drive in a new oil seal.

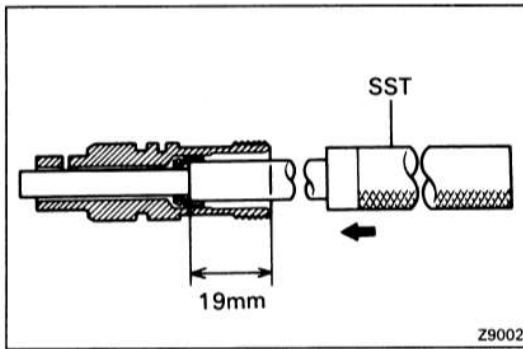
Drive in depth: 9.7 - 10.3 mm (0.382 - 0.406 in.)

- (c) Coat the lip of the oil seal with MP grease.



6. IF NECESSARY, REPLACE SPEEDOMETER DRIVEN GEAR OIL SEAL

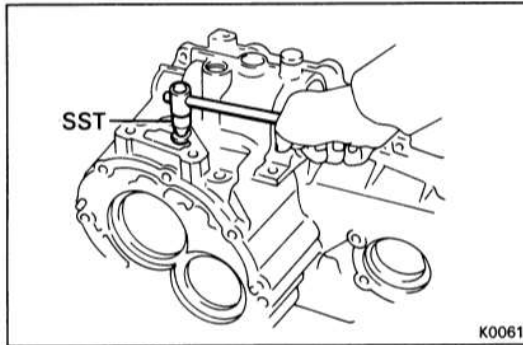
- (a) Using SST, pull out the oil seal.
SST 09921-00010



(b) Using SST, drive in a new oil seal.

SST 09201-60011

Drive in depth: 19 mm (0.75 in.)

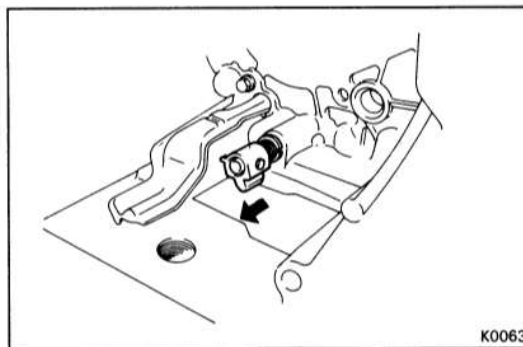


7. IF NECESSARY, REPLACE REVERSE RESTRICT PIN

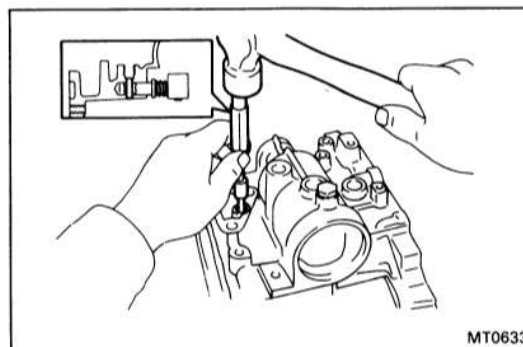
(a) Using SST, remove the screw plug.

SST 09313-30021

(b) Using a pin punch and hammer, drive out the slotted spring pin.



(c) Replace the reverse restrict pin.



(d) Using a pin punch and hammer, drive in the slotted spring pin.

(e) Apply liquid sealant to the plug threads.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

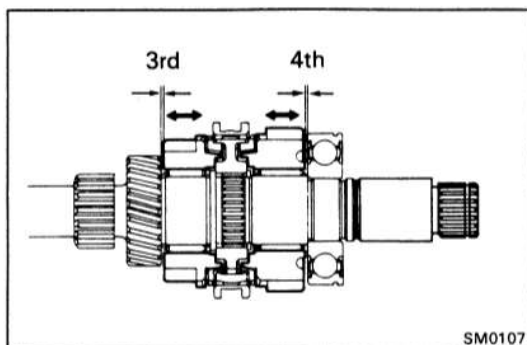
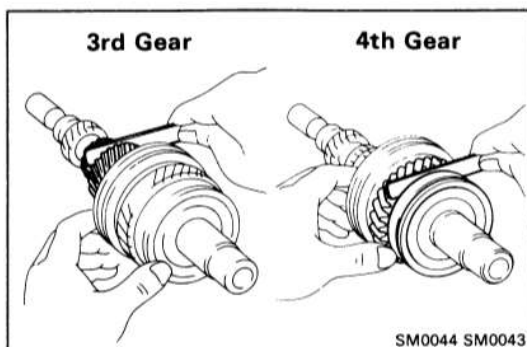
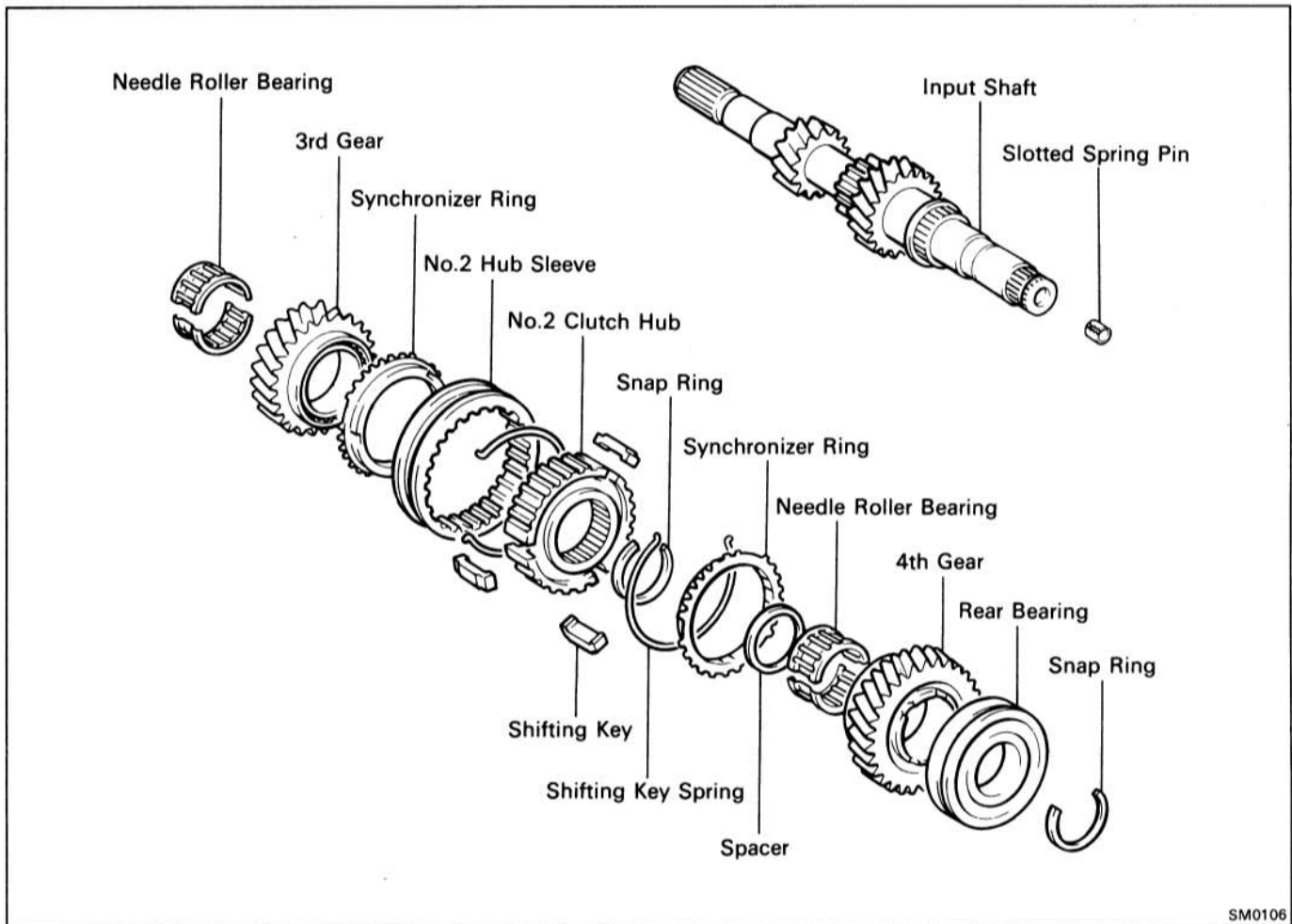
(f) Using SST, install the screw plug.

SST 09313-30021

Torque: 130 kg-cm (9 ft-lb, 13 N·m)

COMPONENT PARTS

Input Shaft Assembly



DISASSEMBLY OF INPUT SHAFT ASSEMBLY

1. MEASURE THIRD AND FOURTH GEAR THRUST CLEARANCE

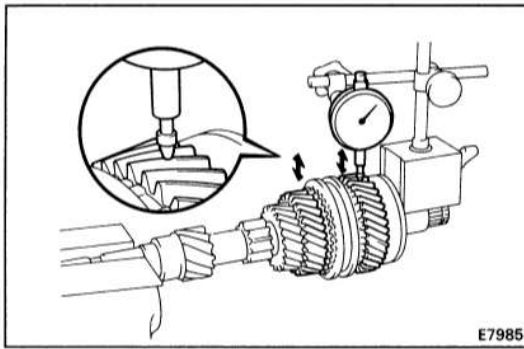
Using a feeler gauge, measure the thrust clearance.

Standard clearance:

3rd gear	0.10 – 0.25 mm (0.0039 – 0.0098 in.)
4th gear	0.20 – 0.45 mm (0.0079 – 0.0177 in.)

Maximum clearance:

3rd gear	0.30 mm (0.0118 in.)
4th gear	0.50 mm (0.0197 in.)



2. CHECK OIL CLEARANCE OF THIRD AND FOURTH GEAR

Using dial indicator, measure the oil clearance between the gear and shaft.

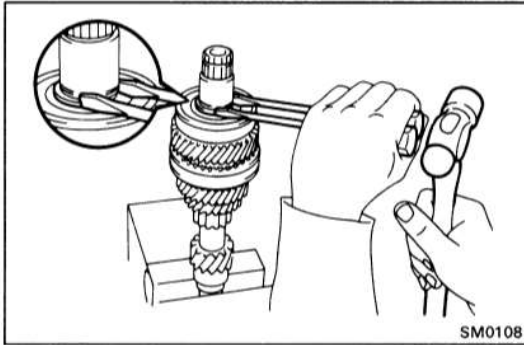
Standard clearance:

3rd and 4th gear 0.009 – 0.053 mm
(0.0004 – 0.0020 in.)

Maximum clearance:

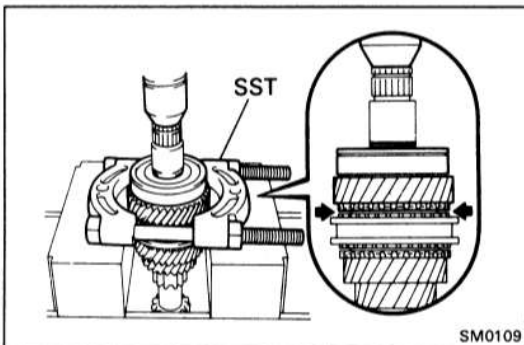
3rd and 4th gear 0.070 mm (0.0028 in.)

If clearance exceeds the limit, replace the gear, needle roller bearing or shaft.



3. REMOVE SNAP RING

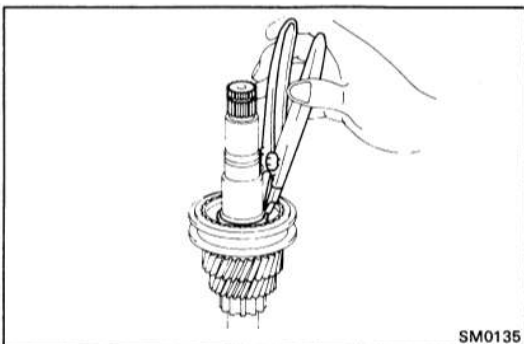
Using two screwdrivers and a hammer, tap out the snap ring.



4. REMOVE RADIAL BALL BEARING AND FOURTH GEAR

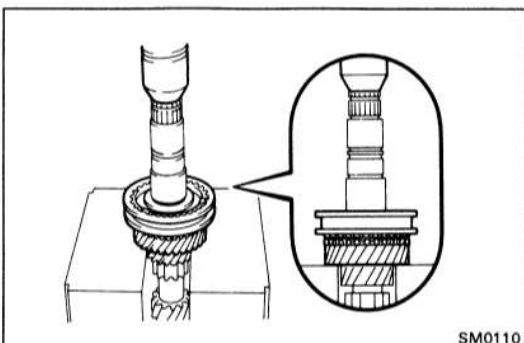
Using SST and a press, remove the radial ball bearing.
SST 09950-00020

5. REMOVE NEEDLE ROLLER BEARINGS, SPACER AND SYNCHRONIZER RING



6. REMOVE SNAP RING

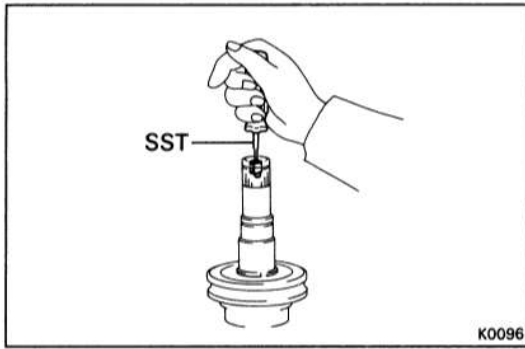
Using snap ring pliers, remove the snap ring.



7. REMOVE NO. 2 CLUTCH HUB ASSEMBLY, SYNCHRONIZER RING AND THIRD GEAR

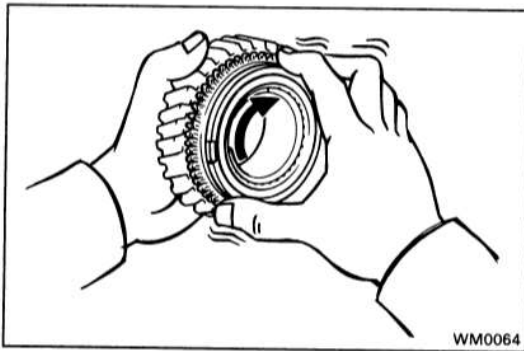
Using a press, remove No. 2 hub sleeve, 3rd gear, synchronizer ring and needle roller bearings.

8. REMOVE NEEDLE ROLLER BEARING

**9. REMOVE SLOTTED SPRING PIN**

Using SST, remove the slotted spring pin.

SST 09921-00010



INSPECTION OF INPUT SHAFT COMPONENT PARTS

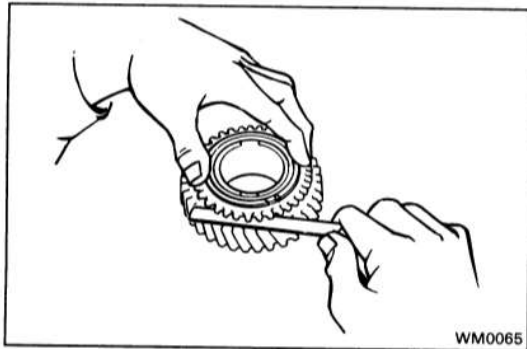
1. INSPECT SYNCHRONIZER RINGS

- Check for wear or damage.
- Turn the ring and push it in to check the braking action.

- Measure the clearance between the synchronizer ring back and the gear spline end.

Minimum clearance: 0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer ring.

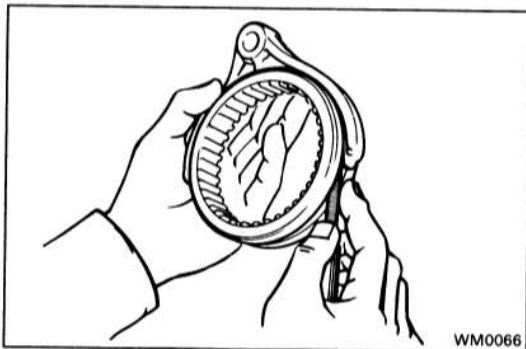


2. MEASURE CLEARANCE OF NO. 2 SHIFT FORK AND HUB SLEEVE

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance: 1.0 mm (0.039 in.)

If the clearance exceeds the limit, replace the shift fork or hub sleeve.

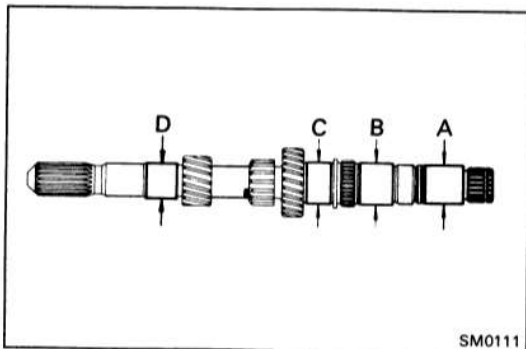


3. INSPECT INPUT SHAFT

- Check the input shaft for wear or damage.
- Using a micrometer, measure the outer diameter of the input shaft journal surface.

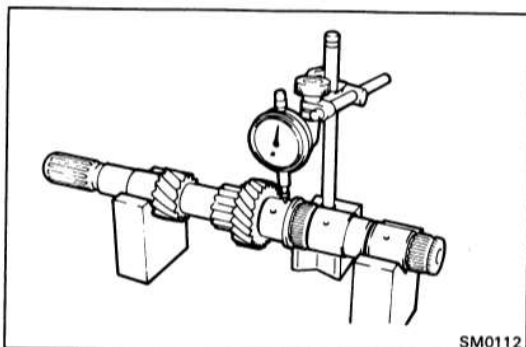
Minimum outer diameter:

Part A	26.970 mm (1.0618 in.)
B	32.420 mm (1.2764 in.)
C	33.090 mm (1.3028 in.)
D	29.970 mm (1.1799 in.)

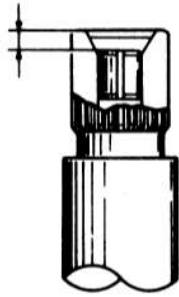


- Using a dial indicator, check the shaft runout.

Maximum runout: 0.05 mm (0.0020 in.)



4.5 – 5.5mm (0.177 – 0.217 in.)



SM0162

ASSEMBLY OF INPUT SHAFT ASSEMBLY

(See page MT-21)

HINT: Coat all of the sliding and rotating surface with ATF before assembly.

1. INSTALL SLOTTED SPRING PIN

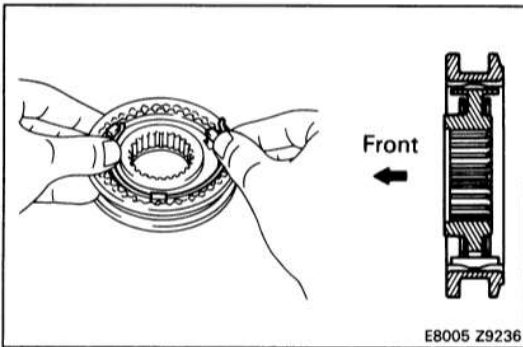
Drive in a slotted spring pin.

Drive in depth: 4.5 – 5.5 mm
(0.177 – 0.217 in.)

2. INSERT NO. 2 CLUTCH HUB INTO HUB SLEEVE

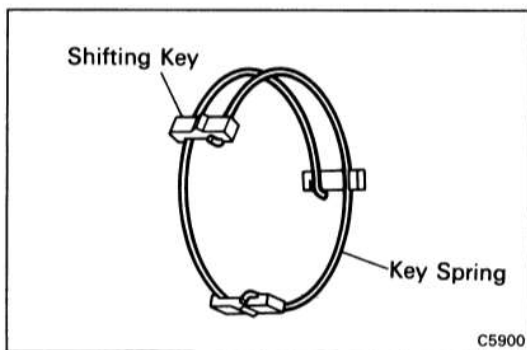
(a) Install the clutch hub and shifting keys to the hub sleeve.

(b) Install the shifting key springs under the shifting keys.



E8005 Z9236

NOTICE: Install the shifting key springs positioned so that their end gaps are not in line.



C5900

3. INSTALL NEEDLE ROLLER BEARING, THIRD GEAR, SYNCHRONIZER RING AND NO. 2 HUB SLEEVE ASSEMBLY TO INPUT SHFT

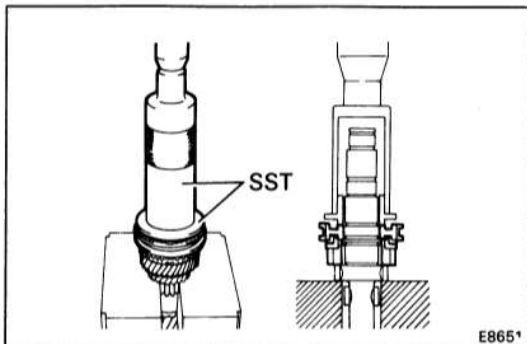
(a) Apply ATF to the needle roller bearings.

(b) Install the 3rd gear.

(c) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.

(d) Using SST and a press, install the 3rd gear and No. 2 hub sleeve.

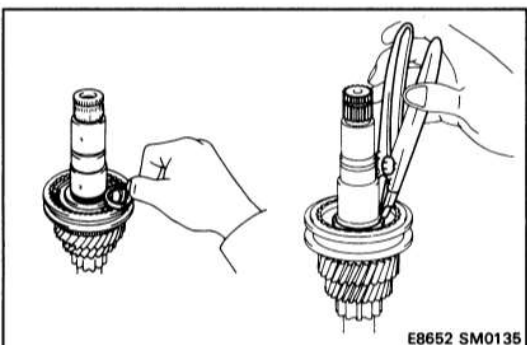
SST 09316-60010 (09316-00010, 09316-00070)



E865*

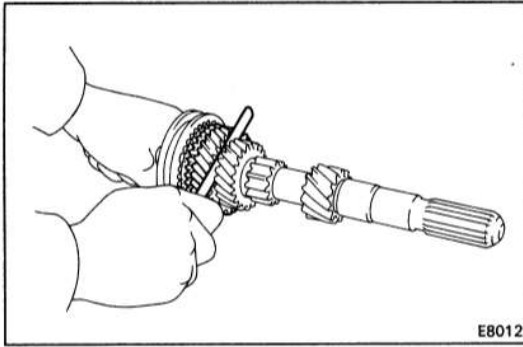
4. INSTALL SNAP RING

Select a snap ring that will allow minimum axial play and install it on the shaft.



E8652 SM0135

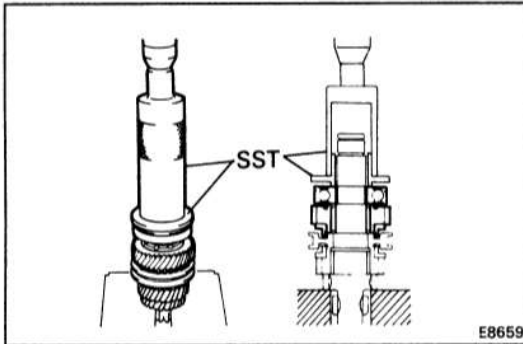
Mark	Thickness	mm (in.)
1	1.95 – 2.00	(0.0768 – 0.0787)
2	2.00 – 2.05	(0.0787 – 0.0807)
3	2.05 – 2.10	(0.0807 – 0.0827)
4	2.10 – 2.15	(0.0827 – 0.0846)
5	2.15 – 2.20	(0.0846 – 0.0866)
6	2.20 – 2.25	(0.0866 – 0.0886)



5. MEASURE THIRD GEAR THRUST CLEARANCE

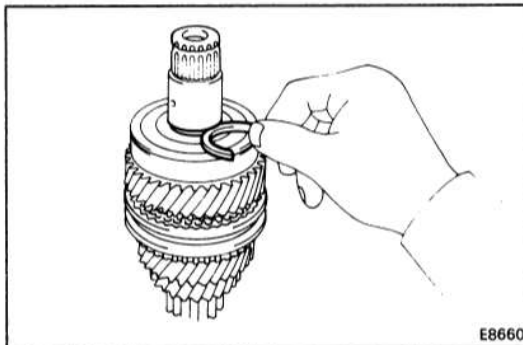
Using a feeler gauge, measure the 3rd gear thrust clearance.

Standard clearance: 0.10 – 0.25 mm
(0.0039 – 0.0098 in.)



6. INSTALL SPACER, SYNCHRONIZER RING, NEEDLE ROLLER BEARINGS, FOURTH GEAR AND RADIAL BALL BEARING

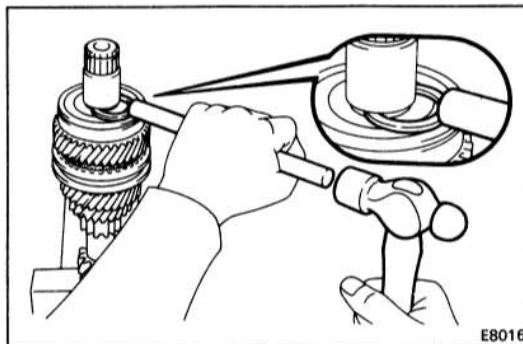
- Install the spacer.
- Apply ATF to the needle roller bearings.
- Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
- Install the 4th gear.
- Using SST and a press, install the radial ball bearing. SST 09316-60010 (09316-00010, 09316-00070)



7. INSTALL SNAP RING

Select a snap ring that will allow minimum axial play and install it on the shaft.

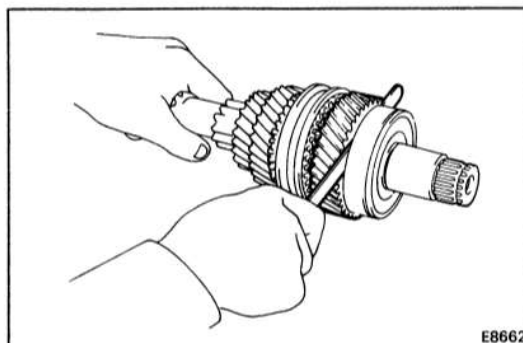
Mark	Thickness	mm (in.)
A	2.15 – 2.20	(0.0846 – 0.0866)
B	2.20 – 2.25	(0.0866 – 0.0886)
C	2.25 – 2.30	(0.0886 – 0.0906)
D	2.30 – 2.35	(0.0906 – 0.0925)
E	2.35 – 2.40	(0.0925 – 0.0945)



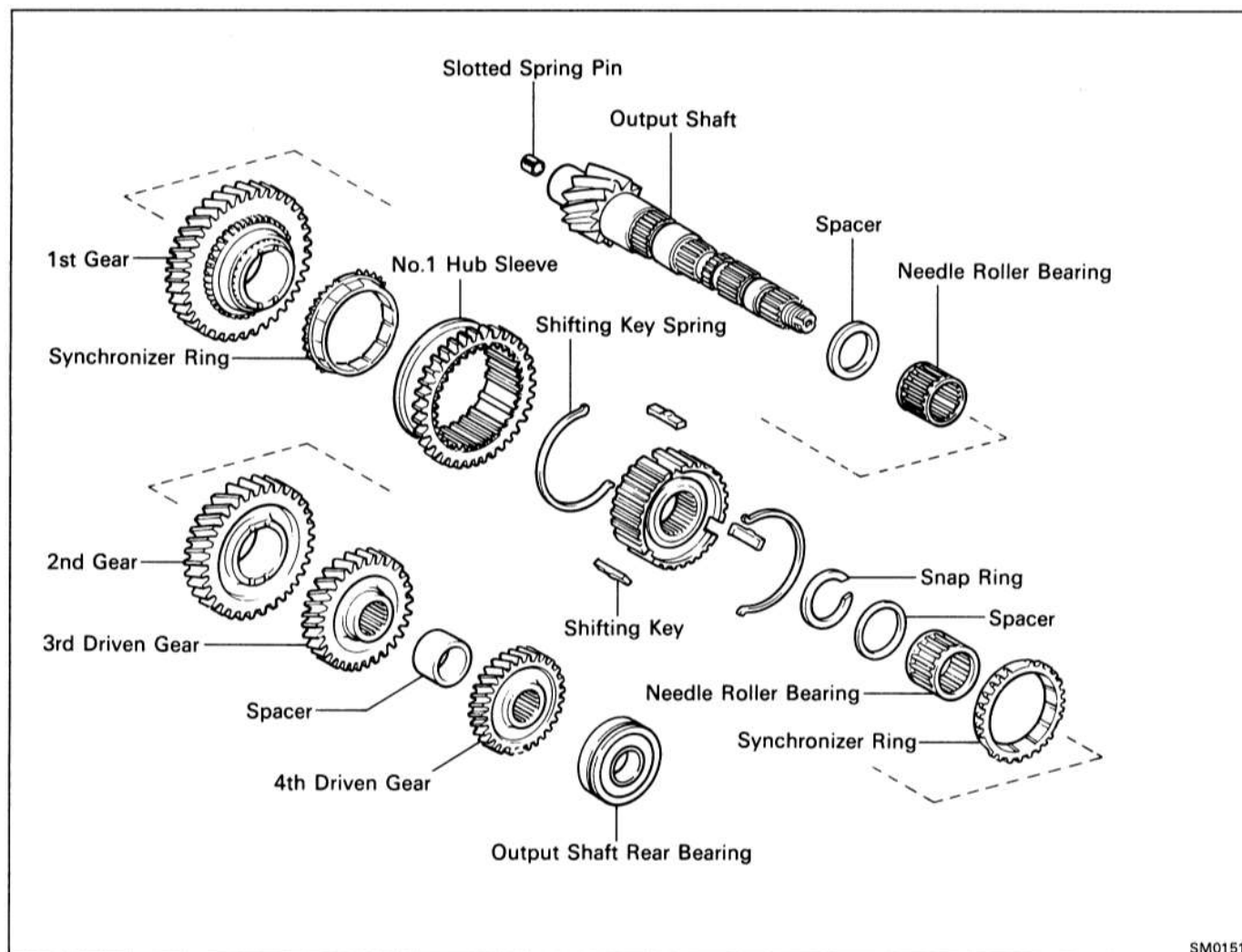
8. MEASURE FOURTH GEAR THRUST CLEARANCE

Using a feeler gauge, measure the 4th gear thrust clearance.

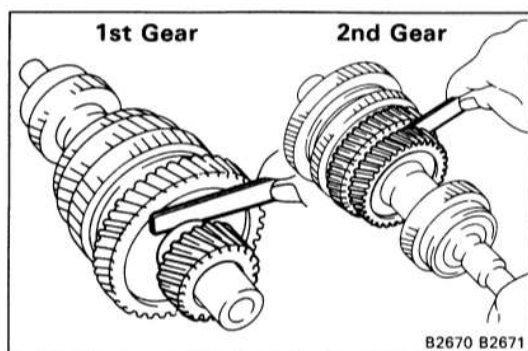
Standard clearance: 0.20 – 0.45 mm
(0.0079 – 0.0177 in.)



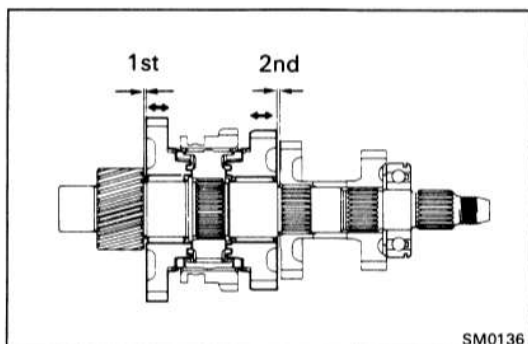
Output Shaft Assembly



SM0151



B2670 B2671



SM0136

DISASSEMBLY OF OUTPUT SHAFT ASSEMBLY

1. MEASURE FIRST AND SECOND GEAR THRUST CLEARANCE

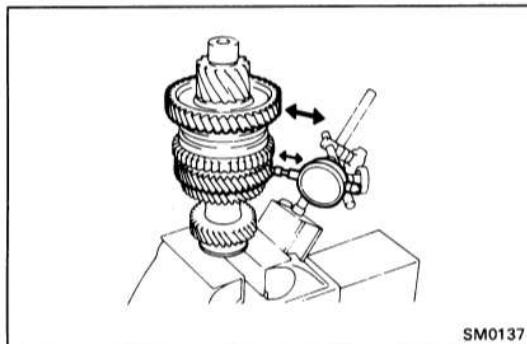
Using a feeler gauge, measure the thrust clearance.

Standard clearance:

1st gear	0.10 – 0.29 mm (0.0039 – 0.0114 in.)
2nd gear	0.20 – 0.44 mm (0.0079 – 0.0173 in.)

Maximum clearance:

1st gear	0.35 mm (0.0138 in.)
2nd gear	0.50 mm (0.0197 in.)



SM0137

2. CHECK OIL CLEARANCE OF FIRST AND SECOND GEAR

Using dial indicator, measure the oil clearance between the gear and shaft.

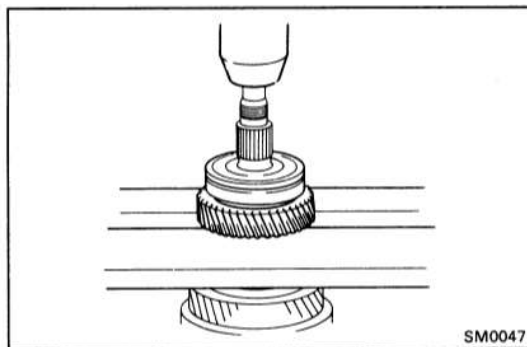
Standard clearance:

1st and 2nd gear 0.009 – 0.053 mm
(0.0004 – 0.0020 in.)

Maximum clearance:

1st and 2nd gear 0.070 mm (0.0028 in.)

If the clearance exceeds the limit, replace the gear, needle roller bearing or shaft.

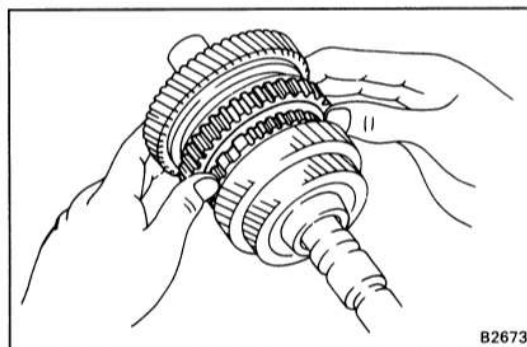


SM0047

3. REMOVE OUTPUT SHAFT REAR BEARING, FOURTH DRIVEN GEAR AND SPACER

(a) Using a press, remove the bearing and 4th driven gear.

(b) Remove the spacer.

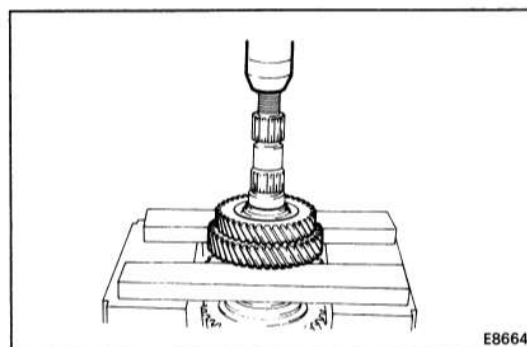


B2673

4. REMOVE THIRD DRIVEN GEAR AND SECOND GEAR

(a) Shift the No. 1 hub sleeve into the 1st gear.

(b) Using a press, remove the 3rd driven gear and 2nd gear.

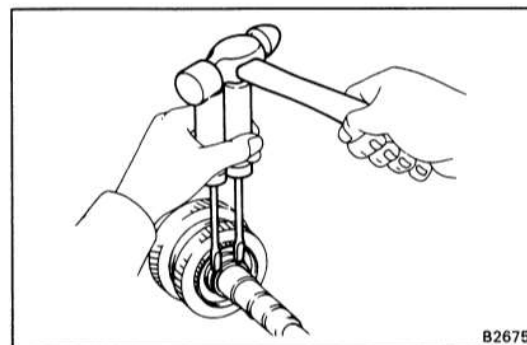


E8664

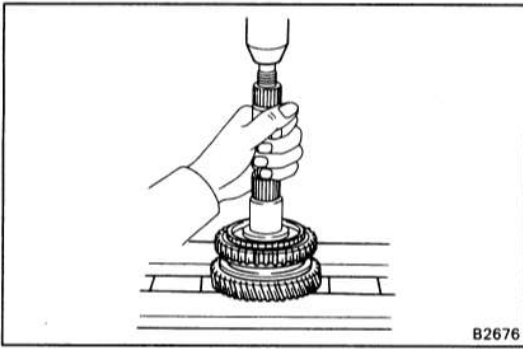
5. REMOVE NEEDLE ROLLER BEARINGS, SPACER AND SYNCHRONIZER RING

6. REMOVE SNAP RING

Using two screwdrivers and a hammer, tap out the snap ring.



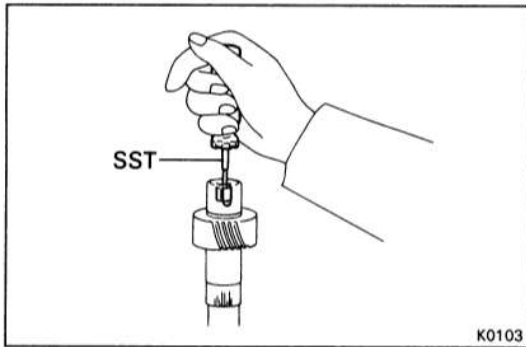
B2675



7. REMOVE NO. 1 HUB SLEEVE ASSEMBLY AND FIRST GEAR

Using a press, remove No. 1 hub sleeve and 1st gear.

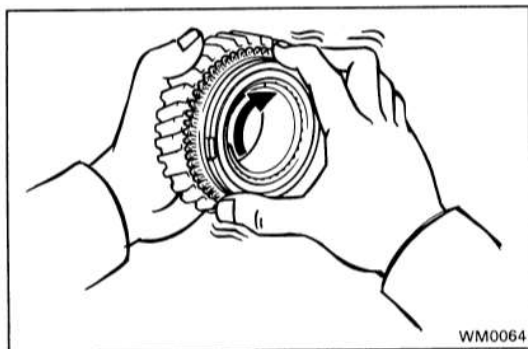
8. REMOVE SYNCHRONIZER RING AND NEEDLE ROLLER BEARING AND THRUST WASHER



9. REMOVE SLOTTED SPRING PIN

Using SST, remove the slotted spring pin.

SST 09921-00010



INSPECTION OF OUTPUT SHAFT COMPONENT PARTS

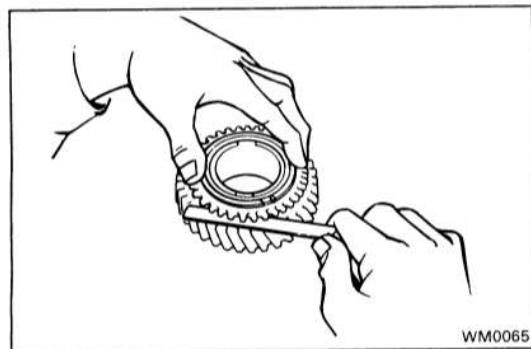
1. INSPECT SYNCHRONIZER RINGS

- Check for wear or damage.
- Turn the ring and push it in to check the braking action.

- Measure the clearance between the synchronizer ring back and the gear spline end.

Maximum clearance: 0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer ring.

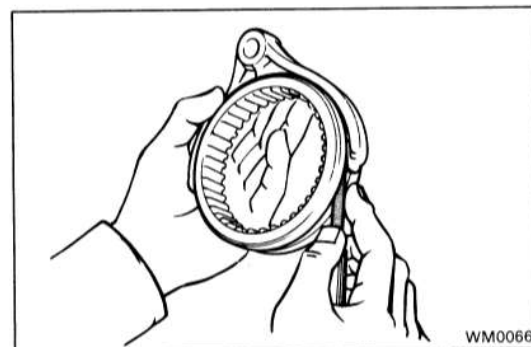


2. MEASURE CLEARANCE OF NO. 1 SHIFT FORK AND HUB SLEEVE

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance: 1.0 mm (0.039 in.)

If the clearance exceeds the limit, replace the shift fork or hub sleeve.



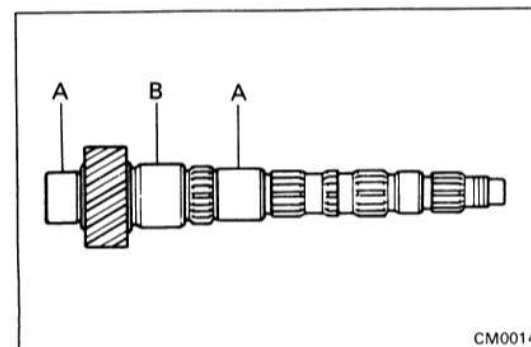
3. INSPECT OUTPUT SHAFT

- Check the output shaft for wear or damage.
- Using a micrometer, measure the outer diameter of the output shaft journal surface.

Minimum outer diameter:

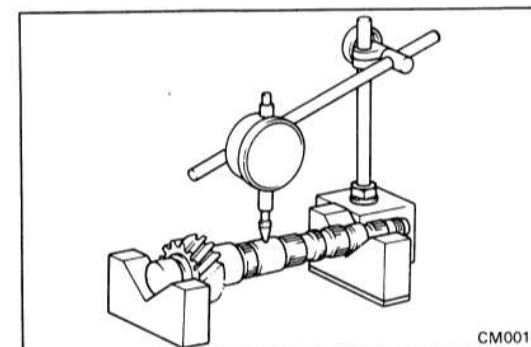
Part A 31.970 mm (1.2587 in.)

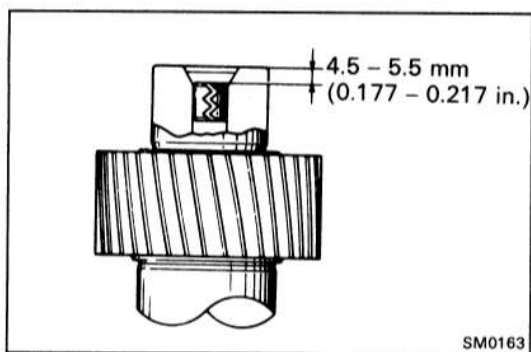
B 37.970 mm (1.4949 in.)



- Using a dial indicator, check the shaft runout.

Maximum runout: 0.05 mm (0.0020 in.)





ASSEMBLY OF OUTPUT SHAFT ASSEMBLY

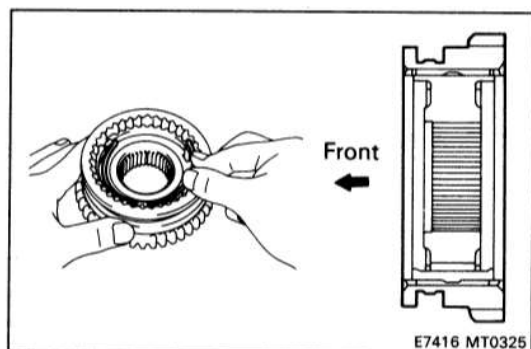
(See page MT-27)

HINT: Coat all of the sliding and rotating surface with ATF before assembly.

1. INSTALL SLOTTED SPRING PIN

Drive in a slotted spring pin.

Drive in depth: 4.5 – 5.5 mm
(0.177 – 0.217 in.)

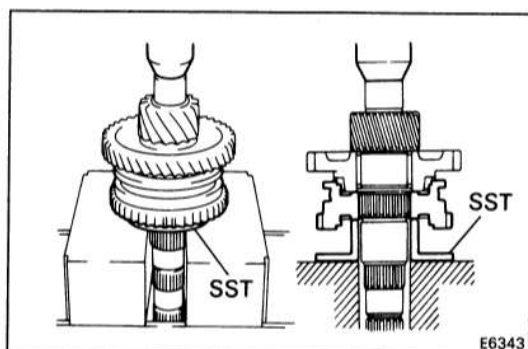
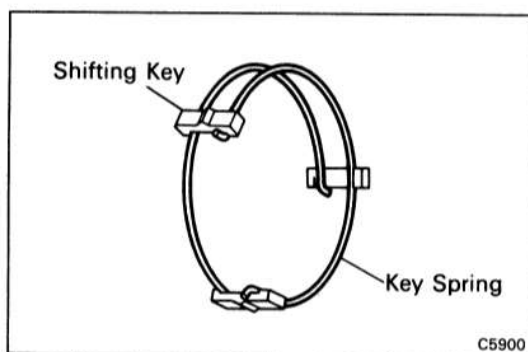


2. INSERT NO. 1 CLUTCH HUB INTO HUB SLEEVE

(a) Install the clutch hub and shifting keys to the hub sleeve.

(b) Install the shifting key springs under the shifting keys.

NOTICE: Install the key springs positioned so that their end gaps are not in line.



3. INSTALL NEEDLE ROLLER BEARING, FIRST GEAR, SYNCHRONIZER RING AND NO. 1 HUB SLEEVE TO OUTPUT SHAFT

(a) Apply ATF to the needle roller bearings.

(b) Install the 1st gear.

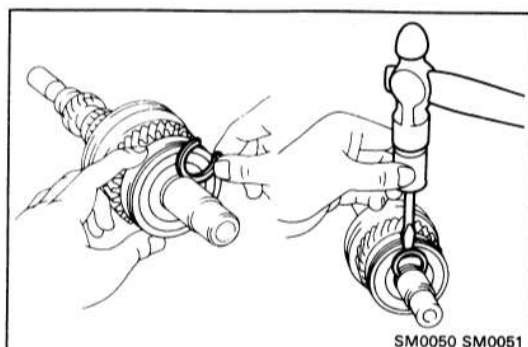
(c) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.

(d) Using SST and a press, install the 1st gear and No. 1 hub sleeve.

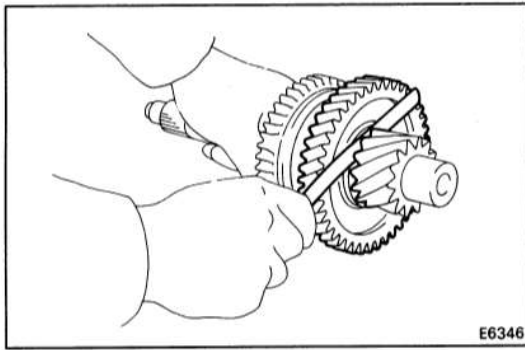
SST 09316-60010 (09316-00030)

4. INSTALL SNAP RING

Select a snap ring that will allow minimum axial play and install it on the shaft.



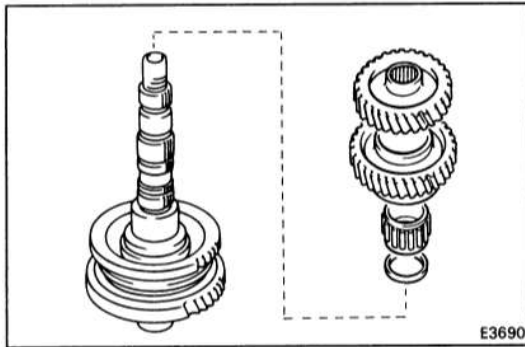
Mark	Thickness	mm (in.)
1	2.50 – 2.55	(0.0984 – 0.1004)
2	2.55 – 2.60	(0.1004 – 0.1024)
3	2.60 – 2.65	(0.1024 – 0.1043)
4	2.65 – 2.70	(0.1043 – 0.1063)
5	2.70 – 2.75	(0.1063 – 0.1083)
6	2.75 – 2.80	(0.1083 – 0.1102)



5. MEASURE FIRST GEAR THRUST CLEARANCE

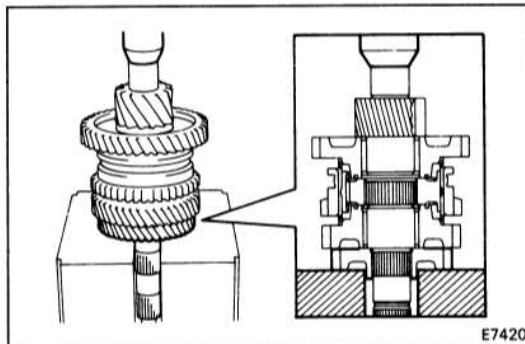
Using a feeler gauge, measure the 1st gear thrust clearance.

Standard clearance: 0.10 – 0.29 mm
(0.0039 – 0.0114 in.)

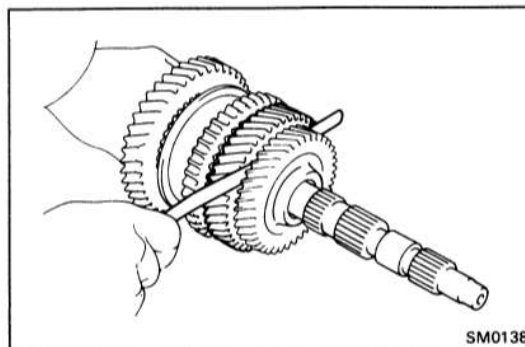


6. INSTALL SPACER, NEEDLE ROLLER BEARING, SYNCHRONIZER RING, SECOND GEAR AND THIRD DRIVEN GEAR

- Install the spacer.
- Apply ATF to the needle roller bearing.
- Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
- Install the 2nd gear.



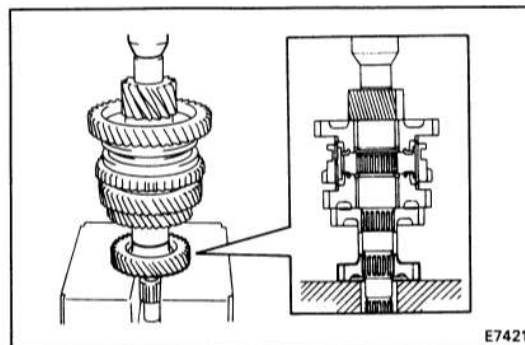
- Using a press, install the 3rd driven gear.



7. MEASURE SECOND GEAR THRUST CLEARANCE

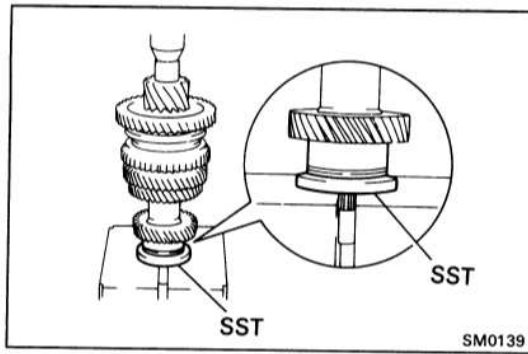
Using a feeler gauge, measure the 2nd gear thrust clearance.

Standard clearance: 0.20 – 0.44 mm
(0.0079 – 0.0173 in.)



8. INSTALL SPACER AND FOURTH DRIVEN GEAR

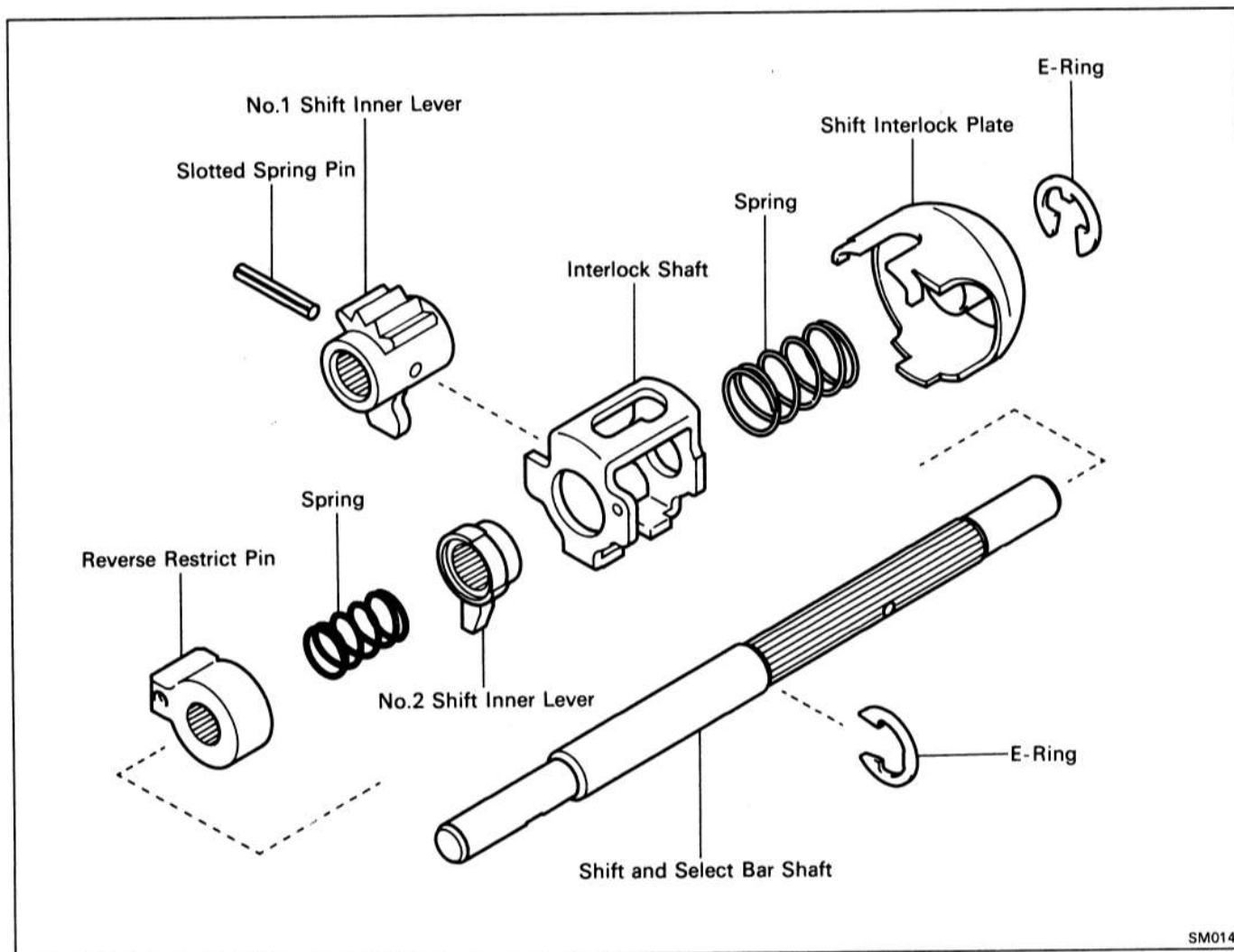
- Install the spacer.
- Using a press, install the 4th driven gear.

**9. INSTALL OUTPUT SHAFT REAR BEARING**

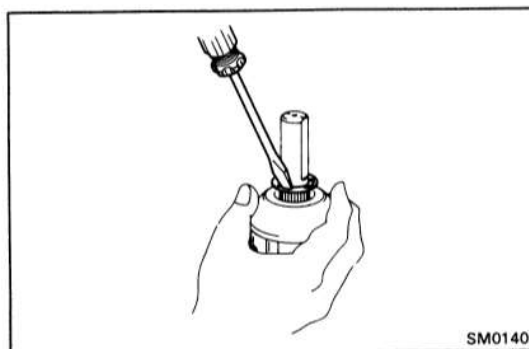
Using SST and a press, install the bearing.

SST 09515-10010

Shift and Select Lever Assembly



SM0147

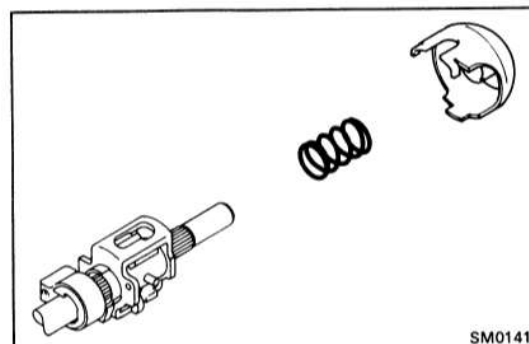


SM0140

DISASSEMBLY OF SHIFT AND SELECT LEVER ASSEMBLY

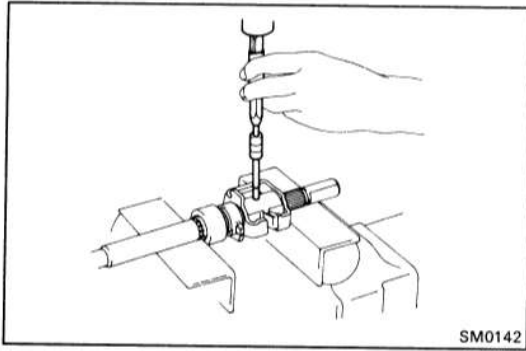
1. REMOVE SHIFT INTERLOCK PLATE

(a) Remove the E-ring.



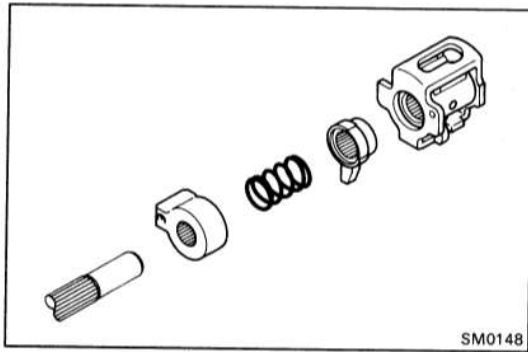
SM0141

(b) Remove the interlock plate and spring.

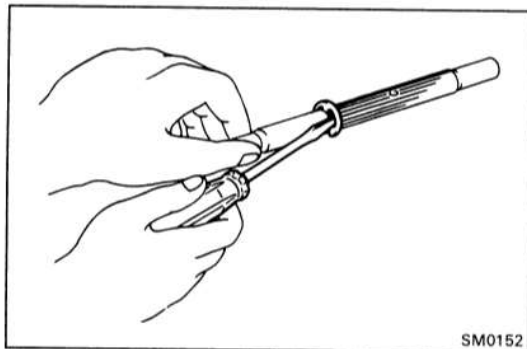


2. REMOVE INTERLOCK SHAFT, NO. 1 SHIFT INNER LEVER, NO. 2 SHIFT INNER LEVER, SPRING AND REVERSE RESTRICT PIN

- (a) Using a pin punch and hammer, drive out the slotted spring pin.



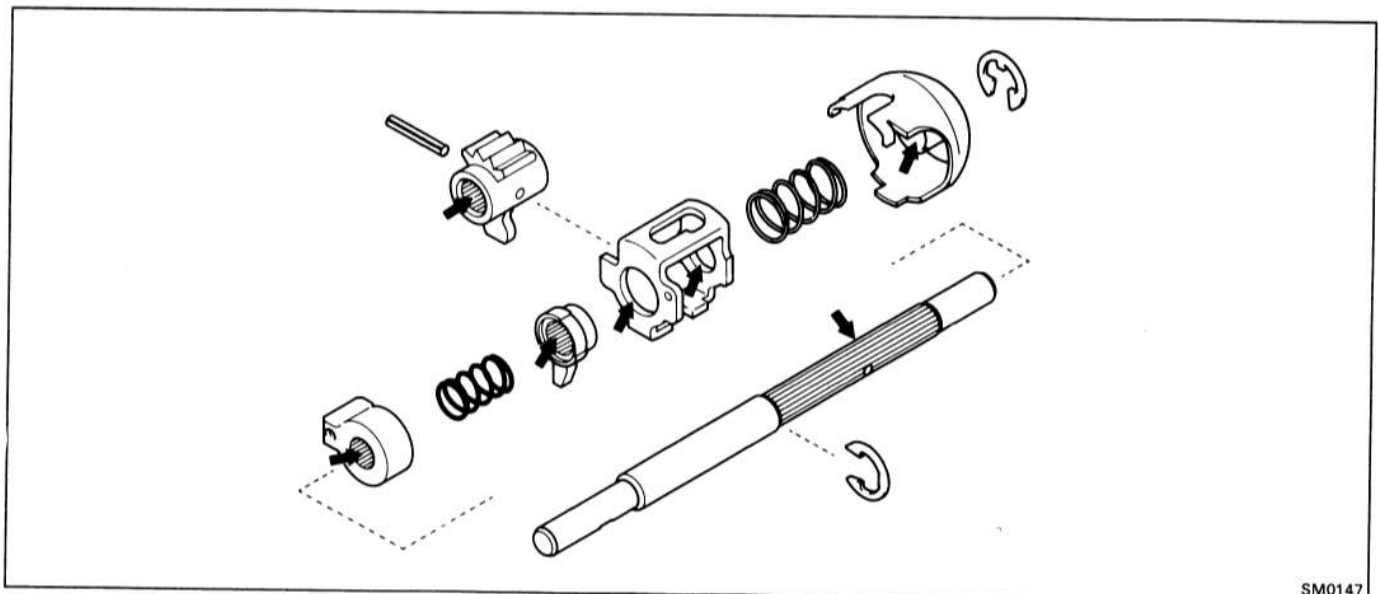
- (b) Remove the interlock shaft, No. 1 shift inner lever, No. 2 shift inner lever, spring and reverse restrict pin.

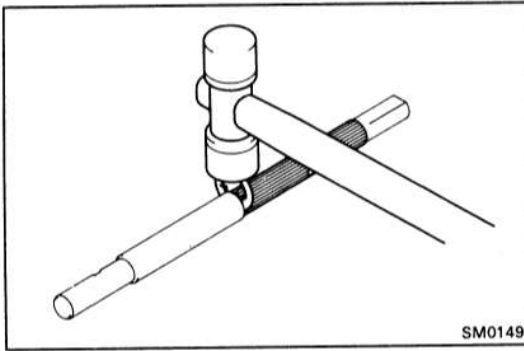


3. REMOVE E-RING

ASSEMBLY OF SHIFT AND SELECT LEVER ASSEMBLY

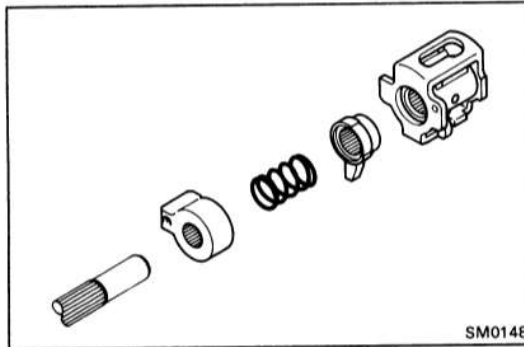
1. APPLY MP GREASE TO PARTS, AS SHOWN





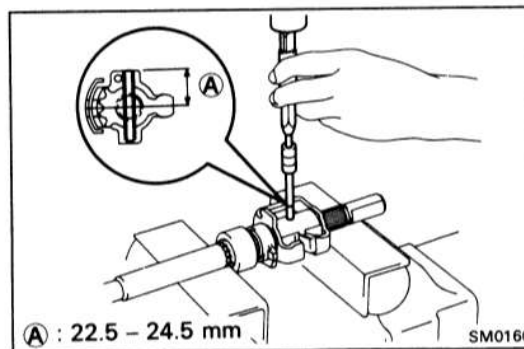
2. INSTALL E-RING

Using a plastic hammer, install the E-ring.

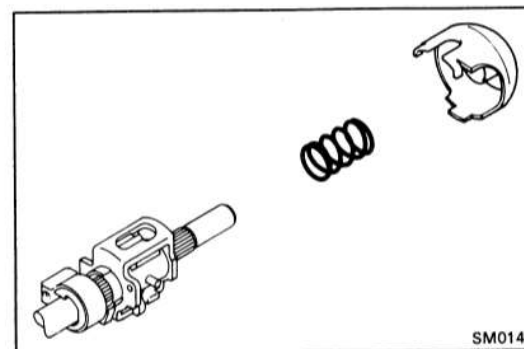


3. INSTALL REVERSE RESTRICT PIN, SPRING, NO. 2 SHIFT INNER LEVER, NO. 1 SHIFT INNER LEVER AND INTERLOCK SHAFT

(a) Install the reverse restrict pin, spring, No. 2 shift inner lever, No. 1 shift inner lever and interlock plate.

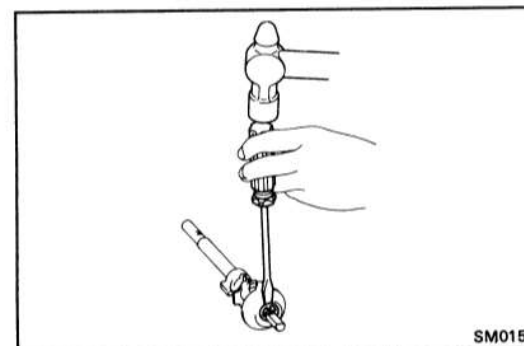


(b) Using a pin punch and hammer, drive in the slotted spring pin.



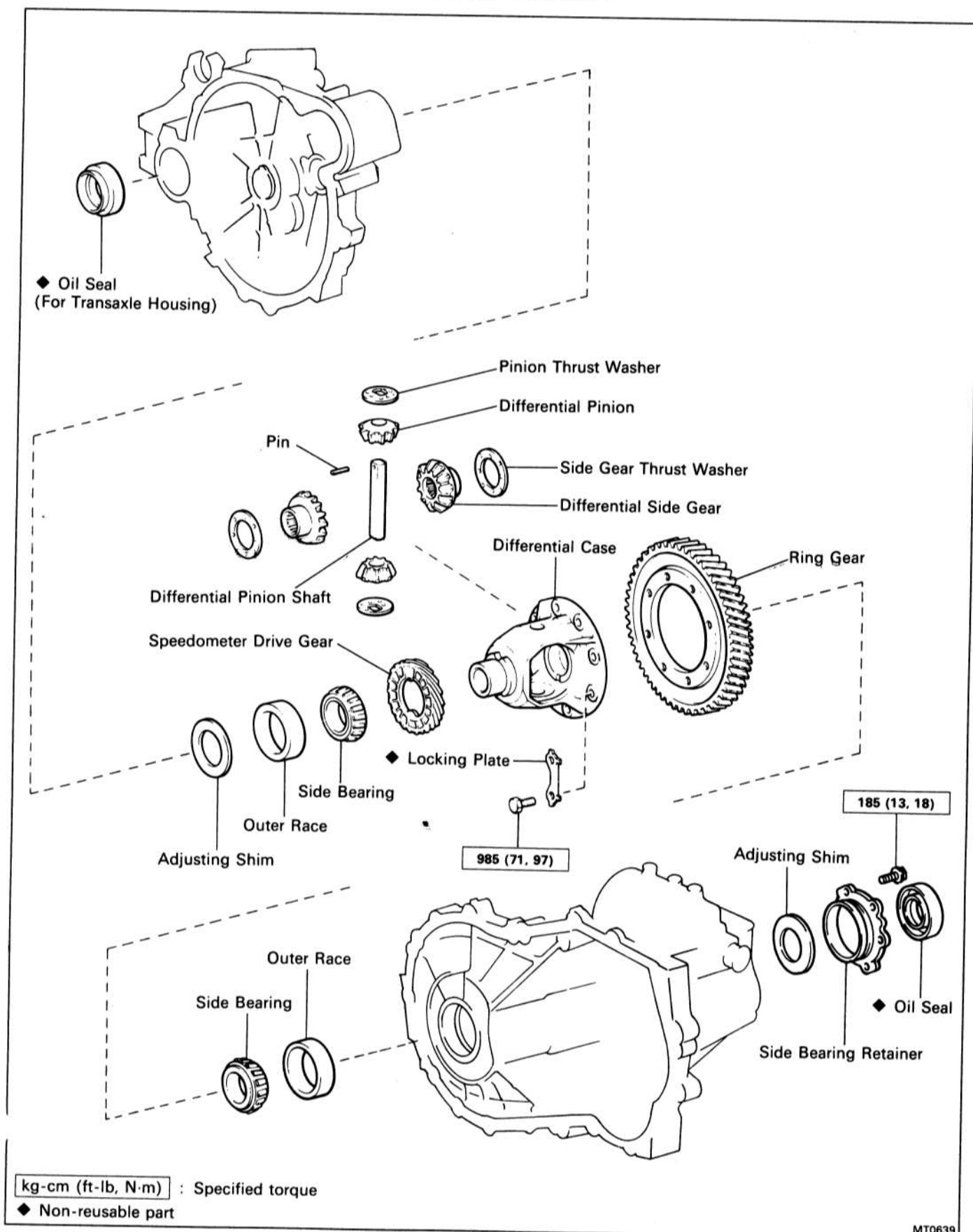
4. INSTALL SHIFT INTERLOCK PLATE

(a) Install the spring and interlock plate.



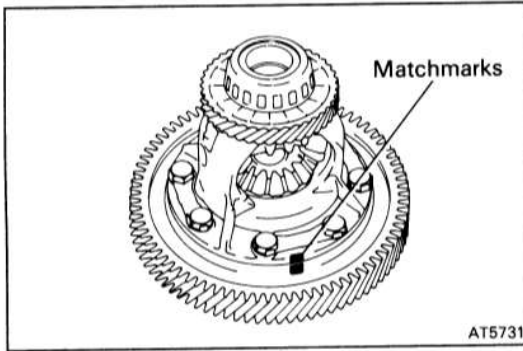
(b) Using a screwdriver and hammer, install the E-ring.

Differential COMPONENTS

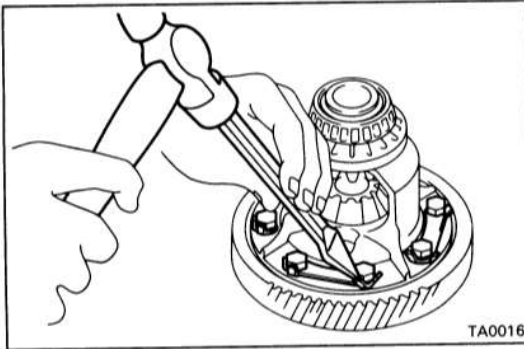


DISASSEMBLY OF DIFFERENTIAL**1. REMOVE RING GEAR**

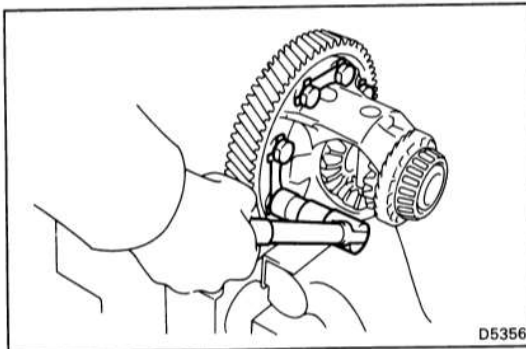
- (a) Place the matchmarks on the ring gear and differential case.



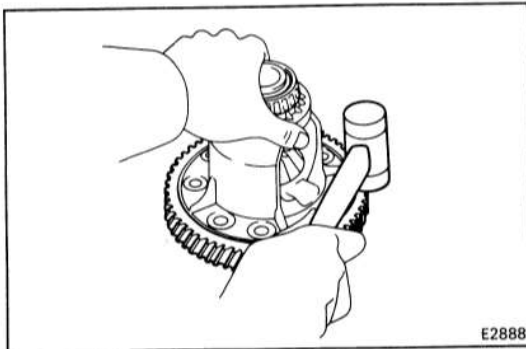
- (b) Loosen the staked part of the locking plate.



- (c) Remove the eight bolts and four locking plates.



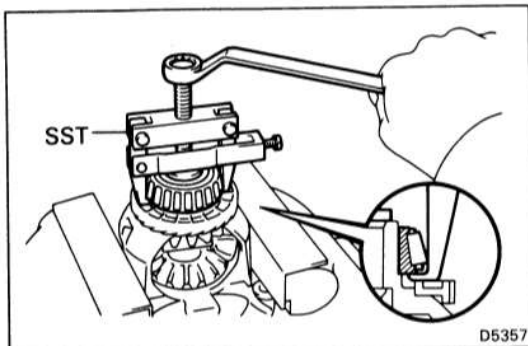
- (d) Using a plastic hammer, tap on the ring gear to remove it from the case.

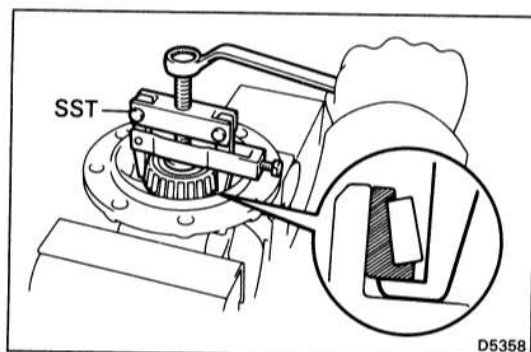
**2. REMOVE SIDE BEARINGS FROM DIFFERENTIAL CASE**

- (a) Setting SST to the cut-out portion on the speedometer drive gear, remove the bearing from the differential case.

SST 09502-10012

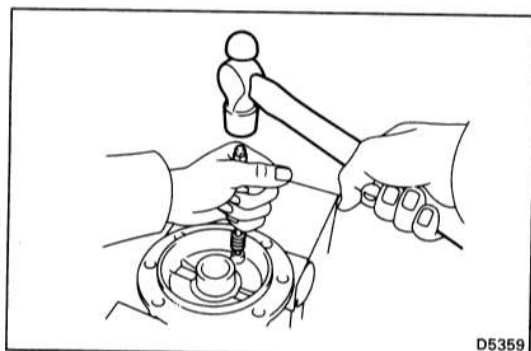
- (b) Remove the speedometer drive gear.





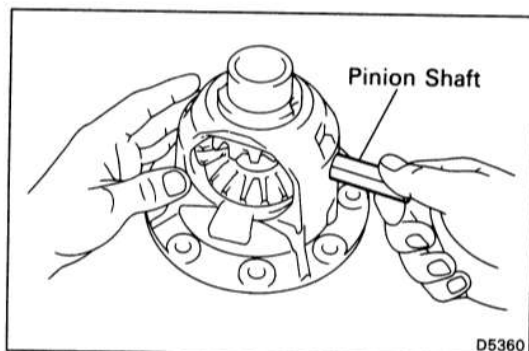
- (c) Setting SST to the cut-out portion on the differential case, remove the bearing.

SST 09502-10012

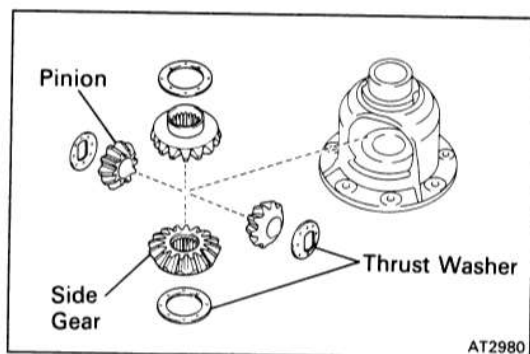


3. DISASSEMBLE DIFFERENTIAL CASE

- (a) Drive out the pinion shaft lock pin from the ring gear side.



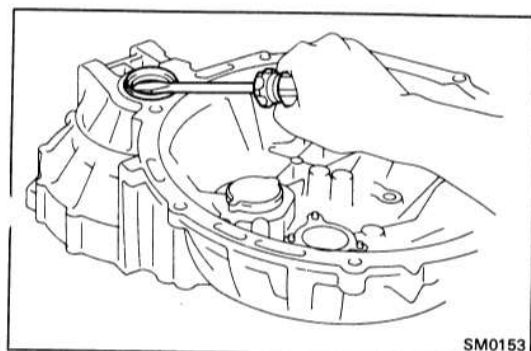
- (b) Remove the pinion shaft from the case.

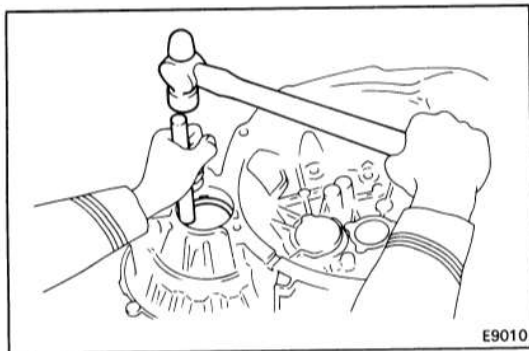


- (c) Remove the two pinions, two side gears and four thrust washers.

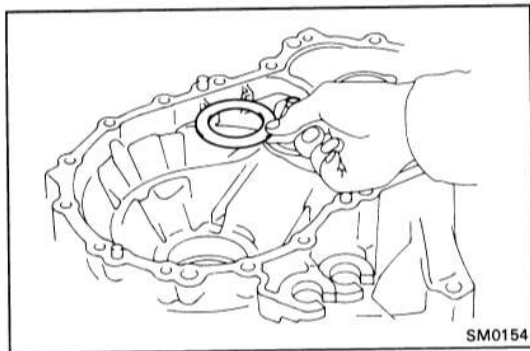
4. (Transaxle Case Side) IF NECESSARY, REPLACE OIL SEAL AND TAPER ROLLER BEARING OUTER RACE

- (a) Using a screwdriver, remove the oil seal.

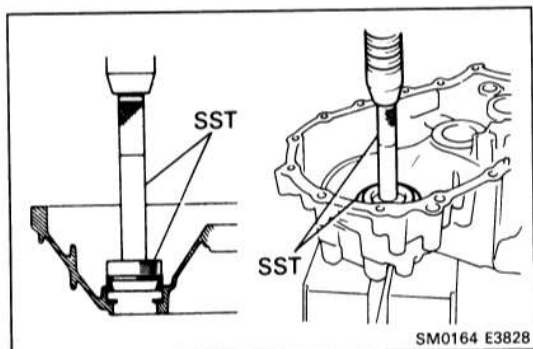




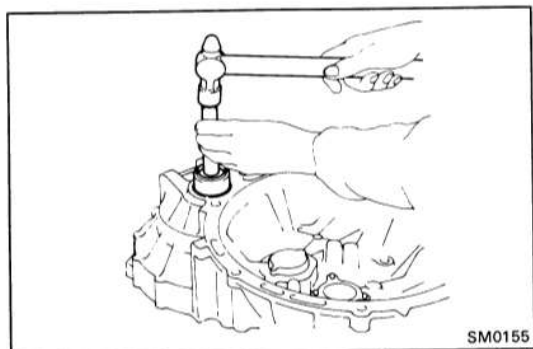
- (b) Using a brass bar and hammer, drive out the bearing outer race lightly and evenly.
- (c) Remove the shim.



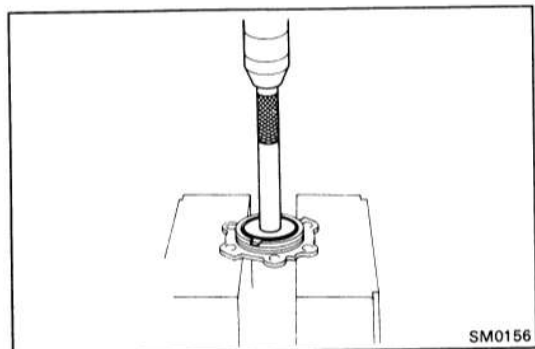
- (d) Install the shim.
- HINT: Shim thickness 2.4 mm (0.094 in.)



- (e) Using SST and a press, install the taper roller bearing outer race.
- SST 09608-20012 (09608-03020, 09608-03060)

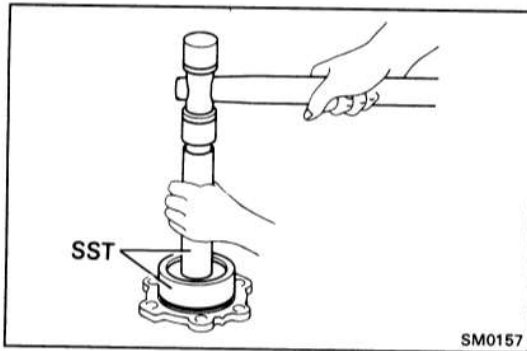


- (f) Using SST and a hammer, drive in a new oil seal.
- (g) Coat the lip of oil seal with MP grease.



**5. (Transmission Case Side)
IF NECESSARY, REPLACE DIFFERENTIAL SIDE
BEARING RETAINER OIL SEAL**

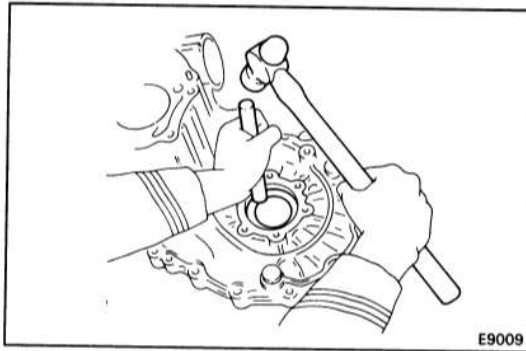
- (a) Using SST, press out the oil seal from the retainer.
- SST 09608-20012 (09608-00030, 09608-03020)



(b) Using SST, press in a new oil seal until its surface is flush with the case surface.

SST 09350-32014 (09351-32130, 09351-32150)

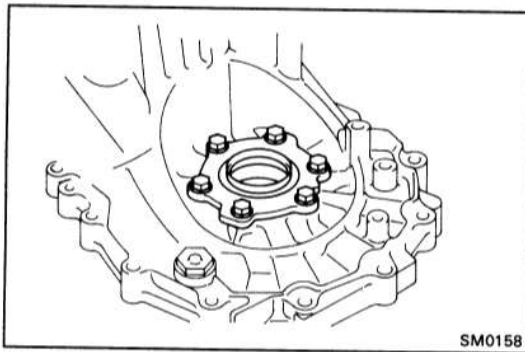
(c) Coat the lip of the oil seal with MP grease.



**6. (Transmission Case Side)
IF NECESSARY, REPLACE TAPER ROLLER BEARING
OUTER RACE**

(a) Using a brass bar and hammer, drive out the bearing outer race tightly and evenly.

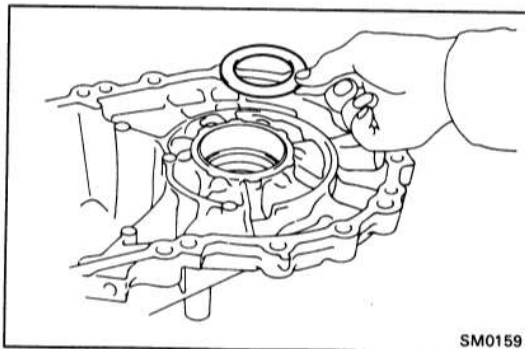
(b) Remove the shim.



(c) Install the differential side bearing retainer without an O-ring.

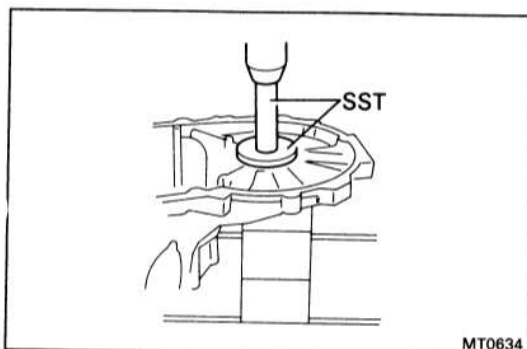
(d) Install and torque the six bolts.

Torque: 185 kg-cm (13 ft-lb, 18 N·m)



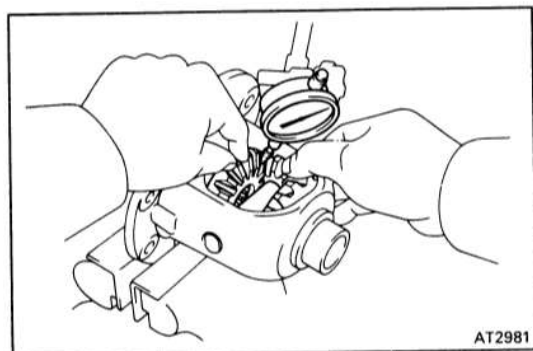
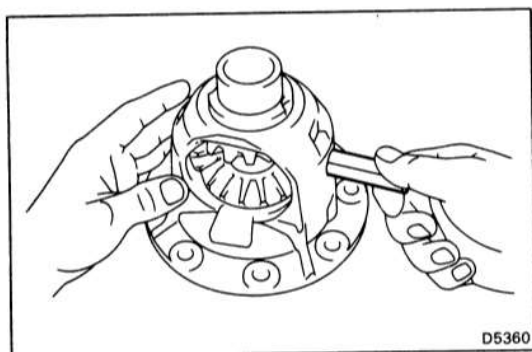
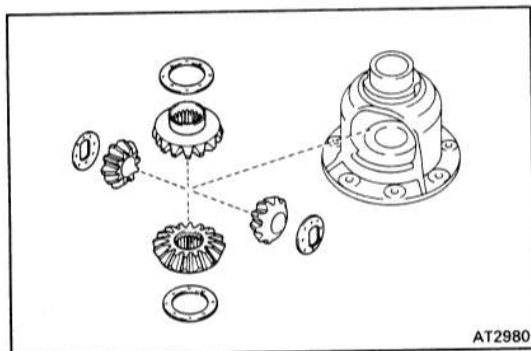
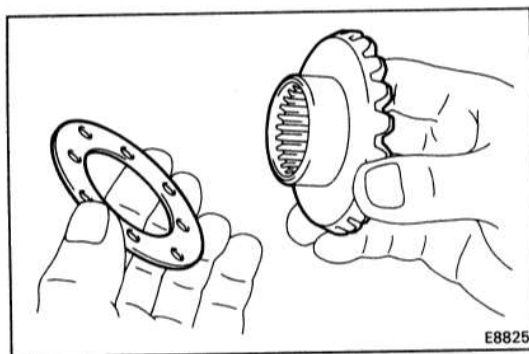
(e) Install the shim.
(See page MT-44)

HINT: First select and install a shim of lesser thickness than before.



(f) Using SST and a press, install the taper roller bearing outer race.

SST 09608-20012 (09608-03020, 09608-03060)



ASSEMBLY OF DIFFERENTIAL

HINT: Coat all of the sliding and rotating surface with ATF before assembly.

1. ASSEMBLE DIFFERENTIAL CASE

(a) Install the thrust washer to the side gear.

(b) Install the side gears with thrust washers, pinion gears and pinion thrust washers into the differential case.

(c) Install the pinion shaft so as to align the lock pin holes on the pinion shaft and differential case.

2. CHECK SIDE GEAR BACKLASH

(a) Measure the side gear backlash while holding one pinion gear toward the case.

Standard backlash: 0.05 – 0.20 mm
(0.0020 – 0.0079 in.)

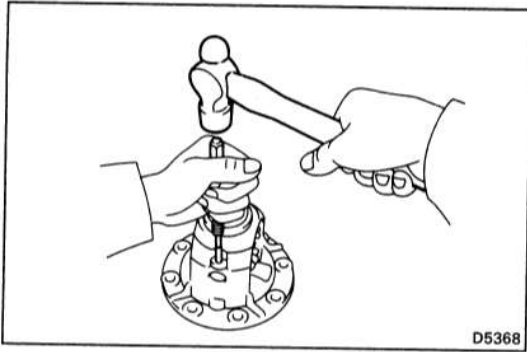
If the backlash is out of specification, install the correct thrust washer to the side gear.

(b) Referring to the table below, select thrust washers which will ensure that the backlash is within specification. Try to select washers of the same size of both sides.

Thrust washer thicknesses

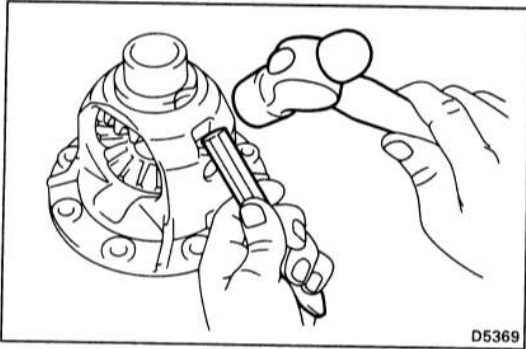
Thickness	mm (in.)	Thickness	mm (in.)
0.95	(0.0374)	1.10	(0.0433)
1.00	(0.0394)	1.15	(0.0453)
1.05	(0.0413)	1.20	(0.0472)

If the backlash is not within specification, install a thrust washer of a different thickness.

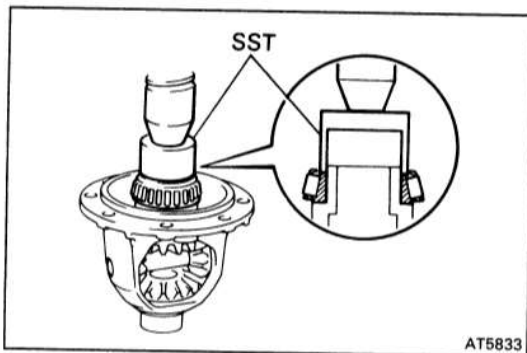


3. INSTALL LOCK PIN

- (a) Using a hammer and punch, drive the lock pin through the case and hole in the pinion shaft.



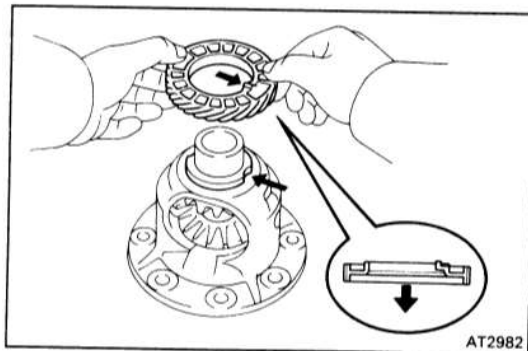
- (b) Stake the differential case.



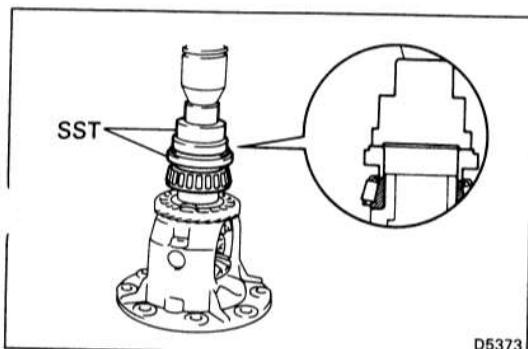
4. INSTALL SIDE BEARINGS TO DIFFERENTIAL CASE

- (a) Using SST and press, press the side bearing into the differential case.

SST 09710-30030 (09710-03160)

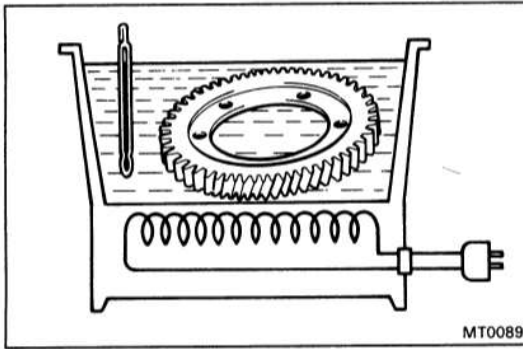


- (b) Install the speedometer drive gear to the differential case.



- (c) Using SST and press, press the side bearing into the differential case.

SST 09350-32014 (09351-32090, 09351-32120)

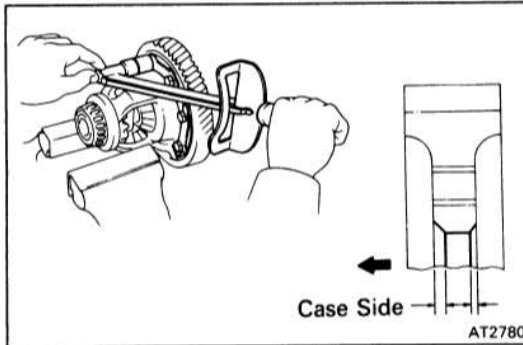


5. INSTALL RING GEAR TO DIFFERENTIAL

- (a) Clean the contact surface of the differential case.
- (b) Heat the ring gear to about 212°F (100°C) in an oil bath.

NOTICE: Do not heat the ring gear above 230°F (110°C).

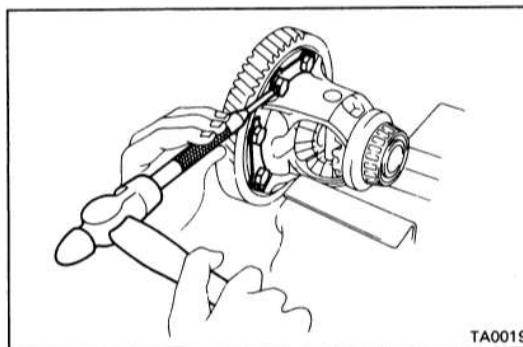
- (c) Clean the contact surface of the ring gear with cleaning solvent.



- (d) Quickly install the ring gear on the differential case.
- (e) Install new locking plates and set bolts.

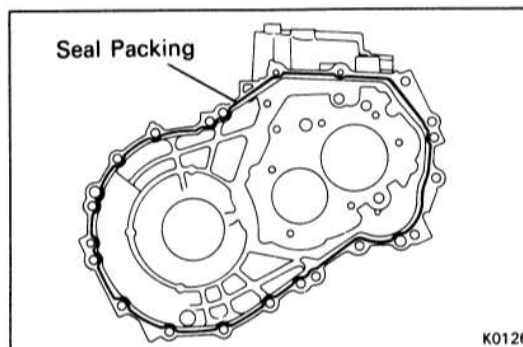
HINT: Tighten the set bolts uniformly and a little at a time. Torque the bolts.

Torque: 985 kg-cm (71 ft-lb, 97 N·m)



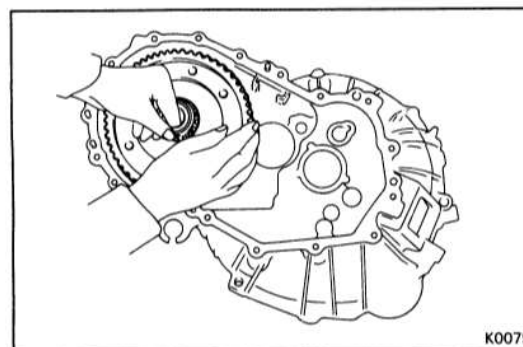
- (f) Using a hammer and drift punch, stake the locking plates.

HINT: Stake one claw flush with the flat surface of the nut. For the claw contacting the protruding portion of the nut, stake only the half on the tightened side.

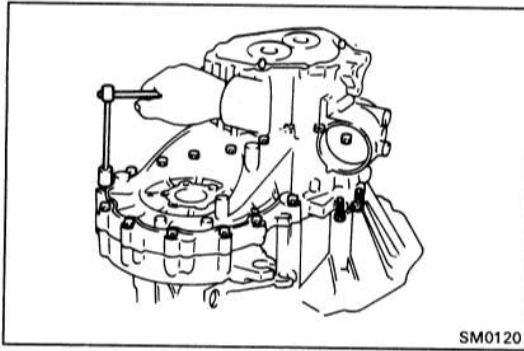


6. ADJUST SIDE BEARING PRELOAD

- (a) Remove any packing material and be careful not to get oil on the contacting surfaces of the transaxle housing or transmission case.



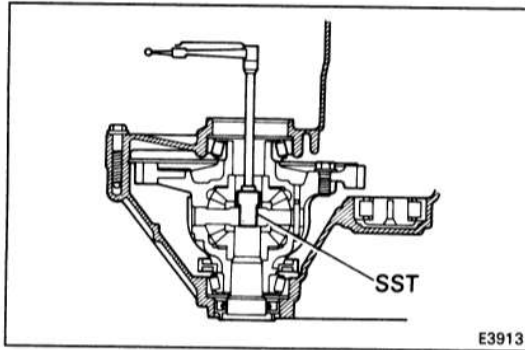
- (b) Install the differential to the transaxle case.



(c) Install the transmission case to the transaxle case.

(d) Install and torque the seventeen bolts.

Torque: 300 kg-cm (22 ft-lb, 29 N·m)



(e) Using SST, rotate the differential in both directions to snug the bearing down.

SST 09564-32011

(f) Using SST and a torque meter, measure the preload of the side bearing.

SST 09564-32011

Preload (at starting):

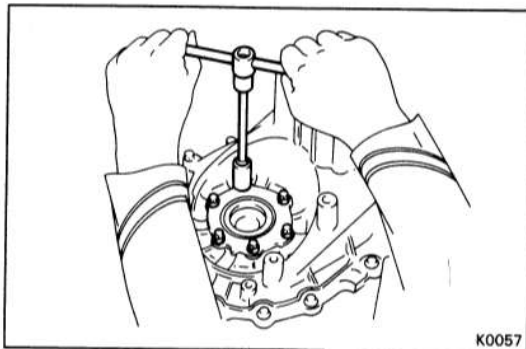
8 – 16 kg-cm (6.9 – 13.9 in.-lb, 0.8 – 1.6 N·m)

If the preload is not within specification, remove the bearing retainer from the case. Re-select the transmission case side adjusting shim.

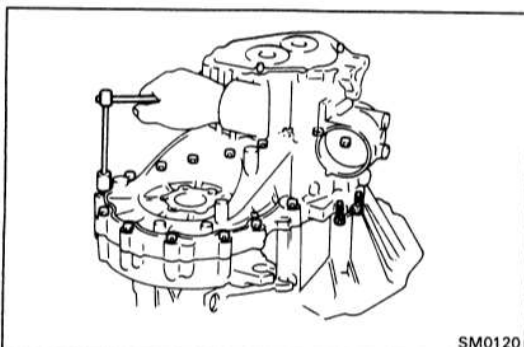
mm (in.)

Mark	Thickness	Mark	Thickness	Mark	Thickness	Mark	Thickness	Mark	Thickness
1	1.90 (0.0748)	5	2.10 (0.0827)	9	2.30 (0.0906)	13	2.50 (0.0984)	17	2.70 (0.1063)
2	1.95 (0.0768)	6	2.15 (0.0846)	10	2.35 (0.0925)	14	2.55 (0.1004)	18	2.75 (0.1083)
3	2.00 (0.0787)	7	2.20 (0.0866)	11	2.40 (0.0945)	15	2.60 (0.1024)	19	2.80 (0.1102)
4	2.05 (0.0807)	8	2.25 (0.0886)	12	2.45 (0.0965)	16	2.65 (0.1043)		

HINT: The preload will change about 3 – 4 kg-cm (2.6 – 3.5 in.-lb, 0.3 – 0.4 N·m) with each shim thickness.

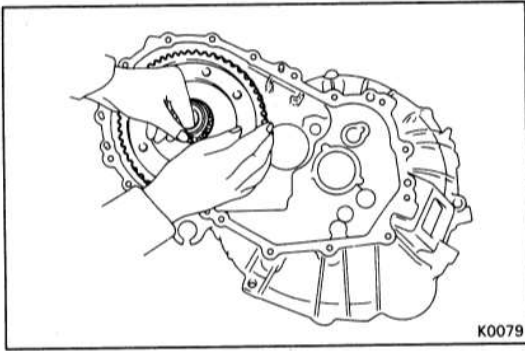


7. REMOVE DIFFERENTIAL SIDE BEARING RETAINER AND SHIM

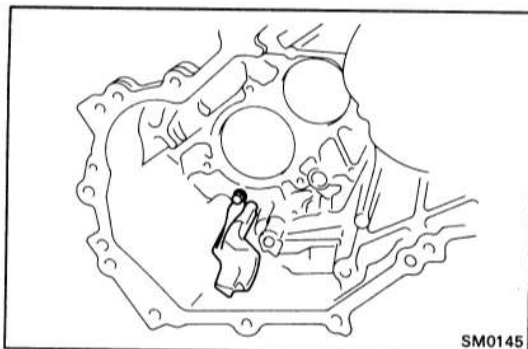


8. REMOVE TRANSMISSION CASE

Remove the seventeen bolts and tap off the case with plastic hammer.



9. REMOVE DIFFERENTIAL ASSEMBLY FROM TRANSAXLE CASE



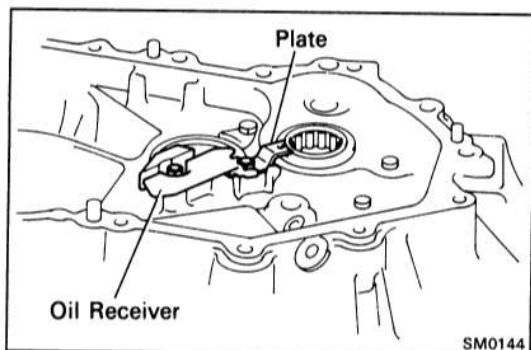
INSTALLATION OF COMPONENT PARTS

(See pages MT-7 to 9)

HINT: Coat all of the sliding and rotating surface with ATF before assembly.

1. INSTALL AND TORQUE NO. 1 OIL RECEIVER PIPE TO TRANSMISSION CASE

Torque: 75 kg-cm (65 in.-lb, 7.4 N·m)



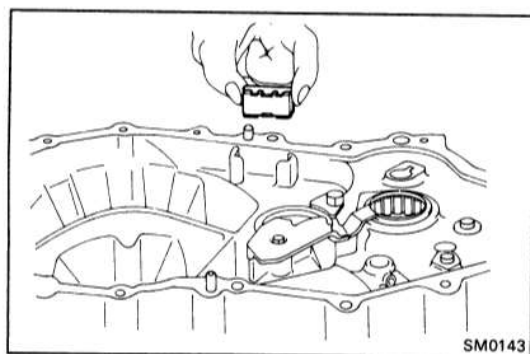
2. INSTALL TRANSAXLE OIL RECEIVER AND PLATE TO TRANSAXLE CASE

(a) Install and torque the oil receiver.

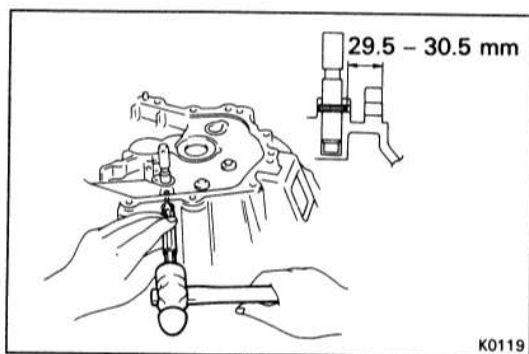
Torque: 75 kg-cm (65 in.-lb, 7.4 N·m)

(b) Install and torque the plate.

Torque: 185 kg-cm (13 ft-lb, 18 N·m)



3. INSTALL MAGNET

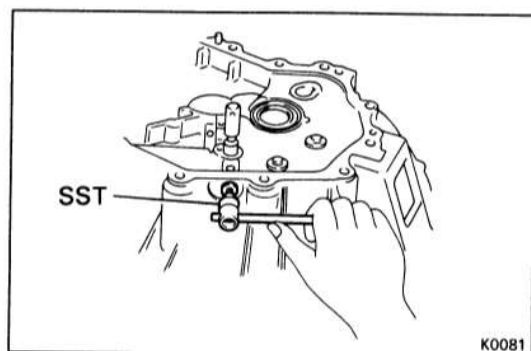


4. INSTALL NO. 2 FORK SHAFT

(a) Insert No. 2 fork shaft to the transaxle case and align the slotted spring pin hole.

(b) Using a pin punch and hammer, drive in a slotted spring pin.

Drive in depth: 29.5 – 30.5 mm (1.16 – 1.20 in.)



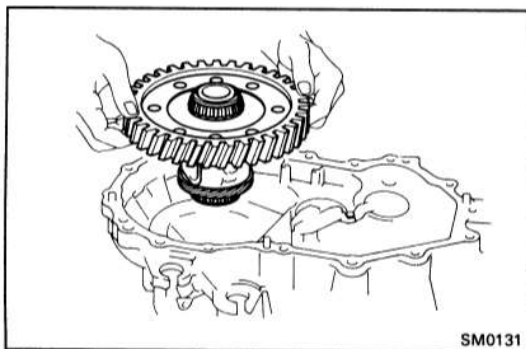
(c) Apply sealant to the plug threads.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

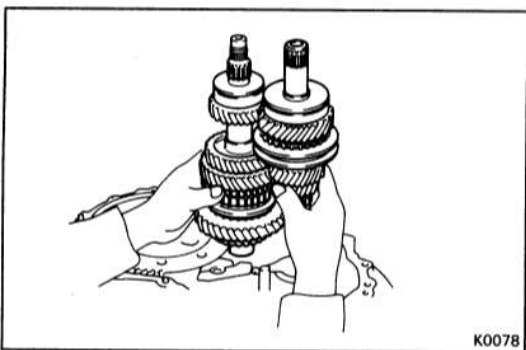
(d) Using SST, install and torque the screw plug.

SST 09313-30021

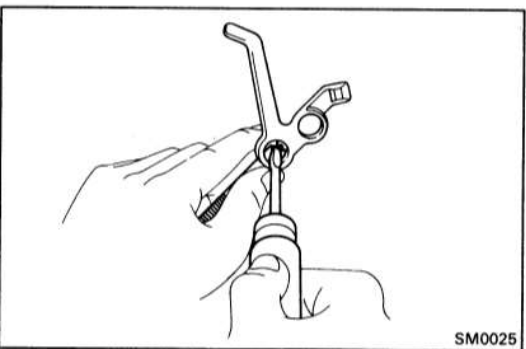
Torque: 130 kg-cm (9 ft-lb, 13 N·m)

**5. INSTALL DIFFERENTIAL ASSEMBLY**

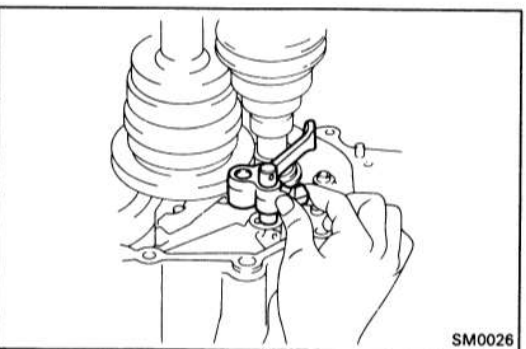
Install the differential assembly to the transaxle case.

**6. INSTALL INPUT AND OUTPUT SHAFTS ASSEMBLY**

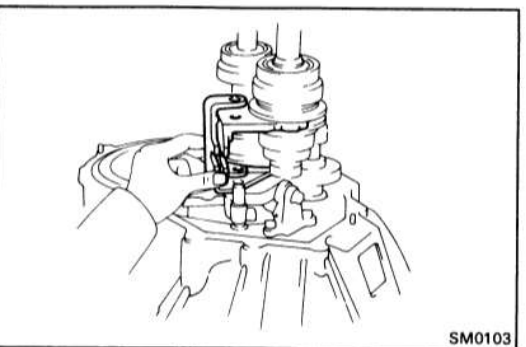
Install the input and output shafts together.

**7. INSTALL REVERSE SHIFT FORK AND INTERLOCK PIN**

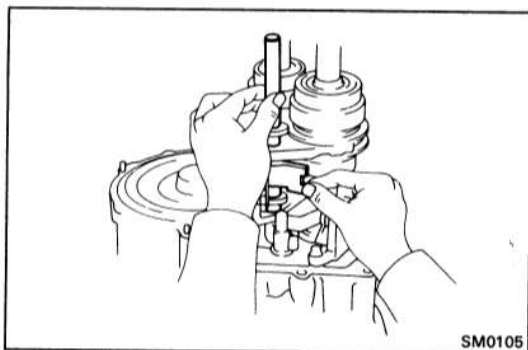
(a) Insert interlock pin into the reverse shift fork hole.



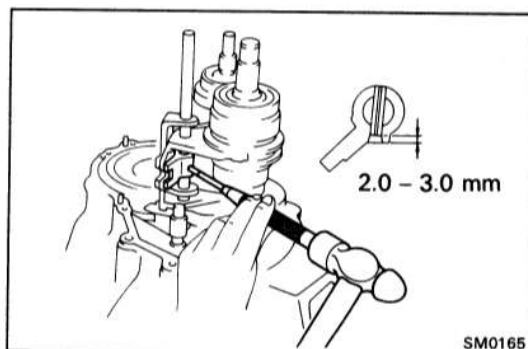
(b) Install the reverse shift fork onto No. 2 fork shaft.

**8. INSTALL NO. 1 AND NO. 2 SHIFT FORKS, NO. 1 SHIFT HEAD AND NO. 1 FORK SHAFT**

(a) Place No. 1 and No. 2 shift forks into the groove of No. 1 and No. 2 hub sleeves.

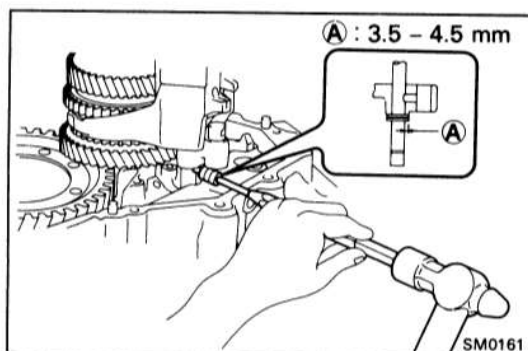


- (b) Hold the No. 1 shift head and insert No. 1 fork shaft into the transaxle case through No. 1 and No. 2 shift fork, No. 1 shift head and reverse shift fork.



- (c) Using a pin punch and hammer, drive the slotted spring pin into No. 1 shift head.

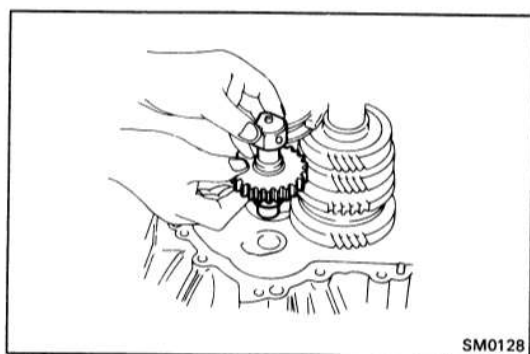
Drive in depth: 2.0 - 3.0 mm (0.08 - 0.12 in.)



- (d) Shift the shift fork shaft into reverse.

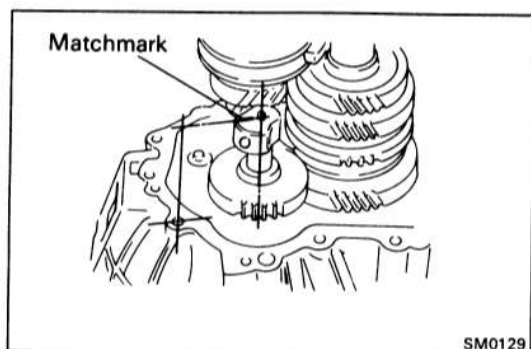
- (e) Using a pin punch and hammer, drive the slotted spring pin into No. 1 fork shaft.

Drive in depth: 3.5 - 4.5 mm (0.14 - 0.18 in.)



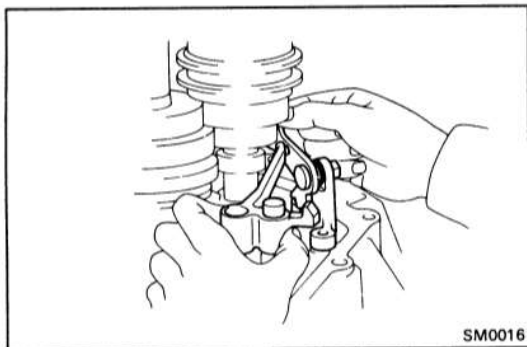
9. INSTALL REVERSE IDLER GEAR AND SHAFT

- (a) Install the reverse idler gear shaft to the reverse idler gear.



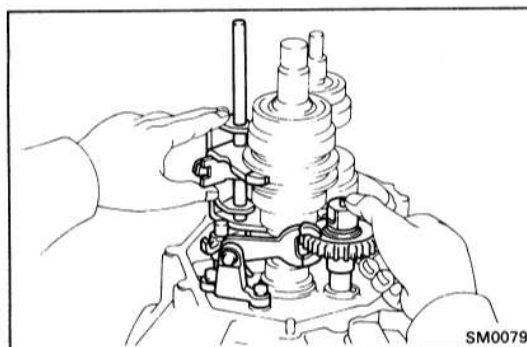
- (b) Install the reverse idler gear and shaft to transaxle case.

- (c) Align the matchmark on the shaft end with the bolt hole in the transaxle case, as shown in the illustration.



10. INSTALL REVERSE SHIFT ARM

- (a) Put the reverse shift arm pivot into the reverse shift fork and install the reverse shift arm to the transaxle case.

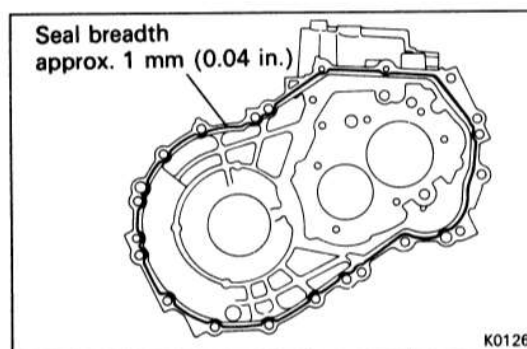


- (b) Shift the shift fork shaft into reverse.

- (c) Install and torque the two bolts.

Torque: 185 kg-cm (13 ft-lb, 18 N·m)

- (d) Shift the shift fork shaft into neutral position.

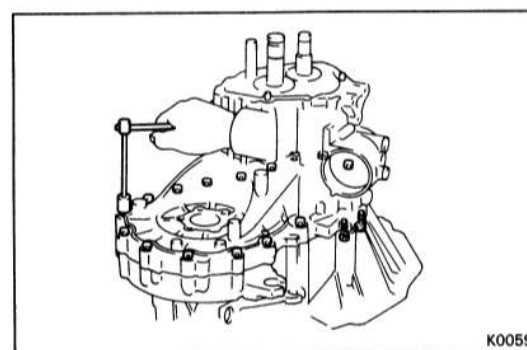


11. INSTALL TRANSMISSION CASE

- (a) Remove any packing material and be careful not to drop oil on the contacting surface of the transmission case or transaxle case.

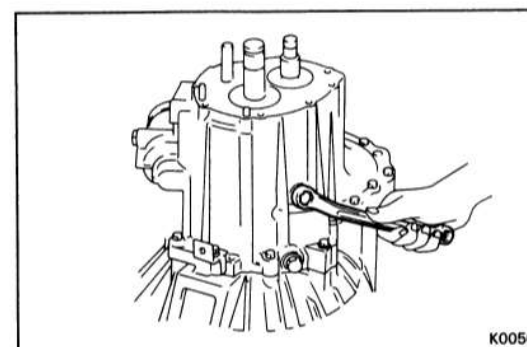
- (b) Apply seal packing to the transmission case as shown in the figure.

Seal packing: Part No. 08826-00090, THREE BOND 1281 or equivalent



- (c) Install and torque the seventeen bolts.

Torque: 300 kg-cm (22 ft-lb, 29 N·m)



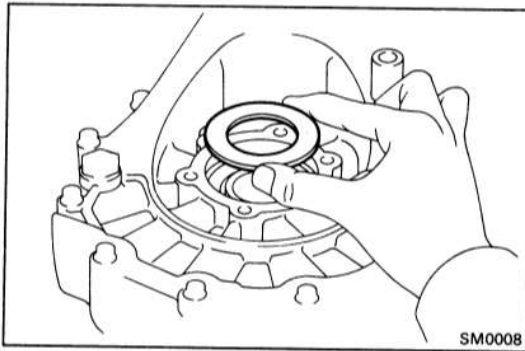
12. INSTALL REVERSE IDLER GEAR SHAFT LOCK BOLT

- (a) Apply sealant to the bolt threads.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

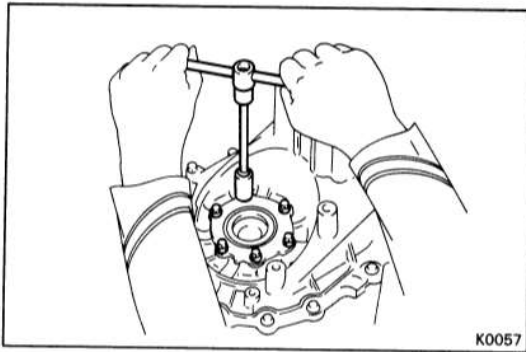
- (b) Install and torque the bolt.

Torque: 300 kg-cm (22 ft-lb, 29 N·m)

**13. INSTALL SIDE BEARING RETAINER**

(a) Install the shim.

HINT: Install the previously selected shim.
(See page MT-45)



(b) Install a new O-ring on the side bearing retainer.

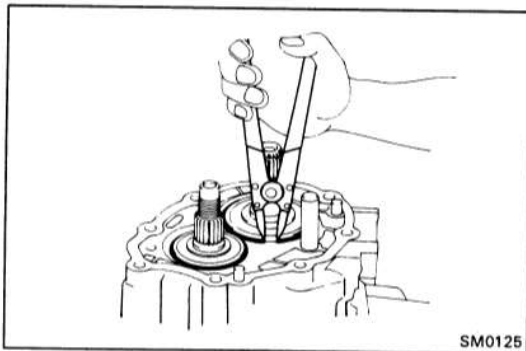
(c) Install the side bearing retainer.

(d) Apply sealant to the bolt threads.

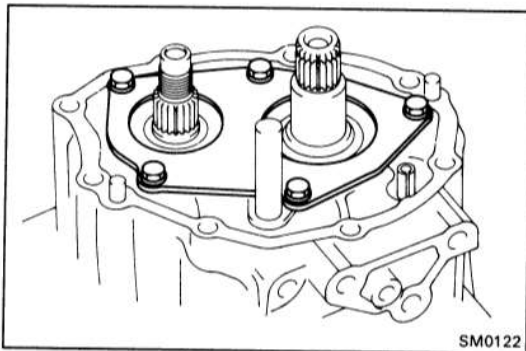
Sealant: Part No. 08833-00080, THREE BOND 1344,
LOCTITE 242 or equivalent

(e) Install and torque the six bolts.

Torque: 185 kg-cm (13 ft-lb, 18 N·m)

**14. INSTALL SNAP RINGS**

Using snap ring pliers, install the snap rings to the input and output shaft rear bearing.

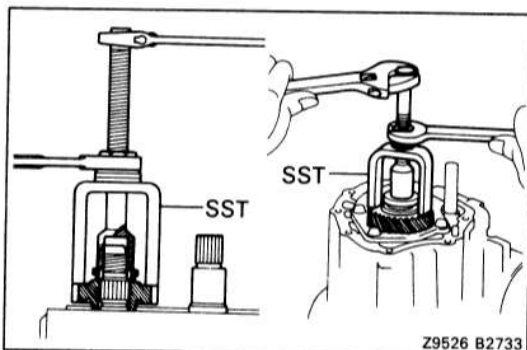
**15. INSTALL REAR BEARING RETAINER**

(a) Apply sealant to the bolt threads.

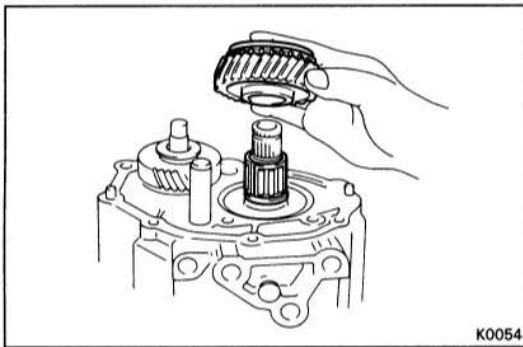
Sealant: Part No. 08833-00070, THREE BOND 1324 or
equivalent

(b) Install and torque the five bolts.

Torque: 210 kg-cm (15 ft-lb, 21 N·m)

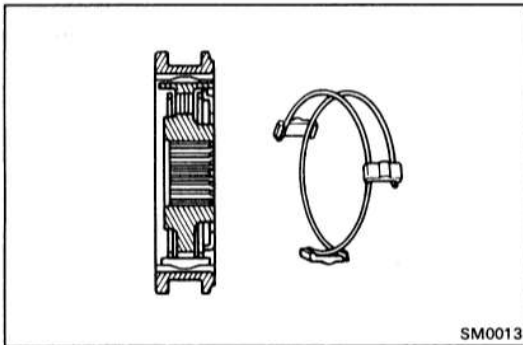
**16. INSTALL FIFTH DRIVEN GEAR**

Using SST, install the fifth driven gear.
SST 09309-32050



17. INSTALL SPACER, NEEDLE ROLLER BEARINGS, FIFTH GEAR AND SYNCHRONIZER RING

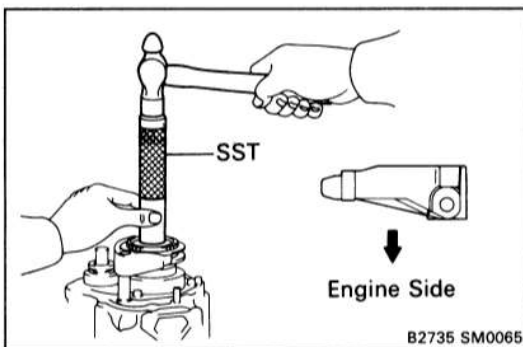
- Install the spacer.
- Install the needle roller bearings.
- Install the fifth gear with the synchronizer ring.



18. INSERT NO. 3 CLUTCH HUB INTO HUB SLEEVE

- Install the clutch hub and shifting keys to the hub sleeve.
- Install the shifting key springs under the shifting keys.

NOTICE: Install the key springs positioned so that their end gaps are not in line.



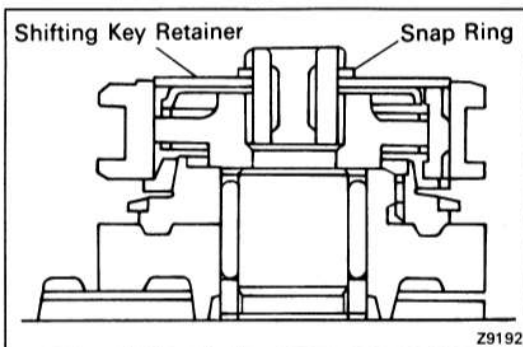
19. INSTALL NO. 3 HUB SLEEVE ASSEMBLY WITH NO. 3 SHIFT FORK

- Support the tip of the input shaft with a spacer or such to raise the transaxle assembly.
- Install the No. 3 shift fork set bolt.

Torque: 185 kg-cm (13 ft-lb, 18 N·m)

- Using SST, drive in No. 3 hub sleeve with shift fork. SST 09612-22011

NOTICE: Align the synchronizer ring slots with the shifting keys.

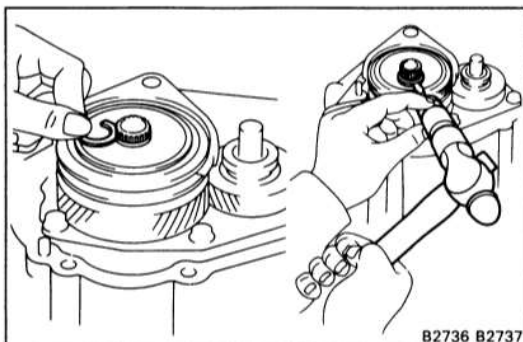


20. INSTALL SHIFTING KEY RETAINER

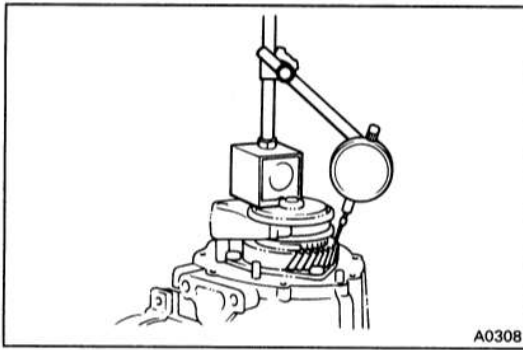
Install the shifting key retainer as shown in the figure.

21. INSTALL SNAP RING

Select a snap ring that will allow minimum axial play and install it on the shaft.

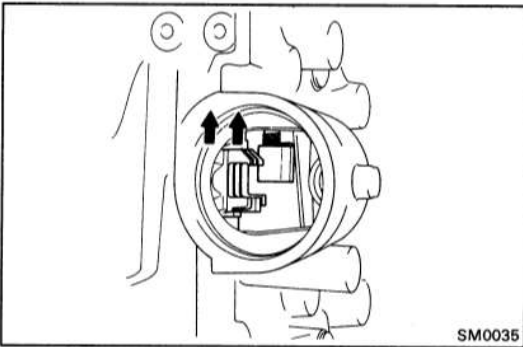


Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
1	1.60–1.65(0.0630–0.0650)	9	2.00–2.05(0.0787–0.0807)
2	1.65–1.70(0.0650–0.0669)	10	2.05–2.10(0.0807–0.0827)
3	1.70–1.75(0.0669–0.0689)	11	2.10–2.15(0.0827–0.0846)
4	1.75–1.80(0.0689–0.0709)	12	2.15–2.20(0.0846–0.0866)
5	1.80–1.85(0.0709–0.0728)	13	2.20–2.25(0.0866–0.0886)
6	1.85–1.90(0.0728–0.0748)	14	2.25–2.30(0.0886–0.0906)
7	1.90–1.95(0.0748–0.0768)	15	2.30–2.35(0.0906–0.0925)
8	1.95–2.00(0.0768–0.0787)		

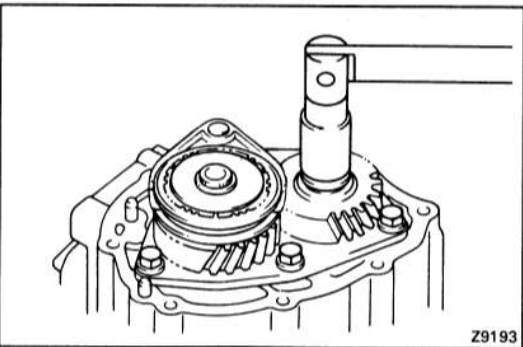
**22. MEASURE FIFTH GEAR THRUST CLEARANCE**

Using a dial indicator, measure the thrust clearance.

Standard clearance: 0.20 – 0.40 mm
(0.0079 – 0.0157 in.)

**23. INSTALL LOCK NUT**

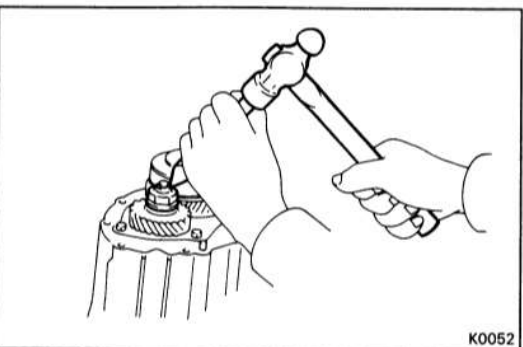
(a) Engage the gear double meshing.



(b) Install and torque the nut.

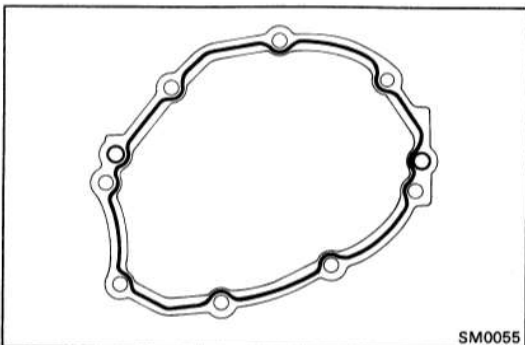
Torque: 1,250 kg-cm (90 ft-lb, 123 N·m)

HINT: The lock nut has LH threads.



(c) Stake the lock nut.

(d) Disengage the gear double meshing.

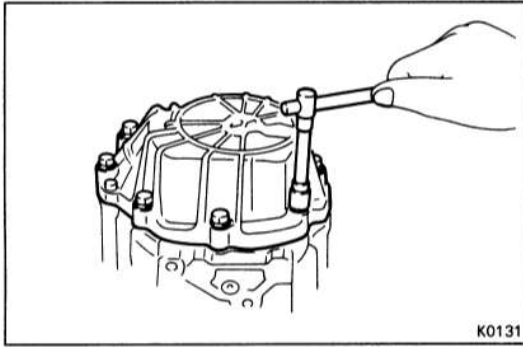
**24. INSTALL TRANSMISSION CASE COVER**

(a) Remove any packing material and be careful not to drop oil on the contacting surfaces of the transmission case cover.

(b) Apply seal packing to the transmission case as shown in the figure.

Seal packing: Part No. 08826-00090, THREE BOND 1281 or equivalent

HINT: Install the transmission case cover as soon as the seal packing is applied.



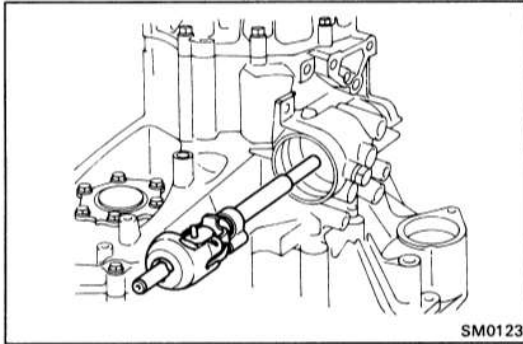
K0131

(c) Apply sealant to the bolt threads.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

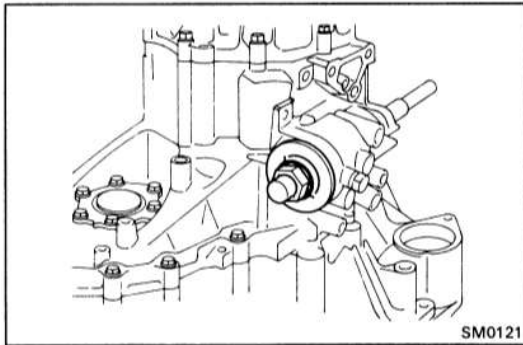
(d) Install and torque the eight bolts.

Torque: 300 kg-cm (22 ft-lb, 29 N·m)



SM0123

25. INSTALL SHIFT AND SELECT LEVER SHAFT ASSEMBLY



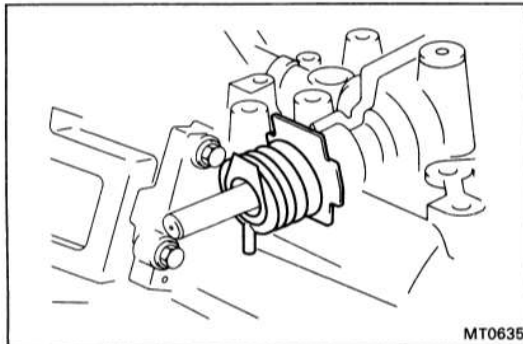
SM0121

26. INSTALL CONTROL SHAFT COVER

(a) Coat a new O-ring with ATF and install it to the control shaft cover.

(b) Install and torque the control shaft cover.

Torque: 335 kg-cm (24 ft-lb, 33 N·m)

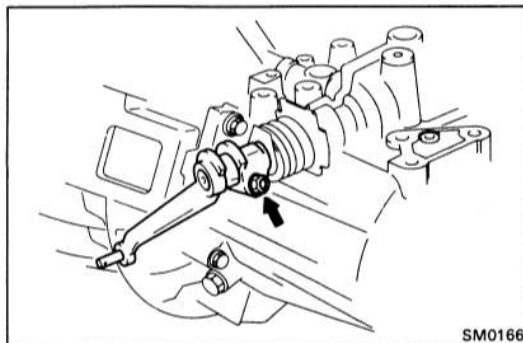


MT0635

27. INSTALL SHIFT LEVER

(a) Install the boot to the control shaft oil seal.

HINT: Make sure to install the boot in the correct direction. Position the air bleed of the boot downward.



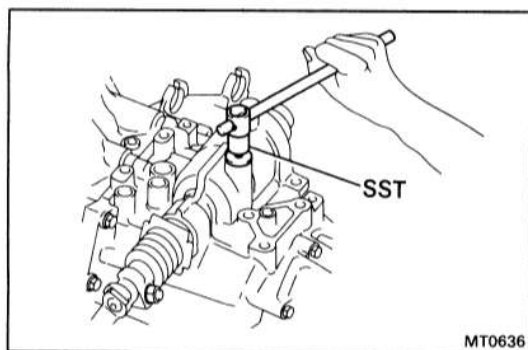
SM0166

(b) Fit the pin's groove into the shaft's notch and tap on with a hammer.

(c) Install and torque the nut.

Torque: 120 kg-cm (9 ft-lb, 12 N·m)

(d) Install the boot to the shift lever.

**28. INSTALL NO. 2 LOCK BALL ASSEMBLY**

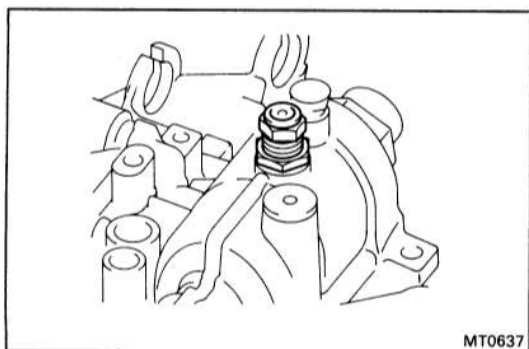
- (a) Apply liquid sealant to the plug.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

- (b) Using SST, install and torque the plug.

SST 09313-30021

Torque: 230 kg-cm (17 ft-lb, 23 N·m)

**29. INSTALL NO. 1 LOCK BALL ASSEMBLY**

- (a) Fully loosen the lock nut.

- (b) Fully screw in the lock ball.

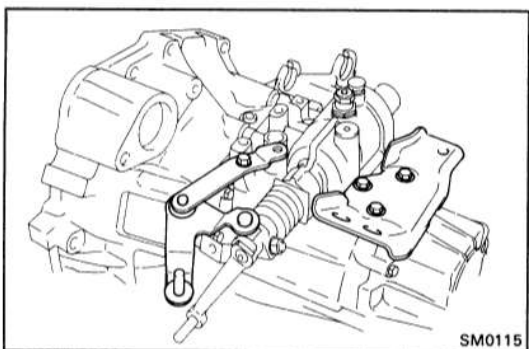
- (c) Loosen the lock ball to where the play at the shift outer lever tip is 0.1 – 0.5 mm (0.004 – 0.020 in.)

- (d) Hold the lock ball and tighten the lock nut.

Torque: 375 kg-cm (27 ft-lb, 37 N·m)

- (e) Check the shift outer lever tip play.

Lever tip play: 0.1 – 0.5 mm (0.004 – 0.020 in.)

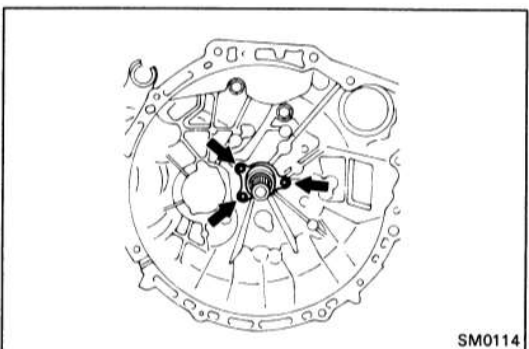
**30. INSTALL SELECTING BELL CRANK ASSEMBLY AND ENGINE MOUNTING BRACKET**

- (a) Install and torque the selecting bell crank.

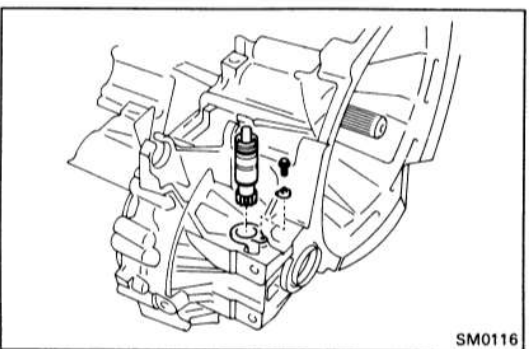
Torque: 200 kg-cm (14 ft-lb, 20 N·m)

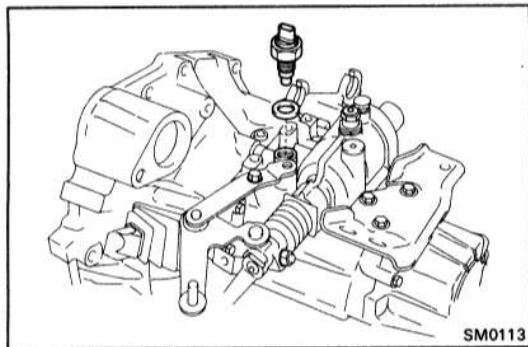
- (b) Install and torque the engine mounting bracket.

Torque: 530 kg-cm (38 ft-lb, 52 N·m)

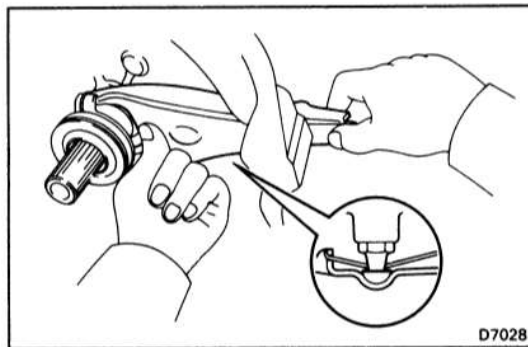
**31. INSTALL RELEASE BEARING RETAINER**

Torque: 75 kg-cm (65 in.-lb, 7.4 N·m)

**32. INSTALL SPEEDOMETER DRIVEN GEAR**

**33. INSTALL BACK-UP LIGHT SWITCH**

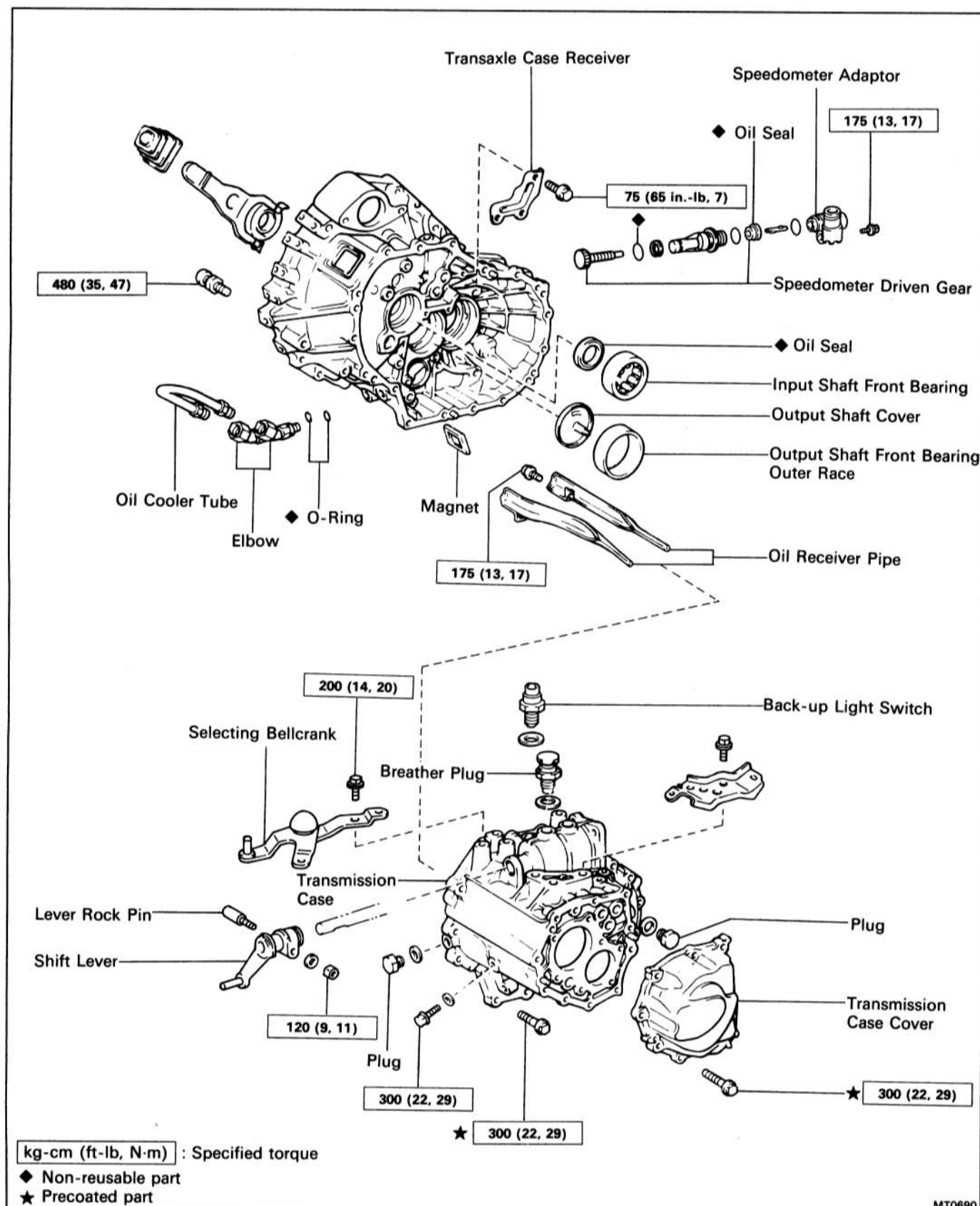
Torque: 450 kg-cm (33 ft-lb, 44 N·m)

**34. INSTALL RELEASE BEARING FORK AND BEARING**

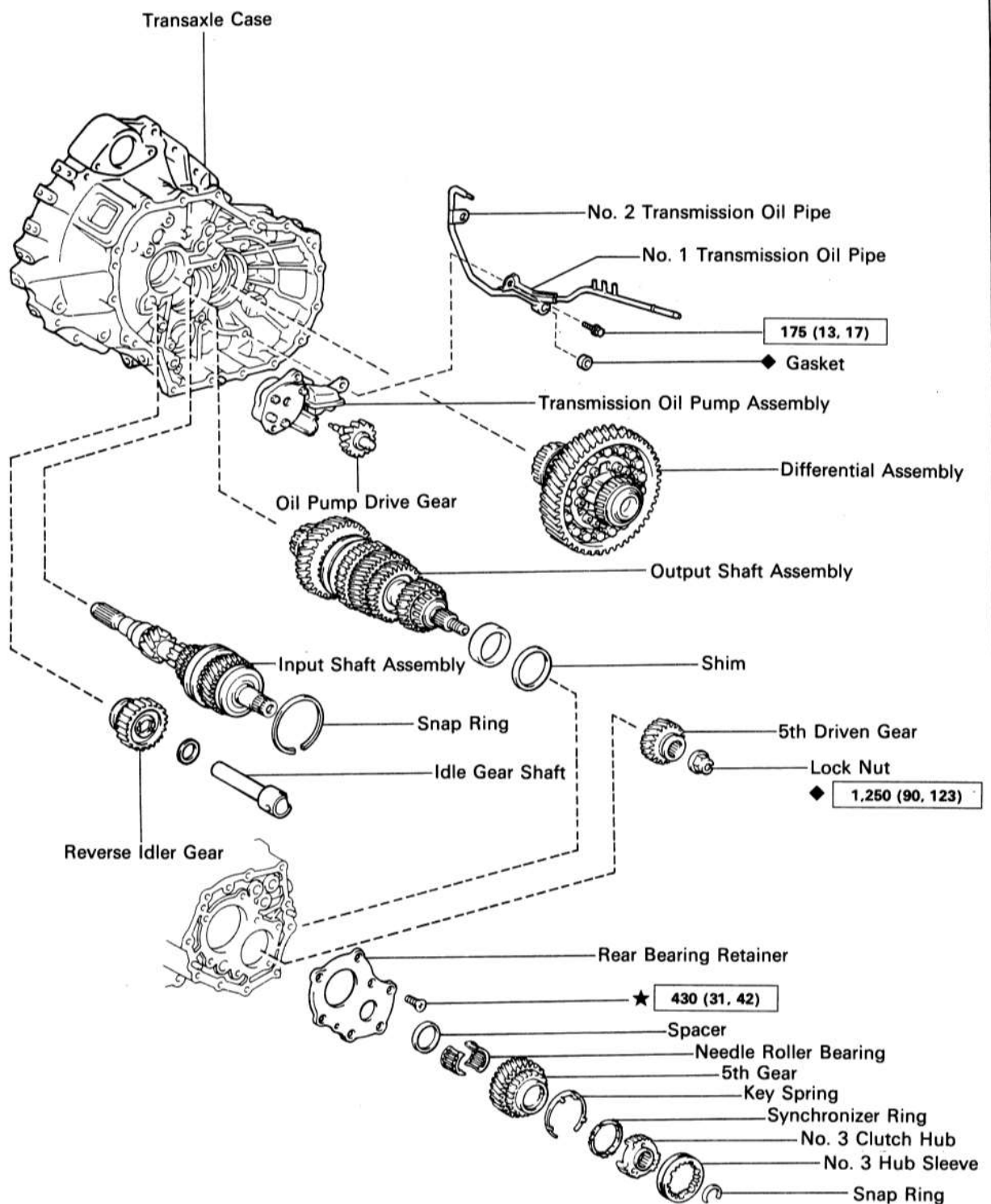
Apply molybdenum disulphide lithium base grease to the following parts:

- Input shaft spline
- Release fork contact surface

(E153 TRANSAXLE) REMOVAL OF COMPONENT PARTS COMPONENTS



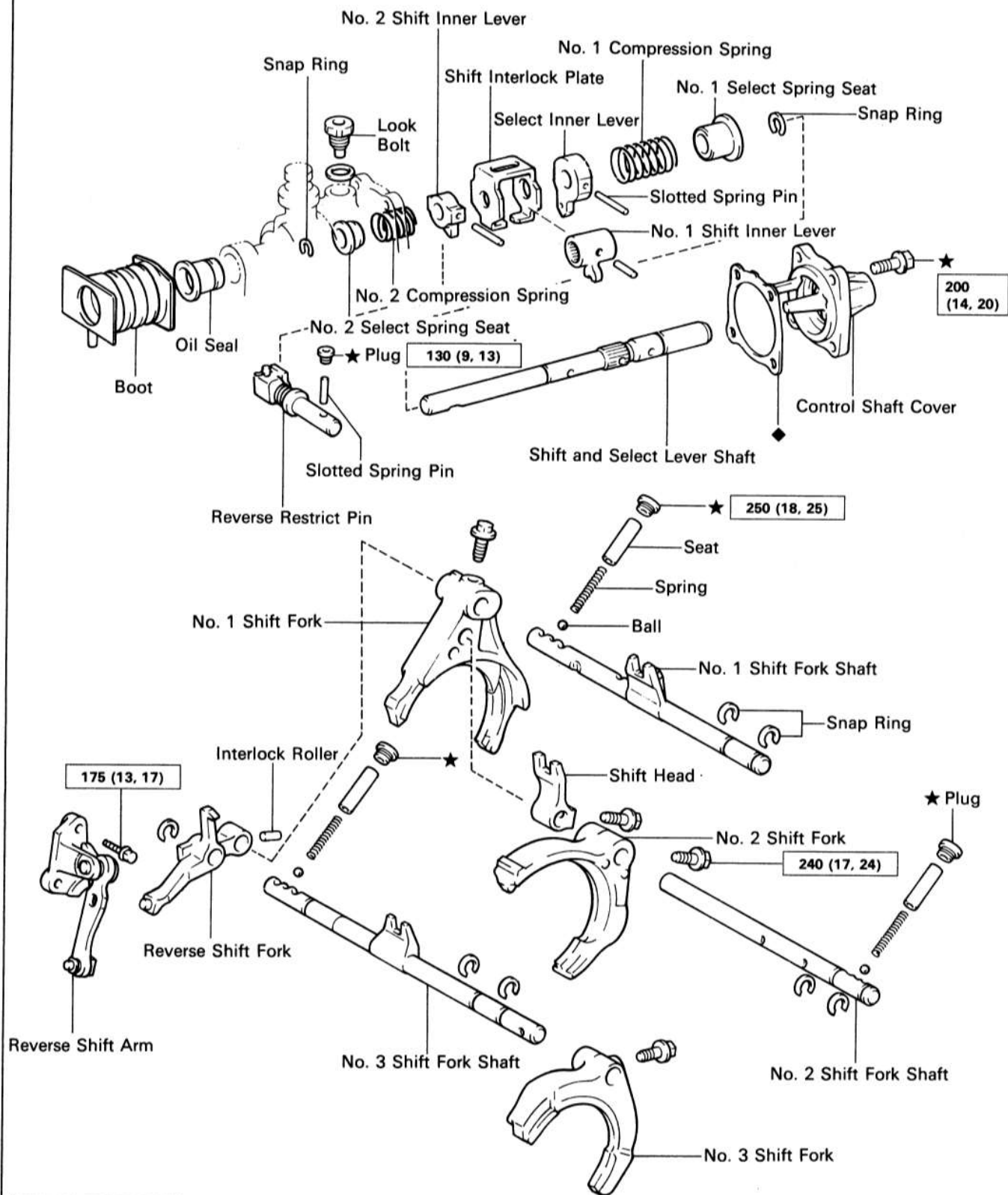
COMPONENTS (Cont'd)



kg-cm (ft-lb, N·m) : Specified torque

- ◆ Non-reusable part
- ★ Precoated part

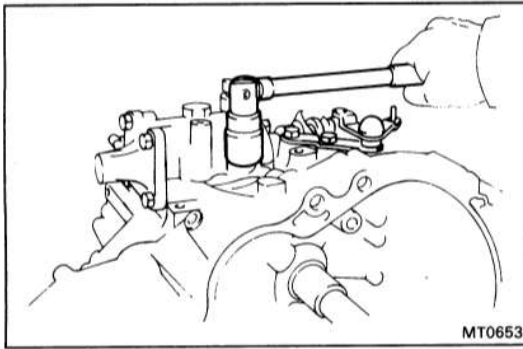
COMPONENTS (Cont'd)



kg-cm (ft-lb, N·m) : Specified torque

◆ Non-reusable part

★ Precoated part



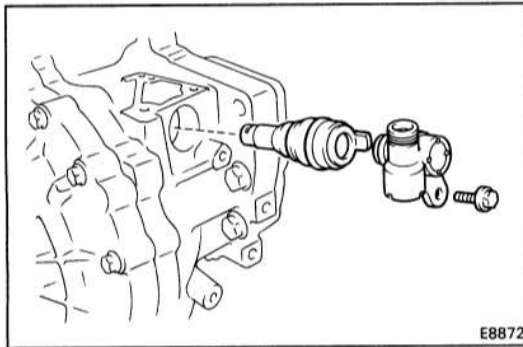
REMOVAL OF COMPONENT PARTS

(See pages MT-57 to 59)

1. REMOVE RELEASE FORK AND BEARING

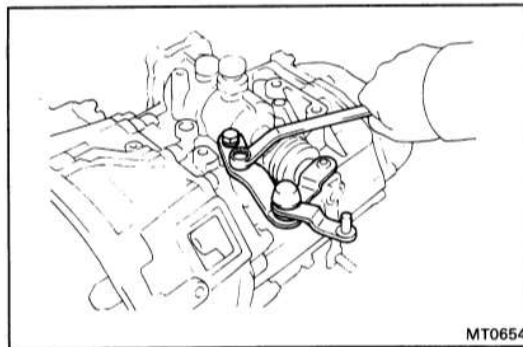
2. REMOVE BACK-UP LIGHT SWITCH

Using SST, remove the back-up light switch.
SST 09817-16011

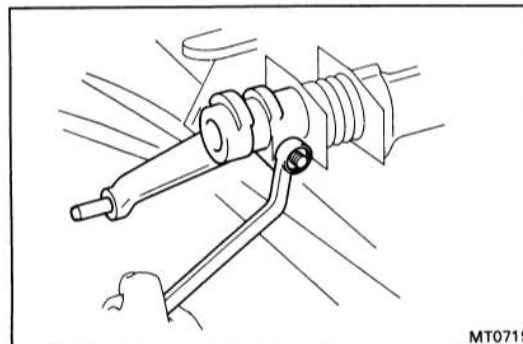


3. REMOVE SPEEDOMETER DRIVEN GEAR

- (a) Remove the set bolt and speedometer adaptor.
- (b) Remove the speedometer driven gear.

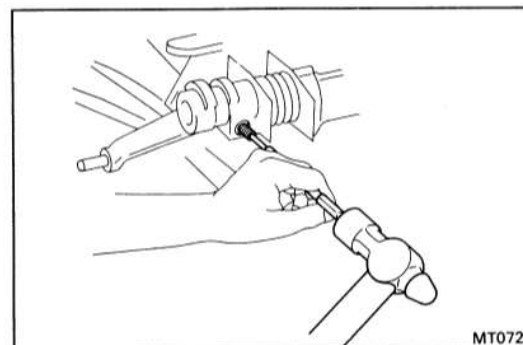


4. REMOVE SELECTING BELLCRANK ASSEMBLY

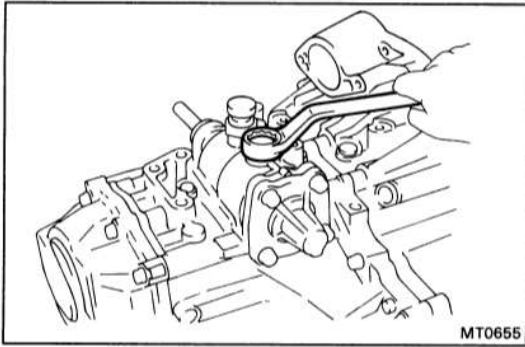
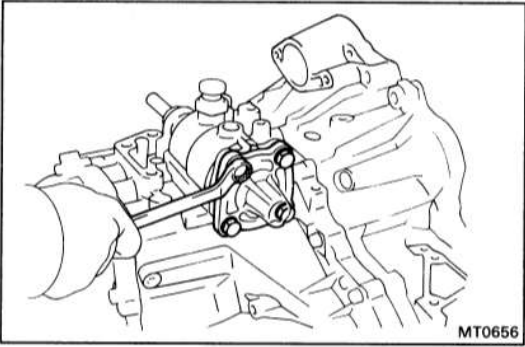


5. REMOVE SHIFT LEVER

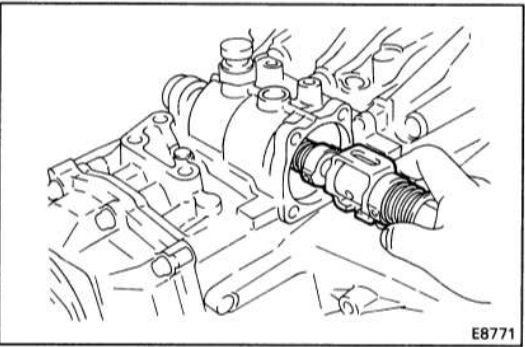
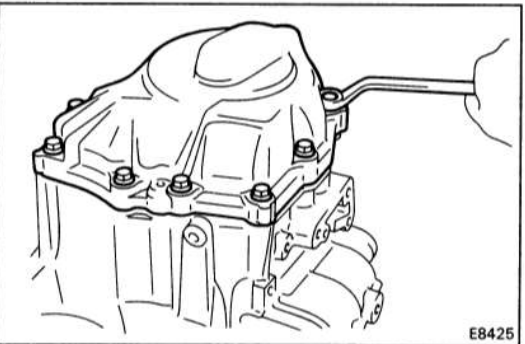
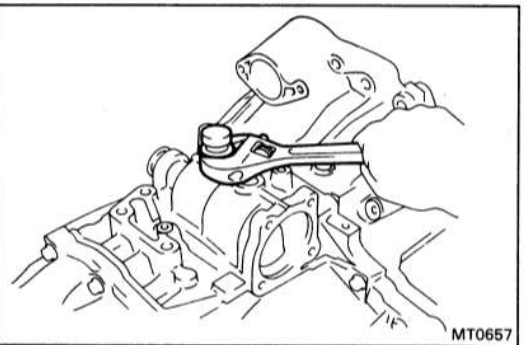
- (a) Remove the shift lever set nut.

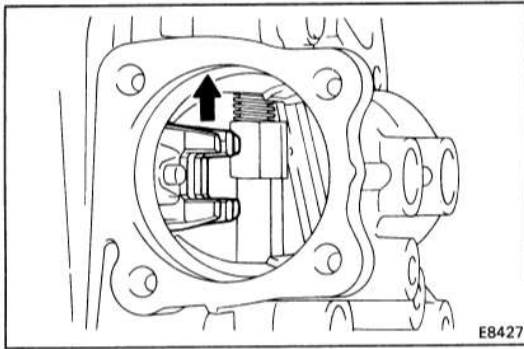


- (b) Using a pin punch and hammer, tap out the lock pin.

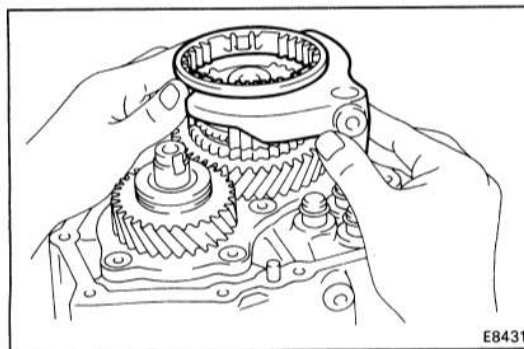
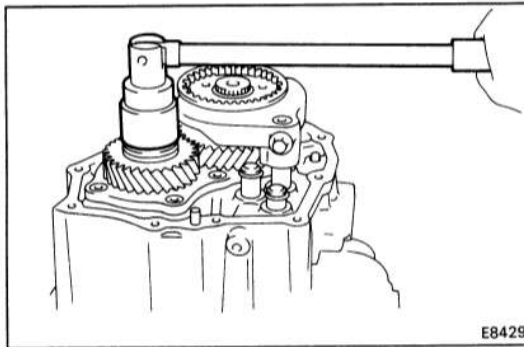
**6. REMOVE LOCK BOLT****7. REMOVE CONTROL SHAFT COVER**

Remove the bolts holding the control shaft cover.

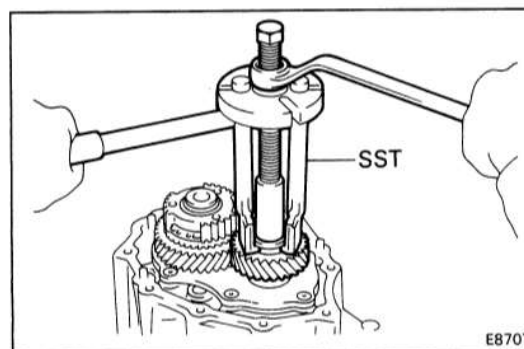
**8. REMOVE SHIFT AND SELECT LEVER SHAFT ASSEMBLY****9. REMOVE TRANSMISSION CASE COVER****10. REMOVE BREATHER PLUG WITH GASKET**

**11. REMOVE LOCK NUT**

- (a) Unstake the lock nut.
- (b) Engage the gear double meshing.
- (c) Remove the lock nut.
- (d) Disengage the gear double meshing.

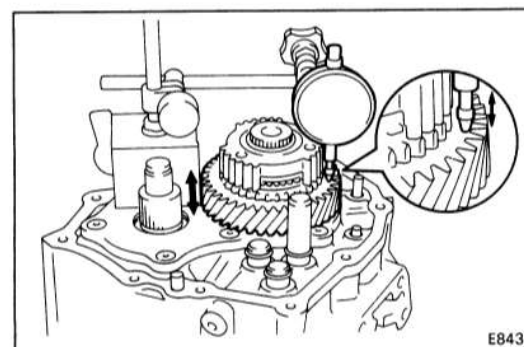
**12. REMOVE NO. 3 HUB SLEEVE AND NO. 3 SHIFT FORK**

- (a) Remove the No. 3 shift fork set bolt.
- (b) Remove the No. 3 hub sleeve and No. 3 shift fork.

**13. REMOVE FIFTH DRIVEN GEAR**

Using SST, remove the 5th driven gear.

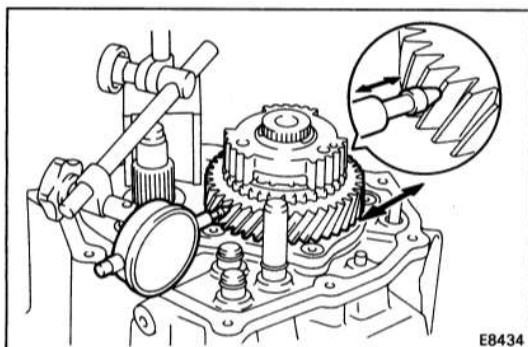
SST 09310-17010 (09310-07010, 09310-07020, 09310-07040, 09310-07050)

**14. MEASURE FIFTH GEAR THRUST CLEARANCE AND OIL CLEARANCE**

- (a) Using a dial indicator, measure the thrust clearance.

Standard clearance: 0.10 – 0.57 mm
(0.0039 – 0.0224 in.)

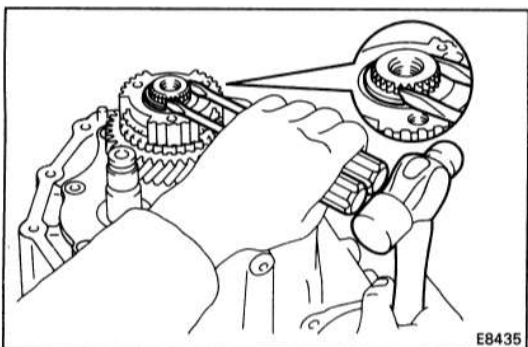
Maximum clearance: 0.65 mm (0.0256 in.)



(b) Using a dial indicator, measure the oil clearance.

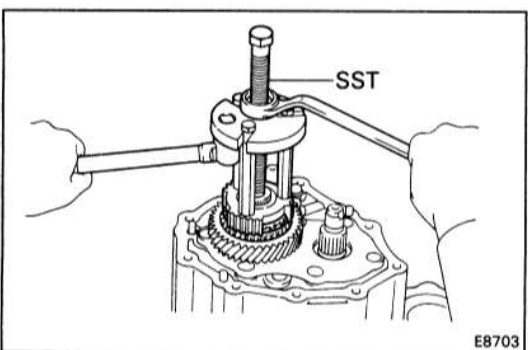
Standard clearance: 0.009 – 0.050 mm
(0.0004 – 0.0020 in.)

Maximum clearance: 0.070 mm (0.0028 in.)



15. REMOVE NO. 3 CLUTCH HUB AND FIFTH GEAR

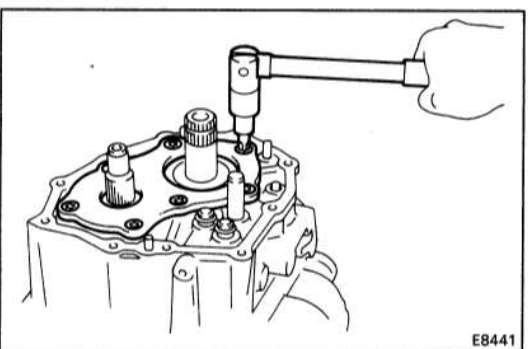
(a) Using two screwdrivers and a hammer, tap out the snap ring.



(b) Using SST, remove the No. 3 clutch hub with synchronizer ring and 5th gear.

SST 09310-17010 (09310-07010, 09310-07020, 09310-07040, 09310-07050)

16. REMOVE NEEDLE ROLLER BEARING AND SPACER

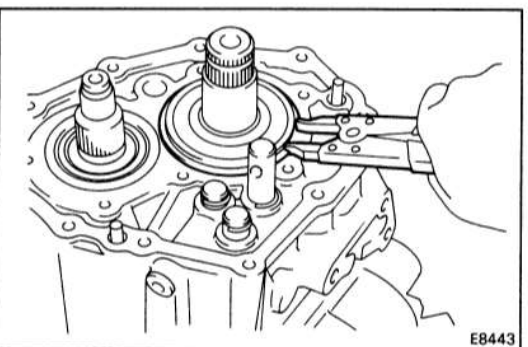


17. REMOVE REAR BEARING RETAINER

(a) Using a torx socket wrench, remove the seven torx screws and bearing retainer.

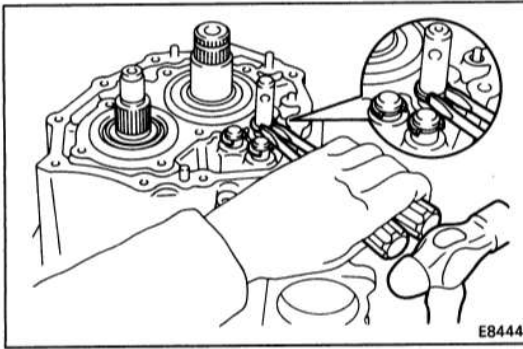
Torx wrench T45 09042-00050

(b) Remove the adjust shim.

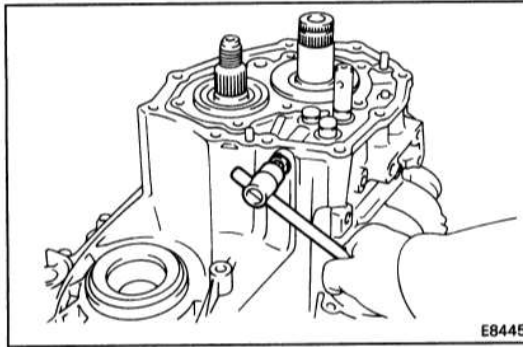


18. REMOVE SNAP RING

(a) Using snap ring pliers, remove the snap ring.



- (b) Using two screwdrivers and a hammer, remove the three snap rings.

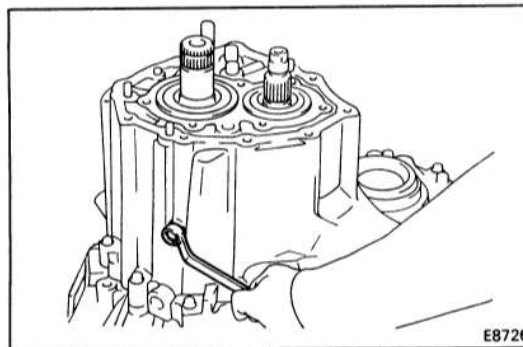


19. REMOVE PLUG, SEAT, SPRING AND LOCKING BALL

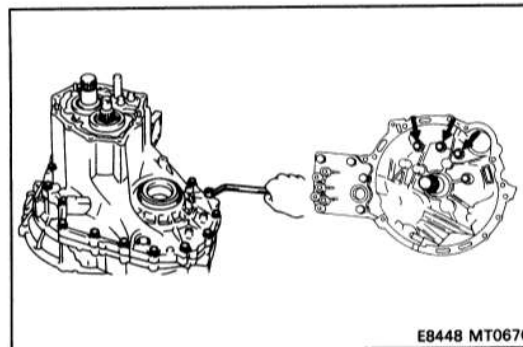
- (a) Using SST, remove the plug.

SST 09313-30021

- (b) Using a magnetic finger, remove the seat, spring and locking ball.



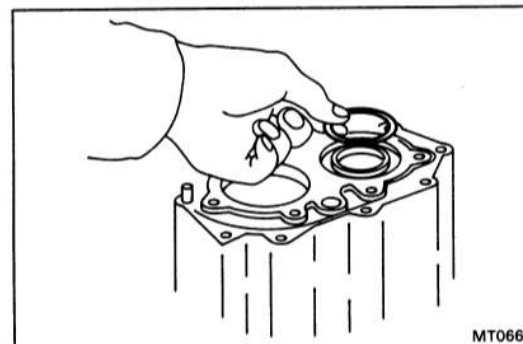
20. REMOVE REVERSE IDLER GEAR SHAFT RETAINING BOLT



21. REMOVE TRANSMISSION CASE

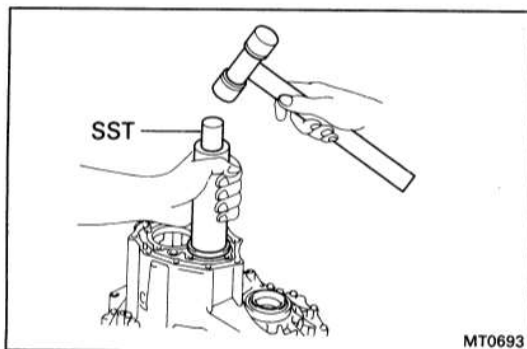
Remove the seventeen bolts and tap off the case with a plastic hammer.

(Transmission case side: fourteen bolts)
 (Transaxle case side: three bolts)



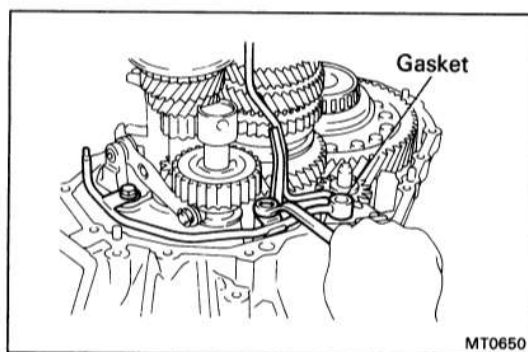
22. REMOVE OUTPUT SHAFT REAR TAPERED ROLLER BEARING OUTER RACE

- (a) Remove the shim.



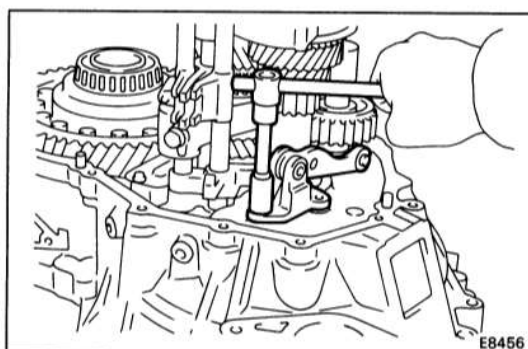
- (b) Using SST and a hammer, remove the output shaft rear tapered roller bearing outer race.

SST 09316-60010 (09316-00010)



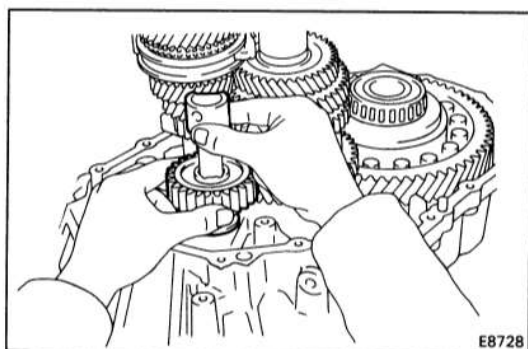
23. REMOVE NO. 2 OIL PIPE

- (a) Remove the gasket.
(b) Remove the two bolts and oil pipe.



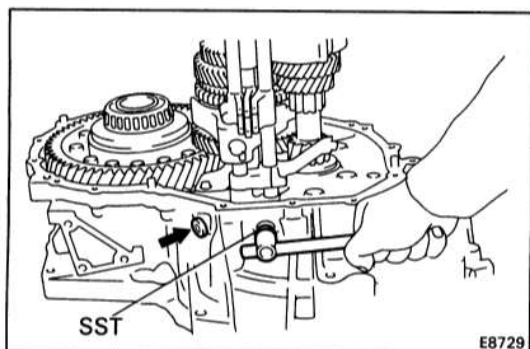
24. REMOVE REVERSE SHIFT ARM BRACKET

Remove the bolt and pull off the bracket.



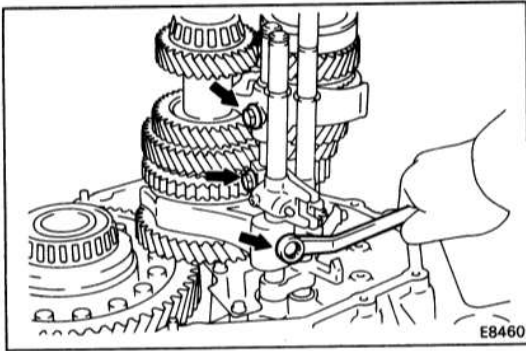
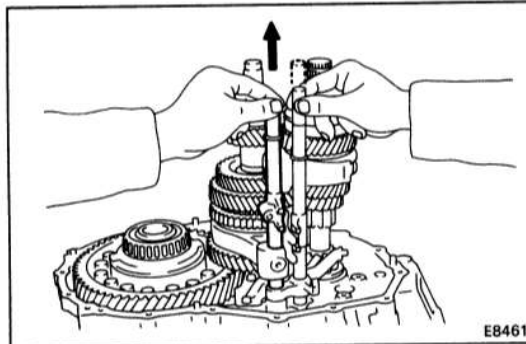
25. REMOVE REVERSE IDLER GEAR AND SHIFT

Pull out the shift, remove the reverse idler gear.

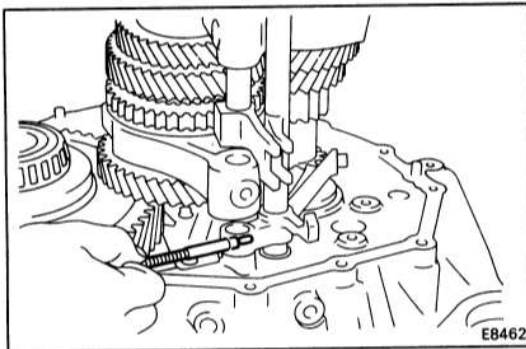


26. REMOVE STRAIGHT SCREW, LOCKING BALLS AND SPRINGS

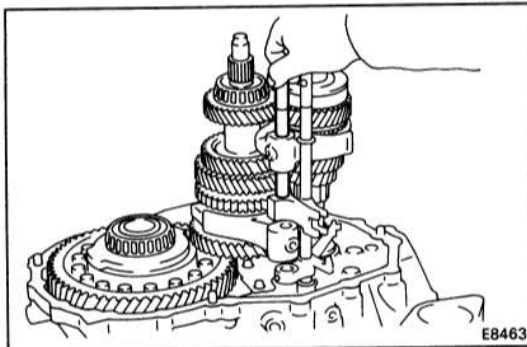
- (a) Using SST, remove the two plugs.
SST 09313-30021
(b) Using a magnetic finger, remove the two spring seats, springs and balls.

**27. REMOVE THREE SET BOLTS****28. REMOVE NO. 1 SHIFT FORK SHAFT**

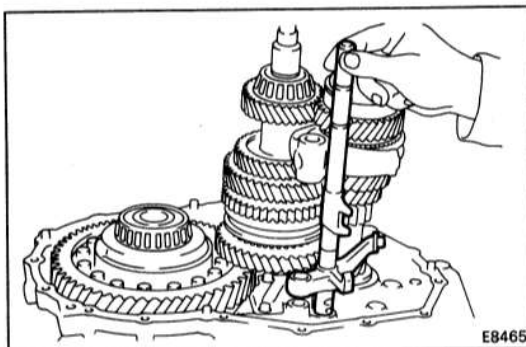
Pull up No. 3 shift fork shaft, remove the No. 1 shift fork shaft.

**29. REMOVE INTERLOCK ROLLER**

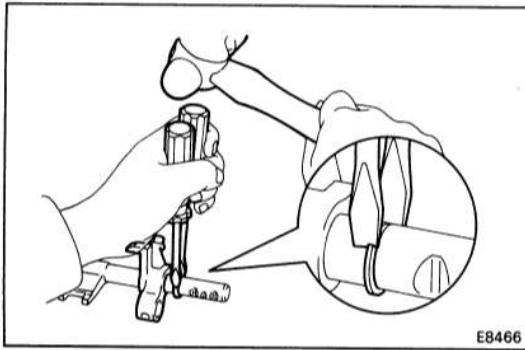
Using a magnetic finger, remove the interlock roller from the reverse shift fork.

**30. REMOVE NO. 2 SHIFT FORK SHAFT, SHIFT HEAD AND NO. 1 SHIFT FORK**

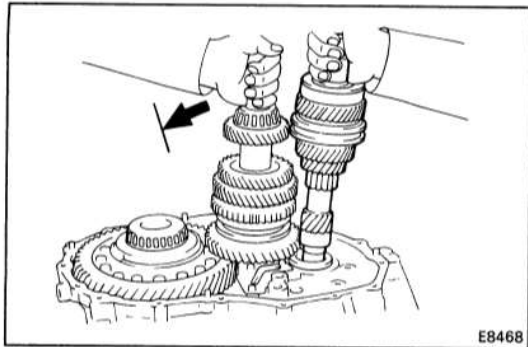
- (a) Pull out the No. 2 shift fork shaft.
- (b) Remove the shift head and No. 1 shift fork.

**31. REMOVE NO. 3 SHIFT FORK SHAFT WITH REVERSE SHIFT FORK AND NO. 2 SHIFT FORK**

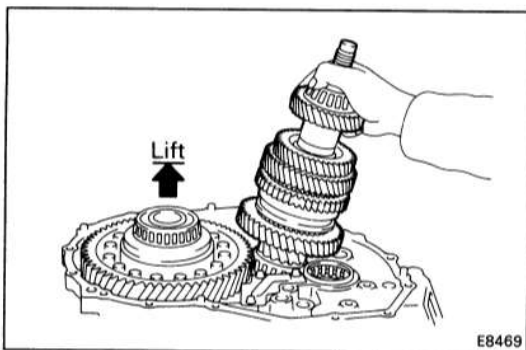
- (a) Pull out the No. 3 shift fork shaft with reverse shift fork.
- (b) Remove the No. 2 shift fork.

**32. REMOVE SNAP RINGS**

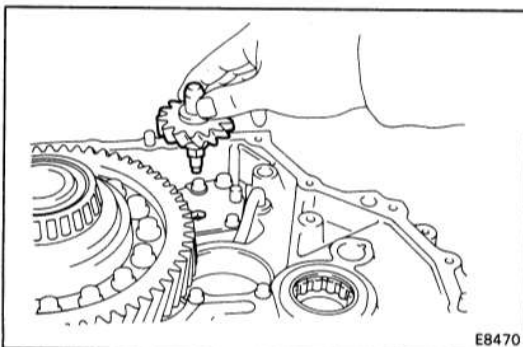
- (a) Using two screwdrivers and a hammer, remove the snap ring and reverse shift fork from the No. 3 shift fork shaft.
- (b) Using two screwdrivers and a hammer, remove the snap ring from the No. 1, No. 2 and No. 3 shift fork shafts.

**33. REMOVE INPUT AND OUTPUT SHAFT ASSEMBLY**

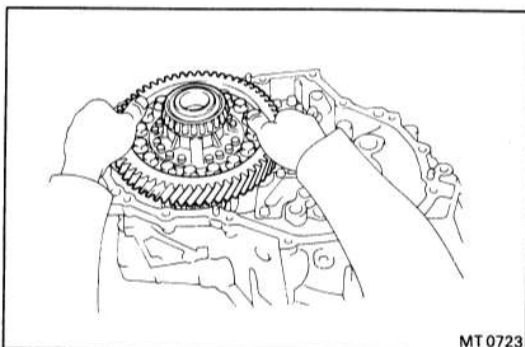
- (a) Leaning the output shaft to the differential side, remove the input shaft assembly.



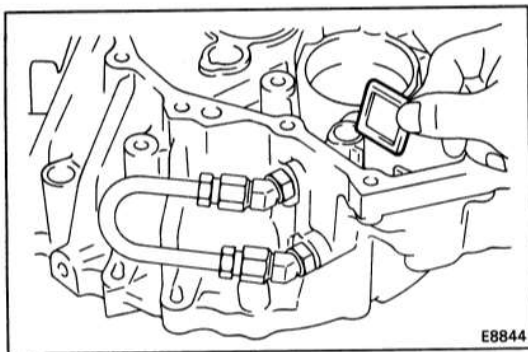
- (b) Lift up the differential case assembly, remove the output shaft.

**34. REMOVE DIFFERENTIAL ASSEMBLY**

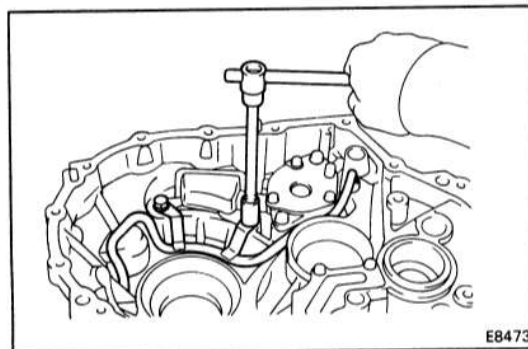
- (a) Remove the oil pump drive gear.



- (b) Remove the differential case assembly.

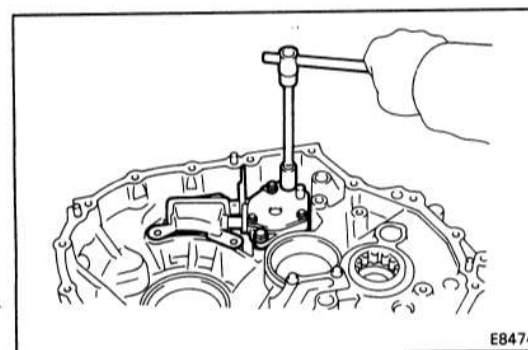


35. REMOVE MAGNET FROM TRANSAXLE CASE

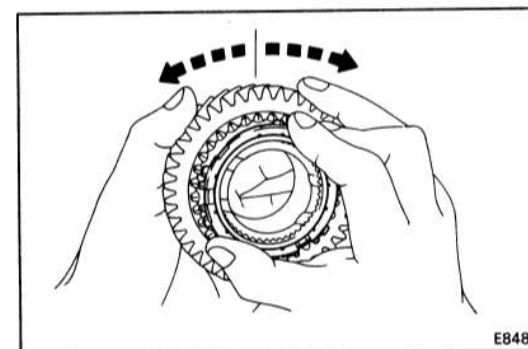


36. REMOVE OIL PUMP ASSEMBLY

(a) Remove the two bolts and oil pipe.



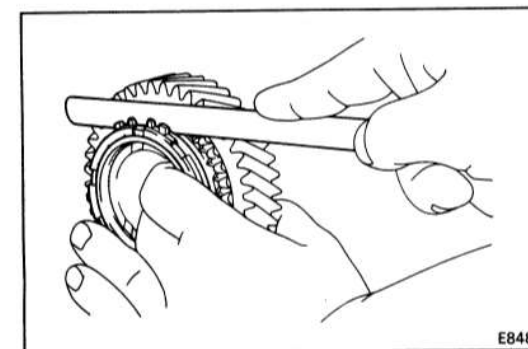
(b) Remove the two bolts and oil pump.



INSPECTION OF COMPONENT PARTS

1. INSPECT SYNCHRONIZER RING FOR FIFTH GEAR

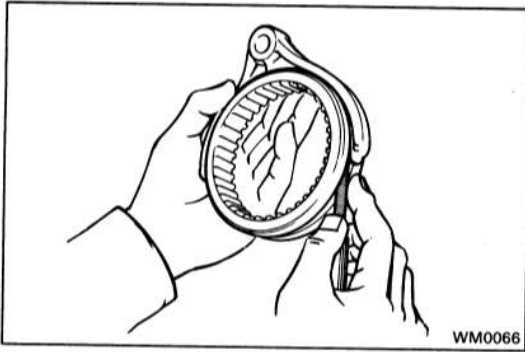
- (a) Check for wear or damage.
- (b) Turn the ring and push it in to check the braking action.



- (c) Measure the clearance between the synchronizer ring back and the gear spline end.

Minimum clearance: 0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer ring.

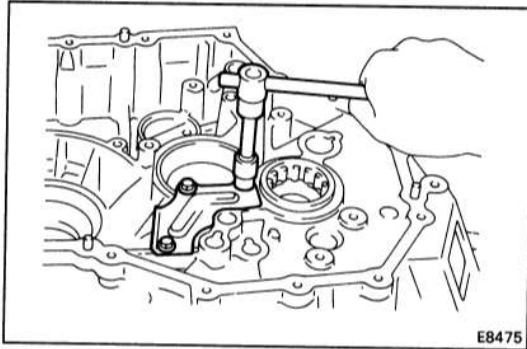


2. MEASURE CLEARANCE OF SHIFT FORKS AND HUB SLEEVE

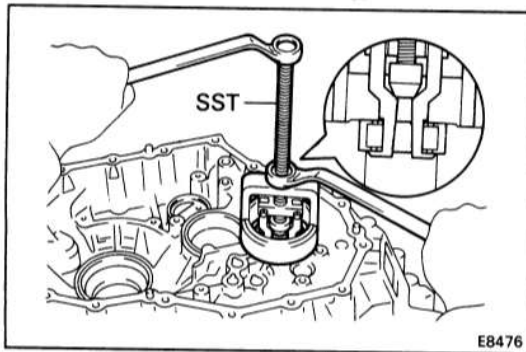
Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance: 1.0 mm (0.039 in.)

If the clearance exceeds the limit, replace the shift fork or hub sleeve.



3. REMOVE TRANSAXLE CASE RECEIVER

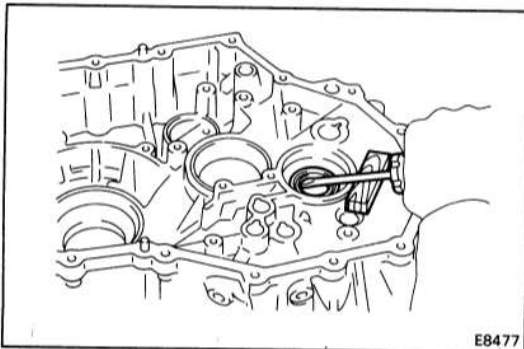


4. IF NECESSARY, REPLACE INPUT SHAFT BEARING AND OIL SEAL

(a) Using SST, pull out the bearing.

SST 09612-65014 (09612-01060)

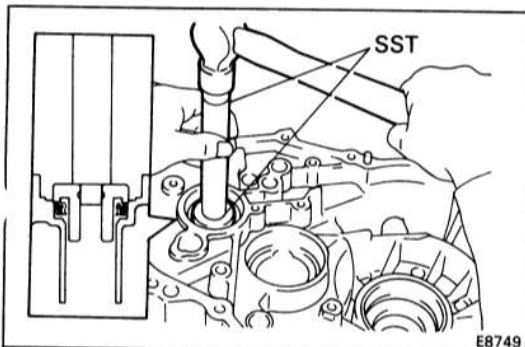
(b) Using a screwdriver, remove the oil seal.

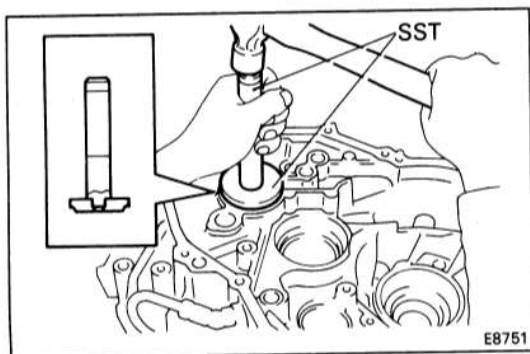


(c) Using SST, drive in a new oil seal.

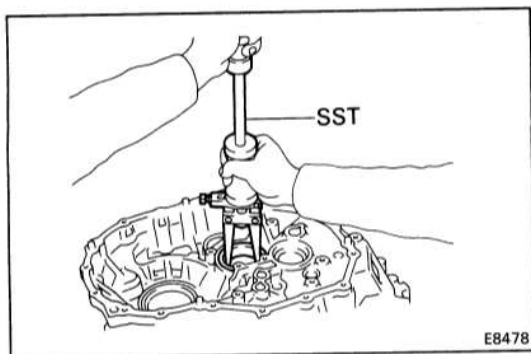
SST 09608-12010 (09608-00020, 09608-00080)

(d) Coat the lip of seal with MP grease.



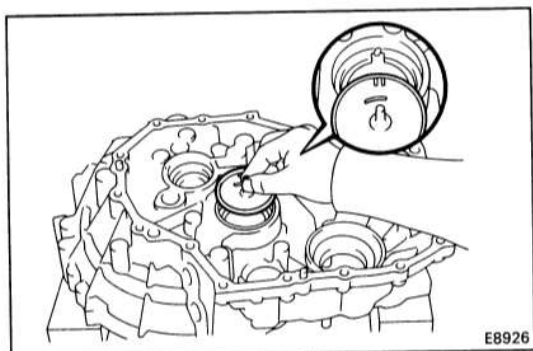


- (e) Using SST, drive in a new bearing.
SST 09608-12010 (09608-00020, 09608-00060)

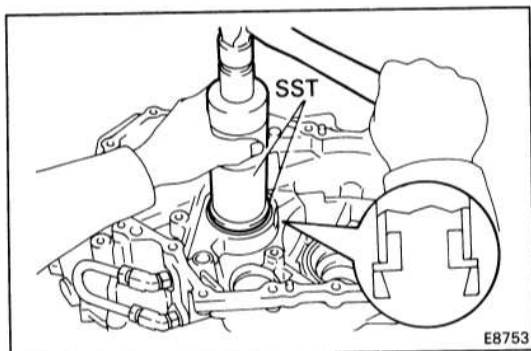


5. IF NECESSARY, REPLACE OUTPUT SHAFT FRONT OUTER RACE AND OUTPUT SHAFT COVER

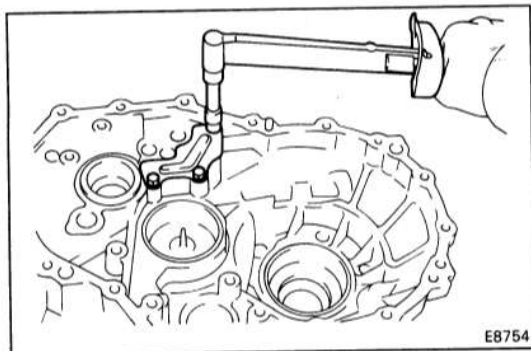
- (a) Using SST, pull out the outer race.
SST 09308-00010
(b) Remove the output shaft cover.



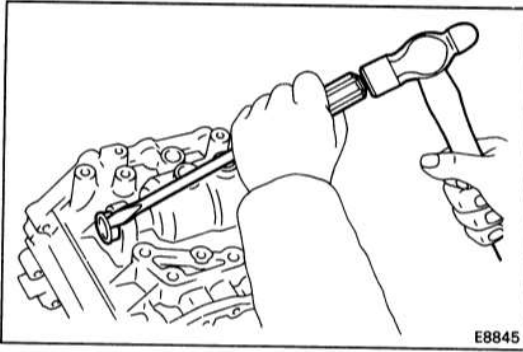
- (c) Install the output shaft front cover.
HINT: Install the shaft cover projection into the case side groove.



- (d) Using SST, press in a new outer race.
SST 09316-60010 (09316-00010, 09316-00020)

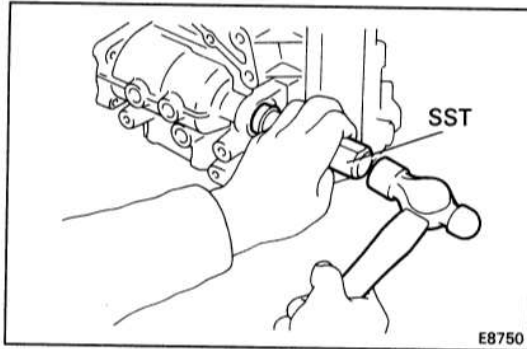


- 6. INSTALL AND TORQUE TRANSAXLE CASE RECEIVER**
Torque: 75 kg-cm (65 in.-lb. 7.4 N·m)



7. IF NECESSARY, REPLACE SHIFT CONTROL SHAFT OIL SEAL

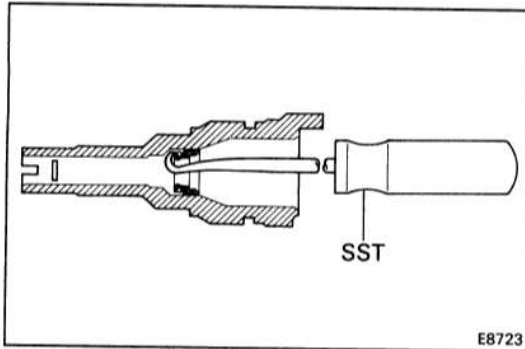
- (a) Using a screwdriver and hammer, remove the oil seal.



- (b) Using SST, drive in the new oil seal until it touches the bottom.

SST 09517-36010

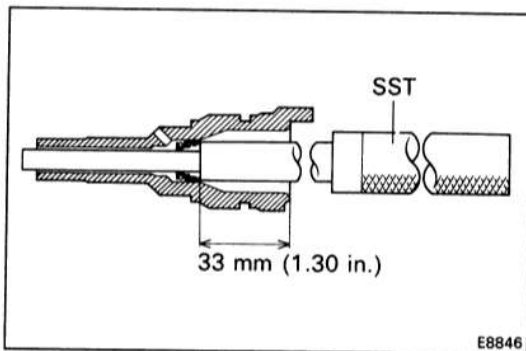
- (c) Coat the lip of oil seal with MP grease.



8. IF NECESSARY, REPLACE SPEEDOMETER DRIVEN GEAR OIL SEAL

- (a) Using SST, pull out the oil seal.

SST 09921-00010

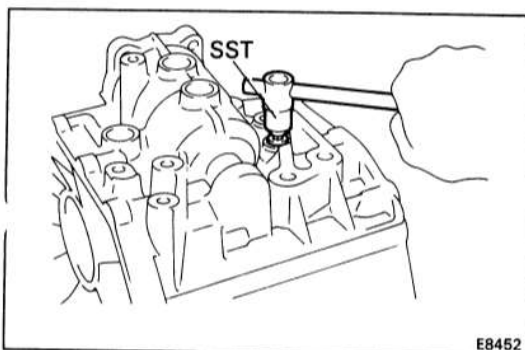


- (b) Using SST, drive in a new oil seal.

SST 09201-60011

Drive in depth: 33 mm (1.30 in.)

- (c) Coat the lip of oil seal with MP grease.

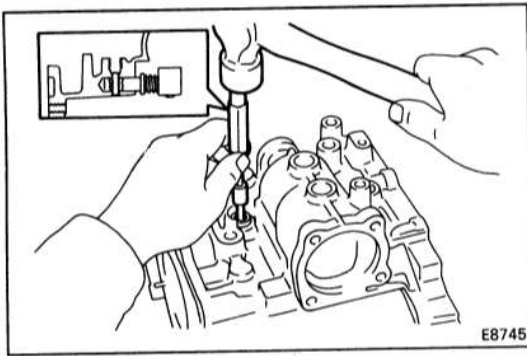


9. IF NECESSARY, REPLACE REVERSE RESTRICT PIN

- (a) Using SST, remove the screw plug.

SST 09313-30021

- (b) Using a pin punch and hammer, drive out the slotted spring pin.



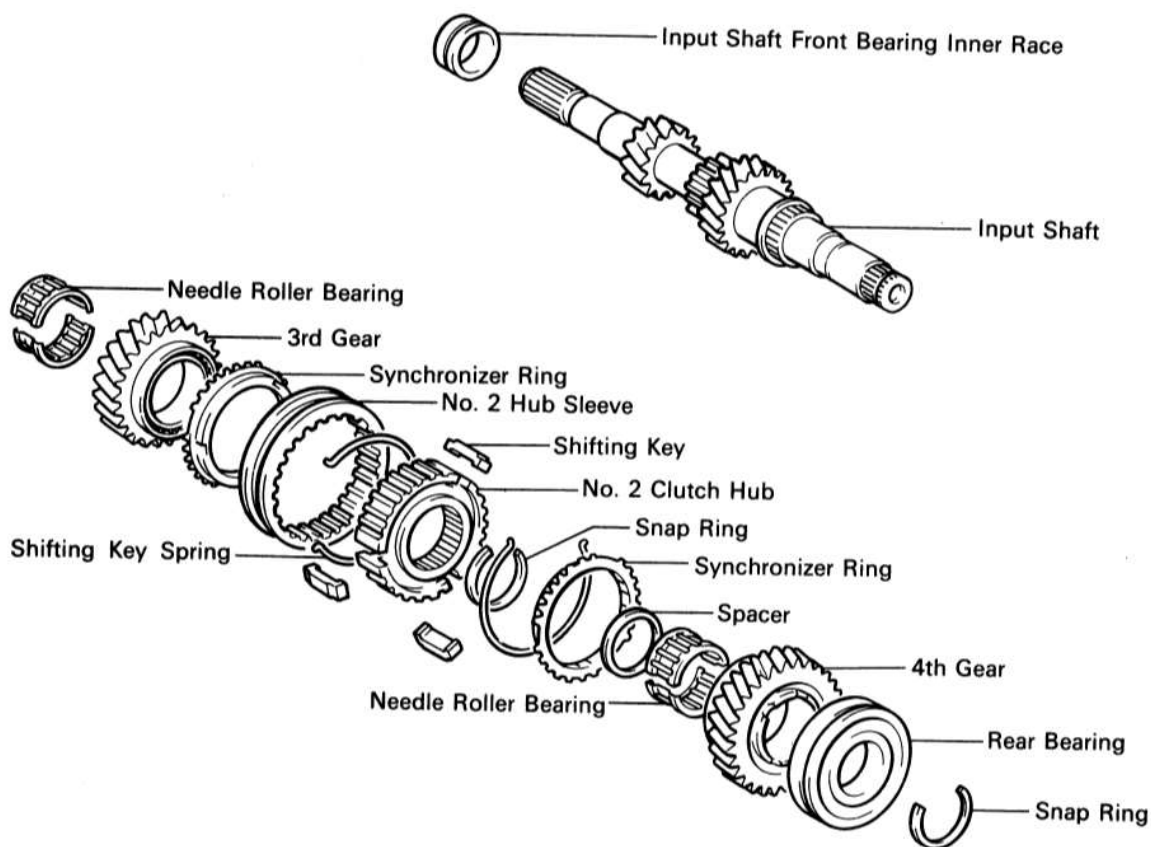
- (c) Replace the reverse restrict pin.
- (d) Using a pin punch and hammer, drive in the slotted spring pin.
- (e) Apply liquid sealant to the plug threads.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

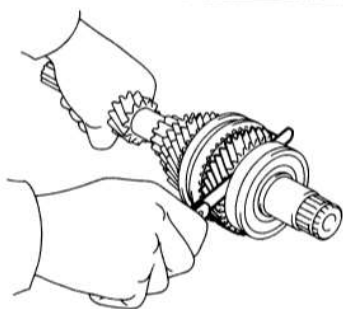
- (f) Using SST, install the screw plug.
SST 09313-30021

COMPONENT PARTS

Input Shaft Assembly



E6991



E7984

DISASSEMBLY OF INPUT SHAFT ASSEMBLY

1. MEASURE THIRD AND FOURTH GEAR THRUST CLEARANCE

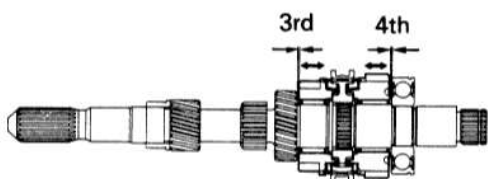
Using a feeler gauge, measure the thrust clearance.

Standard clearance:

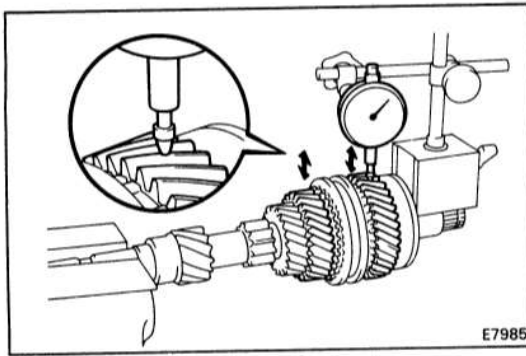
3rd gear	0.10 – 0.35 mm (0.0039 – 0.0138 in.)
4th gear	0.10 – 0.55 mm (0.0039 – 0.0217 in.)

Maximum clearance:

3rd gear	0.40 mm (0.0157 in.)
4th gear	0.60 mm (0.0236 in.)



E6330



2. CHECK OIL CLEARANCE OF THIRD AND FOURTH GEAR

Using dial indicator, measure the oil clearance between the gear and shaft.

Standard clearance:

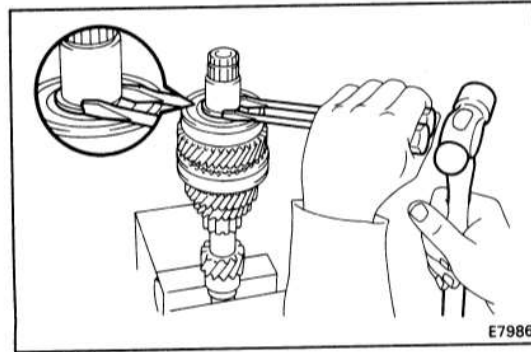
3rd gear 0.009 – 0.053 mm
(0.0004 – 0.0020 in.)

4th gear 0.009 – 0.051 mm
(0.0004 – 0.0020 in.)

Maximum clearance:

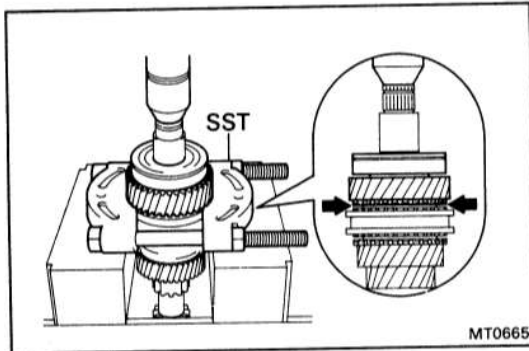
3rd and 4th gear 0.070 mm (0.0028 in.)

If clearance exceeds the limit, replace the gear, needle roller bearing or shaft.



3. REMOVE SNAP RING

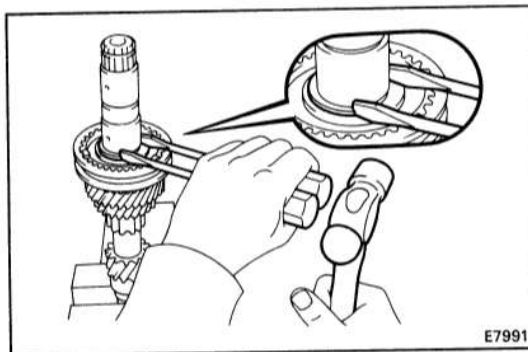
Using two screwdrivers and a hammer, tap out the snap ring



4. REMOVE RADIAL BALL BEARING AND FOURTH GEAR

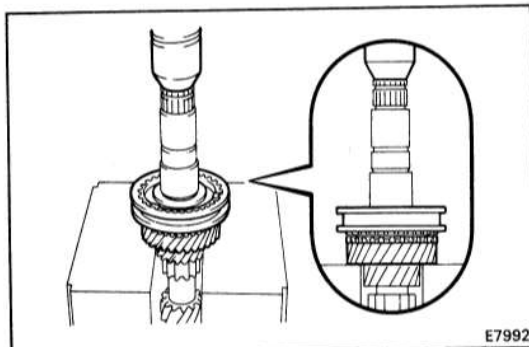
Using SST and a press, remove the radial ball bearing.
SST 09950-00020

5. REMOVE NEEDLE ROLLER BEARINGS, SPACER AND SYNCHRONIZER RING



6. REMOVE SNAP RING

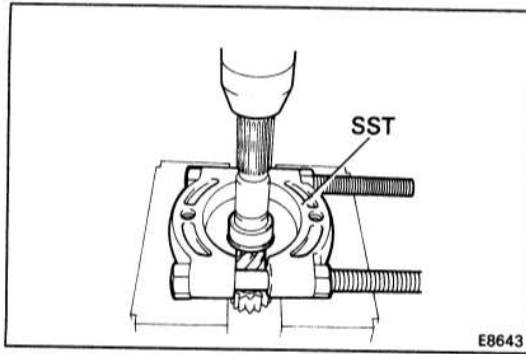
Using two screwdrivers and a hammer, tap out the snap ring.



7. REMOVE NO. 2 CLUTCH HUB ASSEMBLY, SYNCHRONIZER RING AND THIRD GEAR

Using a press, remove No. 2 hub sleeve, 3rd gear, synchronizer ring and needle roller bearings.

8. REMOVE NEEDLE ROLLER BEARING



9. REMOVE INPUT SHAFT FRONT BEARING INNER RACE

Using SST and a press, remove the inner race.
SST 09950-00020

INSPECTION OF INPUT SHAFT COMPONENT PARTS

1. INSPECT SYNCHRONIZER RINGS

- Check for wear or damage.
- Turn the ring and push it in to check the braking action.

- Measure the clearance between the synchronizer ring back and the gear spline end.

Minimum clearance: 0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer ring.

2. MEASURE CLEARANCE OF NO. 2 SHIFT FORK AND HUB SLEEVE

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance: 1.0 mm (0.039 in.)

If the clearance exceeds the limit, replace the shift fork or hub sleeve.

3. INSPECT INPUT SHAFT

- Check the input shaft for wear or damage.
- Using a micrometer measure the outer diameter of the input shaft journal surface.

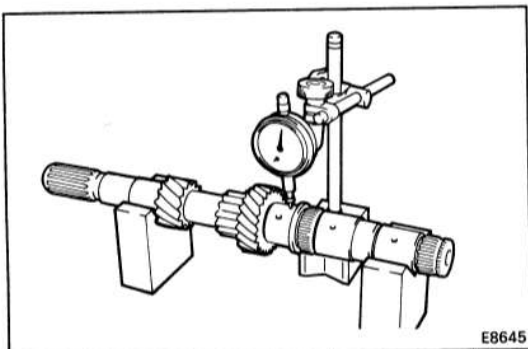
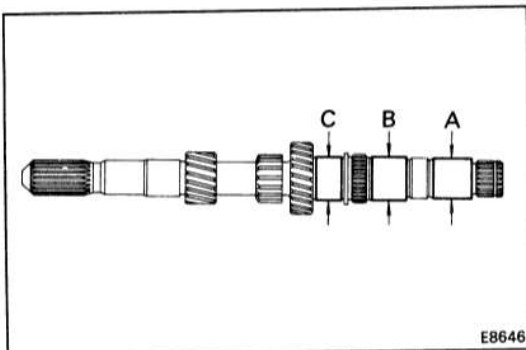
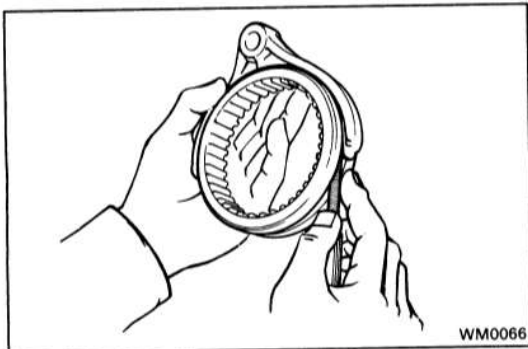
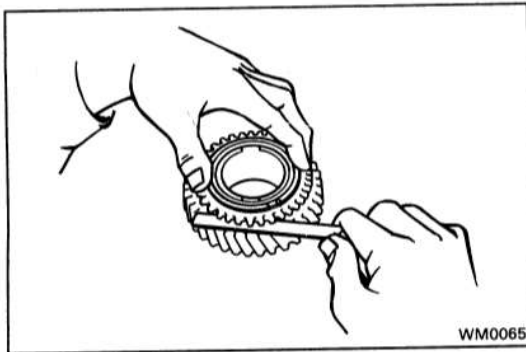
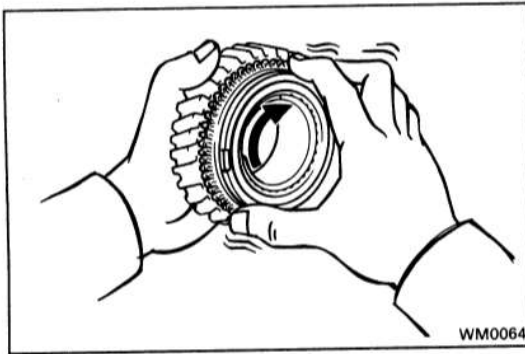
Minimum outer diameter:

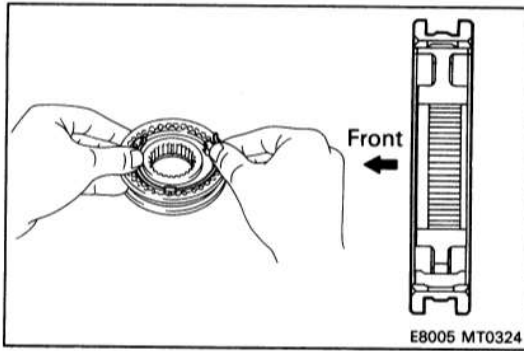
Part A 32.930 mm (1.2965 in.)

B and C 35.950 mm (1.4154 in.)

- Using a dial indicator, check the shaft runout.

Maximum runout: 0.05 mm (0.0020 in.)





ASSEMBLY OF INPUT SHAFT ASSEMBLY

(See page MT-73)

HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

1. INSERT NO. 2 CLUTCH HUB INTO HUB SLEEVE

- Install the clutch hub and shifting keys to the hub sleeve.
- Install the shifting key springs under the shifting keys.

CAUTION: Install the shifting key springs positioned so that their end gaps are not in line.

2. INSTALL NEEDLE ROLLER BEARING, THIRD GEAR, SYNCHRONIZER RING AND NO. 2 HUB SLEEVE ASSEMBLY TO INPUT SHIFT

- Apply MP grease to the needle roller bearings.
- Install the 3rd gear.
- Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
- Using SST and a press, install the 3rd gear and No. 2 hub sleeve.

SST 09316-60010 (09316-00010, 09316-00050)

3. INSTALL SNAP RING

Select a snap ring that will allow minimum axial play and install it on the shaft.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
H	2.30 (0.0906)	M	2.50 (0.0984)
J	2.35 (0.0925)	N	2.55 (0.1004)
K	2.40 (0.0945)	P	2.60 (0.1024)
L	2.45 (0.0965)		

4. MEASURE THIRD GEAR THRUST CLEARANCE

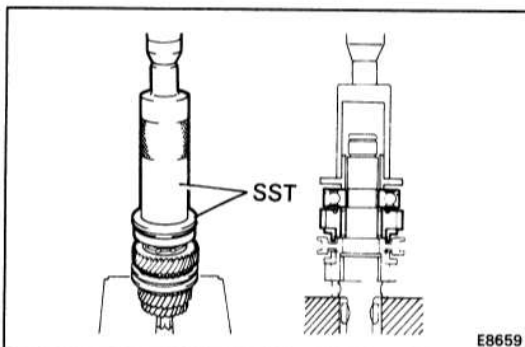
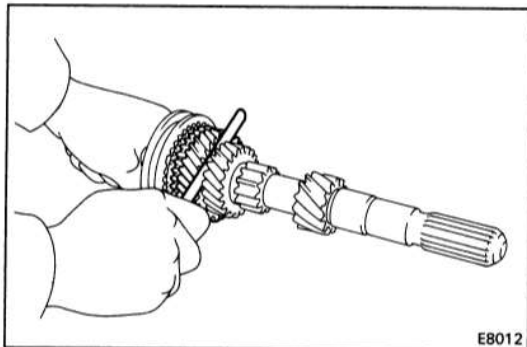
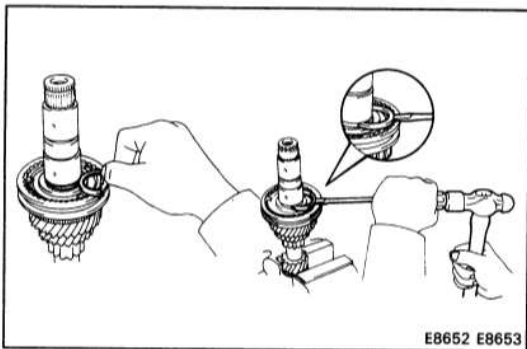
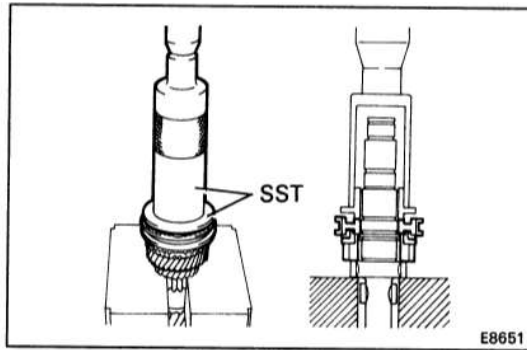
Using a feeler gauge, measure the 3rd gear thrust clearance.

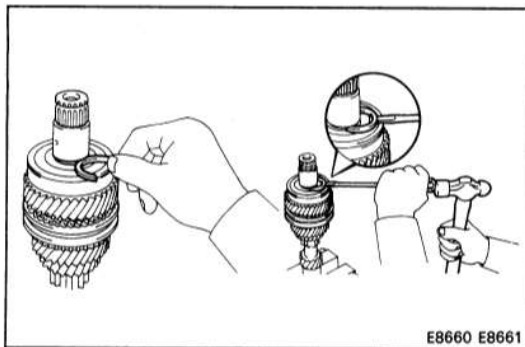
Standard clearance: 0.10 – 0.35 mm
(0.0039 – 0.0138 in.)

5. INSTALL SPACER, SYNCHRONIZER RING, NEEDLE ROLLER BEARINGS, FOURTH GEAR AND RADIAL BALL BEARING

- Install the spacer.
- Apply MP grease to the needle roller bearings.
- Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
- Install the 4th gear.
- Using SST and a press, install the radial ball bearing.

SST 09316-60010 (09316-00010, 09316-00020)

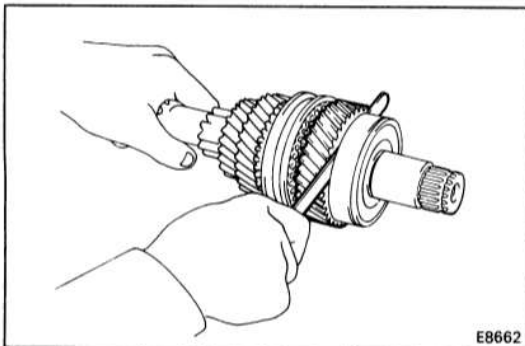




6. INSTALL SNAP RING

Select a snap ring that will allow minimum axial play and install it on the shaft.

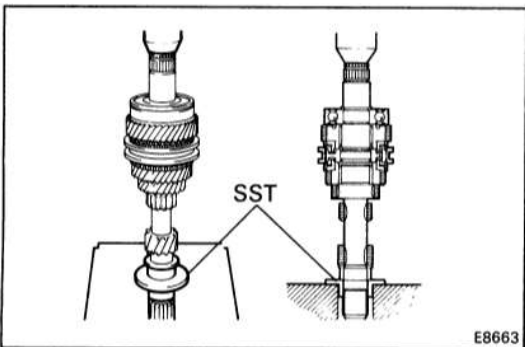
Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
1	2.35 (0.0925)	5	2.55 (0.1004)
2	2.40 (0.0945)	6	2.60 (0.1024)
3	2.45 (0.0965)	7	2.65 (0.1043)
4	2.50 (0.0984)	8	2.70 (0.1063)



7. MEASURE FOURTH GEAR THRUST CLEARANCE

Using a feeler gauge, measure the 4th gear thrust clearance.

Standard clearance: 0.10 – 0.55 mm
(0.0039 – 0.0217 in.)

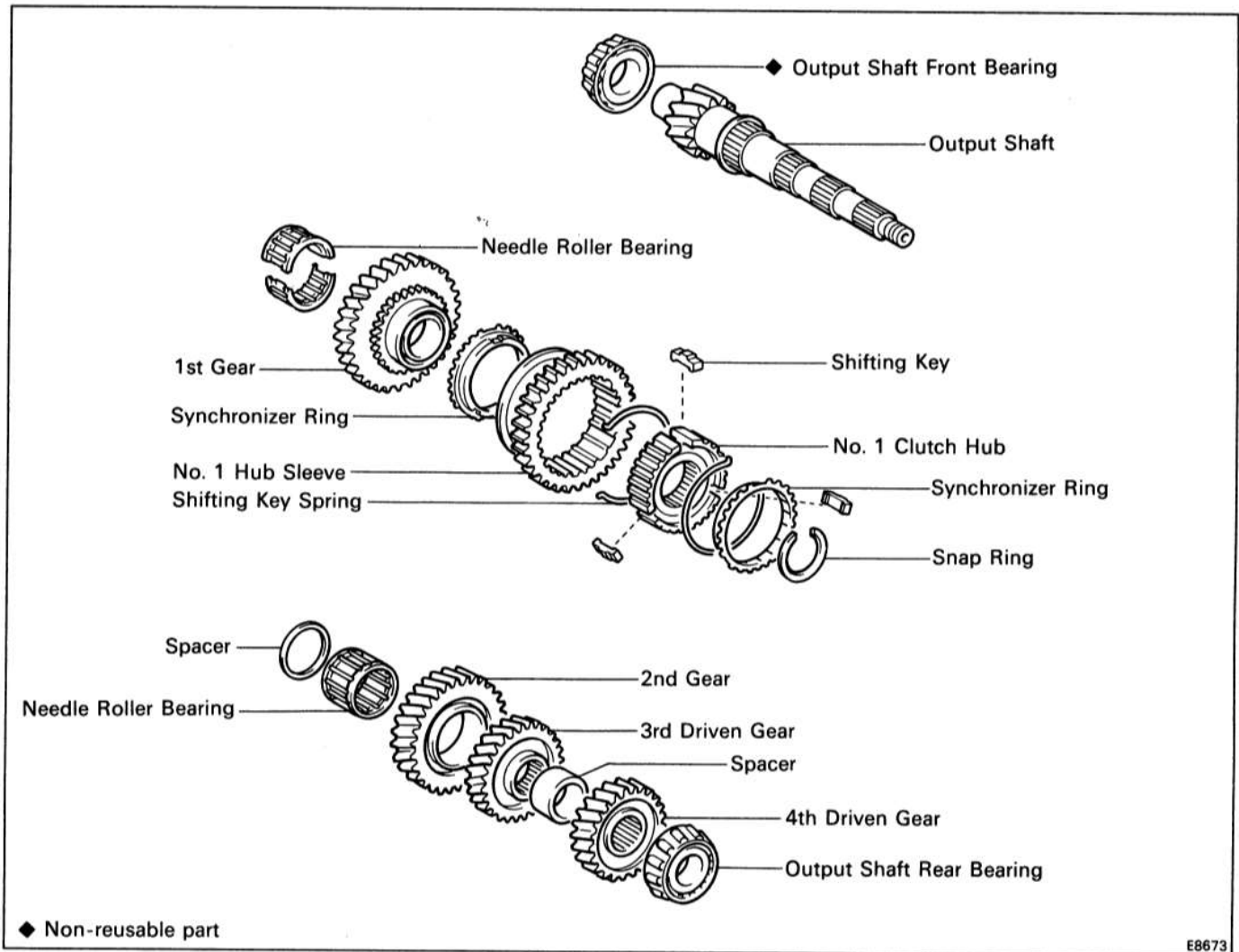


8. INSTALL INPUT SHAFT FRONT BEARING INNER RACE

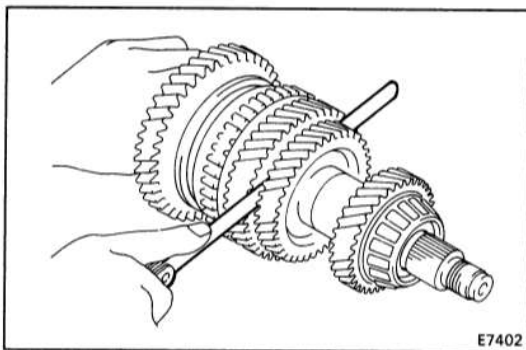
Using SST and a press, install the input shaft front bearing inner race.

SST 09316-60010 (09316-00020)

Output Shaft Assembly



E8673



E7402

DISASSEMBLY OF OUTPUT SHAFT ASSEMBLY

1. MEASURE FIRST AND SECOND GEAR THRUST CLEARANCE

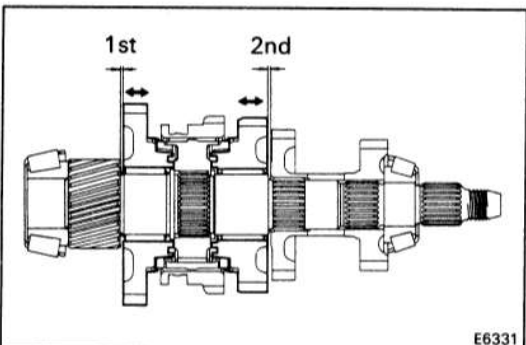
Using a feeler gauge, measure the thrust clearance.

Standard clearance:

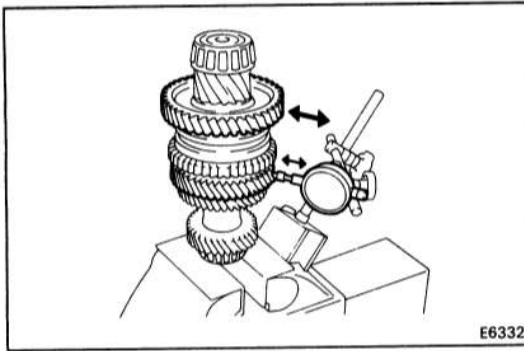
1st gear	0.10 – 0.35 mm (0.0039 – 0.0138 in.)
2nd gear	0.10 – 0.45 mm (0.0039 – 0.0177 in.)

Maximum clearance:

1st gear	0.40 mm (0.0157 in.)
2nd gear	0.50 mm (0.0197 in.)



E6331



2. CHECK OIL CLEARANCE OF FIRST AND SECOND GEAR

Using dial indicator, measure the oil clearance between the gear and shaft.

Standard clearance:

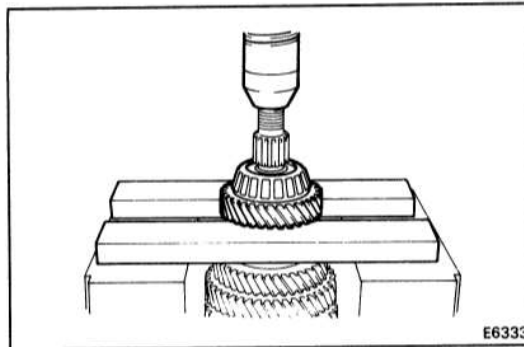
1st gear 0.009 – 0.051 mm
(0.0004 – 0.0020 in.)

2nd gear 0.009 – 0.053 mm
(0.0004 – 0.0020 in.)

Maximum clearance:

1st and 2nd gear 0.070 mm (0.0028 in.)

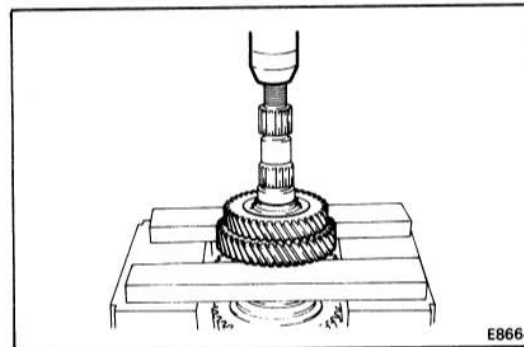
If the clearance exceeds the limit, replace the gear, needle roller bearing or shaft.



3. REMOVE OUTPUT SHAFT REAR BEARING, FOURTH DRIVEN GEAR AND SPACER

(a) Using a press, remove the bearing and 4th driven gear.

(b) Remove the spacer.



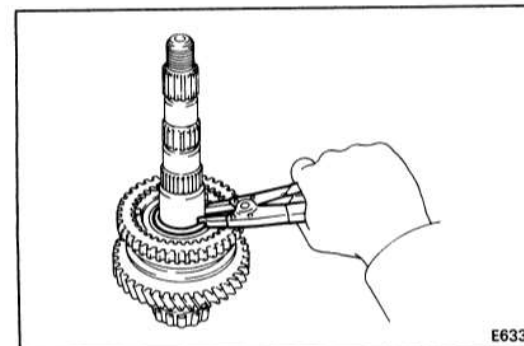
4. REMOVE THIRD DRIVEN GEAR AND SECOND GEAR

Using a press, remove the 3rd driven gear and 2nd gear.

5. REMOVE NEEDLE ROLLER BEARINGS, SPACER AND SYNCHRONIZER RING

6. REMOVE SNAP RING

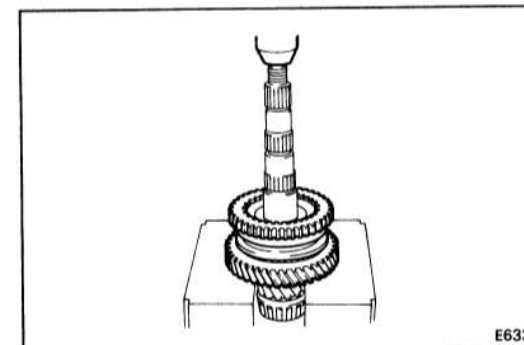
Using snap ring pliers, remove the snap ring.

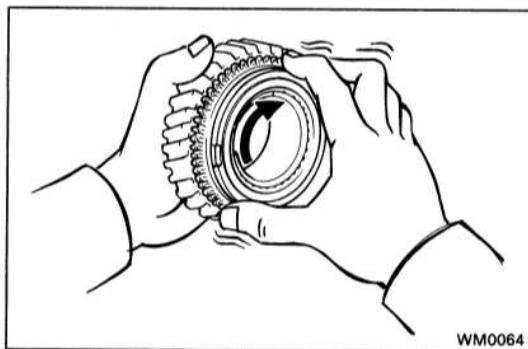


7. REMOVE NO. 1 HUB SLEEVE ASSEMBLY AND FIRST GEAR

Using a press, remove No. 1 hub sleeve and 1st gear.

8. REMOVE SYNCHRONIZER RING AND NEEDLE ROLLER BEARING





INSPECTION OF OUTPUT SHAFT COMPONENT PARTS

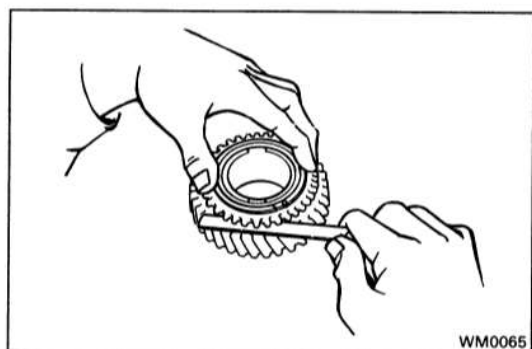
1. INSPECT SYNCHRONIZER RINGS

- (a) Check for wear or damage.
- (b) Turn the ring and push it in to check the braking action.

- (c) Measure the clearance between the synchronizer ring back and the gear spline end.

Maximum clearance: 0.6 mm (0.024 in.)

If the clearance is less than the limit, replace the synchronizer ring.

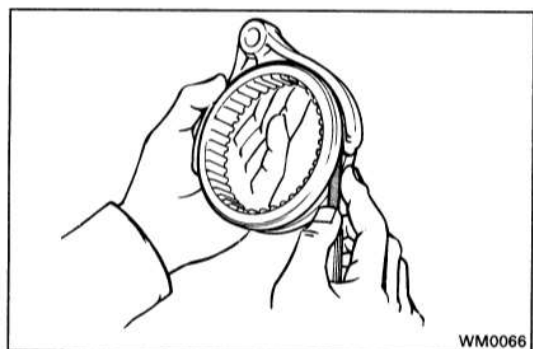


2. MEASURE CLEARANCE OF NO. 1 SHIFT FORK AND HUB SLEEVE

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance: 1.0 mm (0.039 in.)

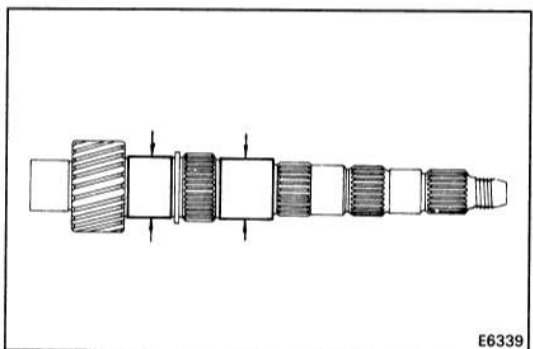
If the clearance exceeds the limit, replace the shift fork or hub sleeve.



3. INSPECT OUTPUT SHAFT

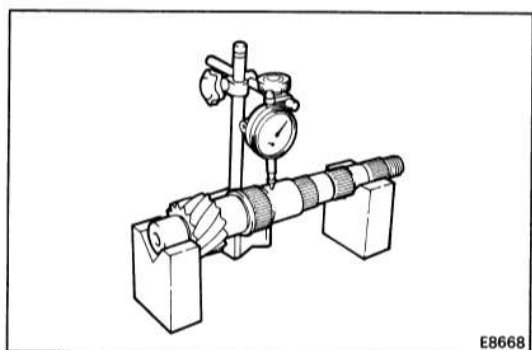
- (a) Check the output shaft for wear or damage.
- (b) Using a micrometer, measure the outer diameter of the output shaft journal surface.

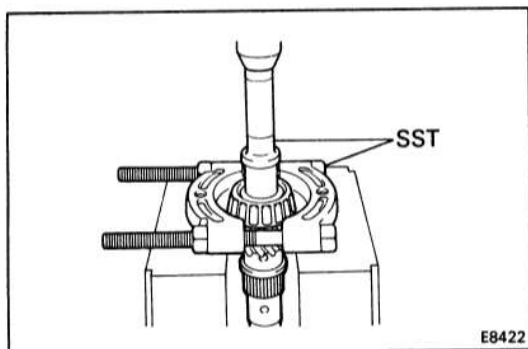
Minimum outer diameter: 38.950 mm (1.5335 in.)



- (c) Using a dial indicator, check the shaft runout.

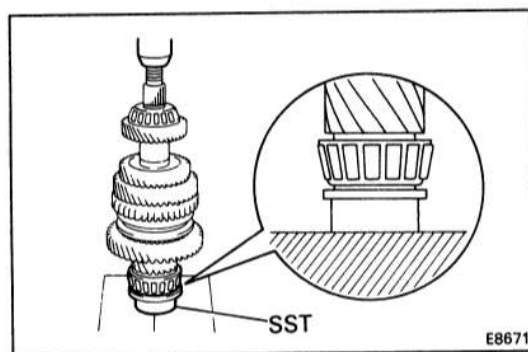
Maximum runout: 0.06 mm (0.0024 in.)



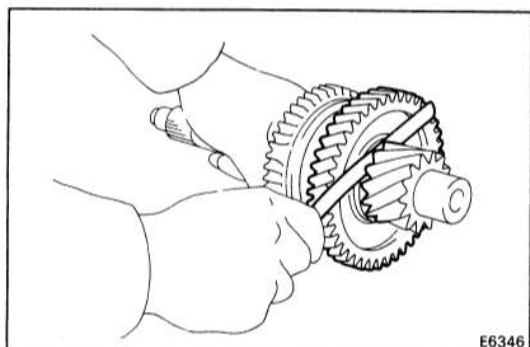
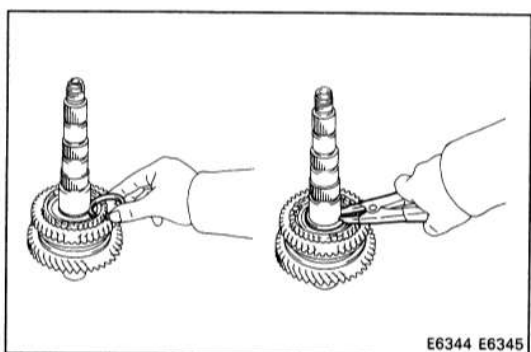
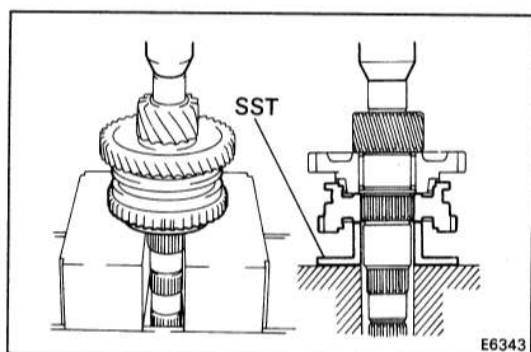
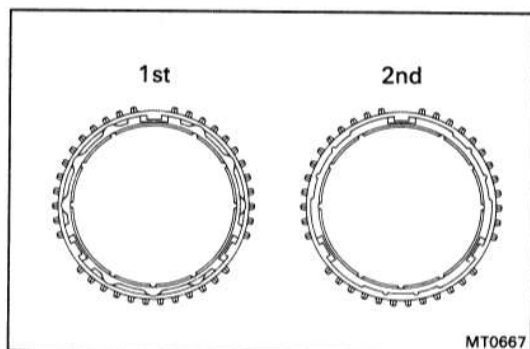
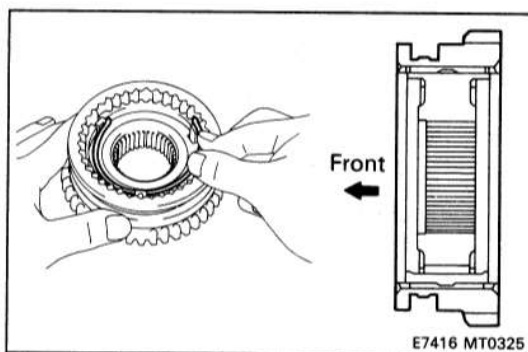


4. IF NECESSARY, REPLACE OUTPUT SHAFT FRONT BEARING

(a) Using SST and a press, remove the bearing.
SST 09307-12010, 09950-00020



(b) Using SST and a press, install the new bearing.
SST 09316-60010 (09316-00070)



ASSEMBLY OF OUTPUT SHAFT ASSEMBLY

(See page MT-79)

HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

1. INSERT NO. 1 CLUTCH HUB INTO HUB SLEEVE

- Install the clutch hub and shifting keys to the hub sleeve.
- Install the shifting key springs under the shifting keys.

NOTICE: Install the key springs positioned so that their end gaps are not in line.

2. INSTALL NEEDLE ROLLER BEARING, FIRST GEAR, SYNCHRONIZER RING AND NO. 1 HUB SLEEVE TO OUTPUT SHAFT

- Apply MP grease to the needle roller bearings.
- Install the 1st gear.
- Place the synchronizer ring on the gear and align the ring slots with the shifting keys.

NOTICE: Don't exchange the 1st synchronizer ring and the 2nd synchronizer ring.

- Using SST and a press, install the 1st gear and No. 1 hub sleeve.

SST 09316-60010 (09316-00040)

3. INSTALL SNAP RING

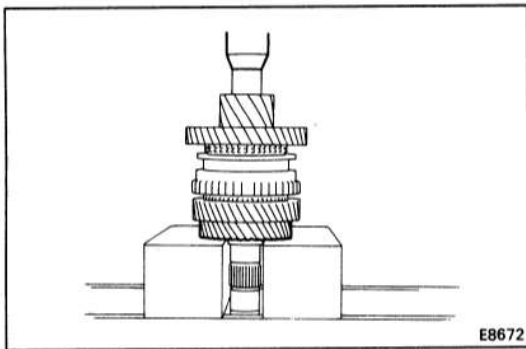
Select a snap ring that will allow minimum axial play and install it on the shaft.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
A	2.80 (0.1102)	E	3.00 (0.1181)
B	2.85 (0.1122)	F	3.05 (0.1201)
C	2.90 (0.1142)	G	3.10 (0.1220)
D	2.95 (0.1161)		

4. MEASURE FIRST GEAR THRUST CLEARANCE

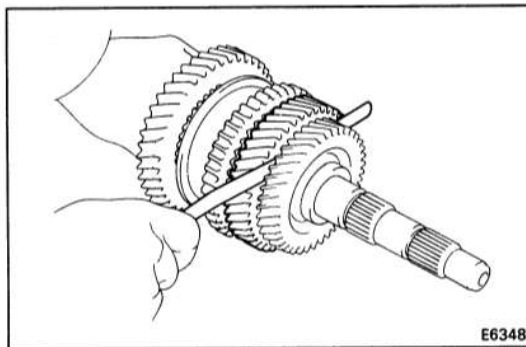
Using a feeler gauge, measure the 1st gear thrust clearance.

Standard clearance: 0.10 – 0.35 mm
(0.0039 – 0.0138 in.)



5. INSTALL SPACER, NEEDLE ROLLER BEARING, SYNCHRONIZER RING, SECOND GEAR AND THIRD DRIVEN GEAR

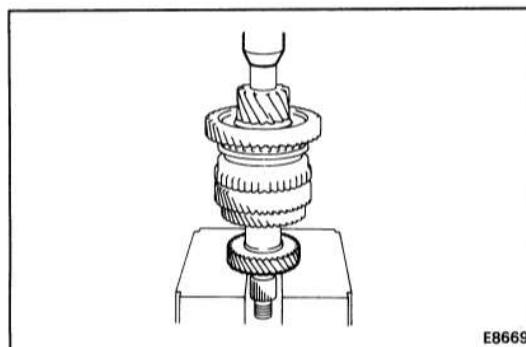
- (a) Install the spacer.
- (b) Apply MP grease to the needle roller bearing.
- (c) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
- (d) Install the 2nd gear.
- (e) Using a press, install the 3rd driven gear.



6. MEASURE SECOND GEAR THRUST CLEARANCE

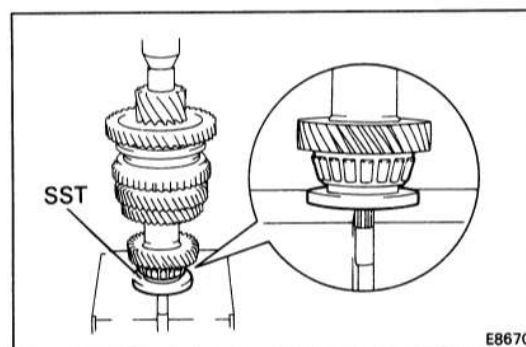
Using a feeler gauge, measure the 2nd gear thrust clearance.

Standard clearance: 0.10 – 0.45 mm
(0.0039 – 0.0177 in.)



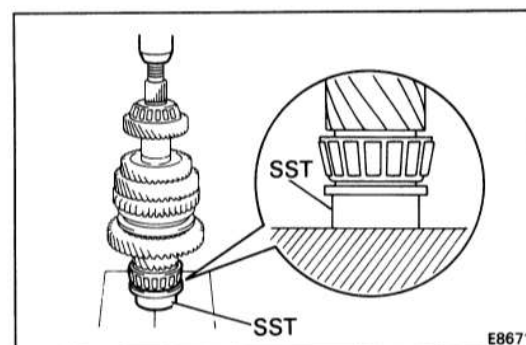
7. INSTALL SPACER AND FOURTH DRIVEN GEAR

- (a) Install the spacer.
- (b) Using a press, install the 4th driven gear.



8. INSTALL OUTPUT SHAFT REAR BEARING

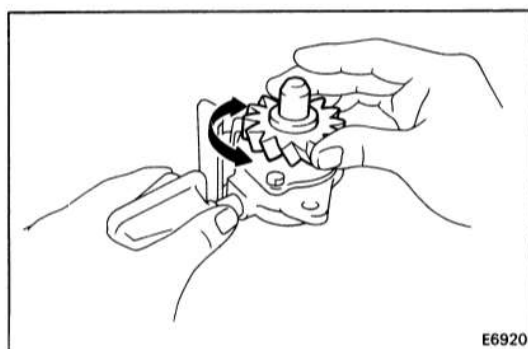
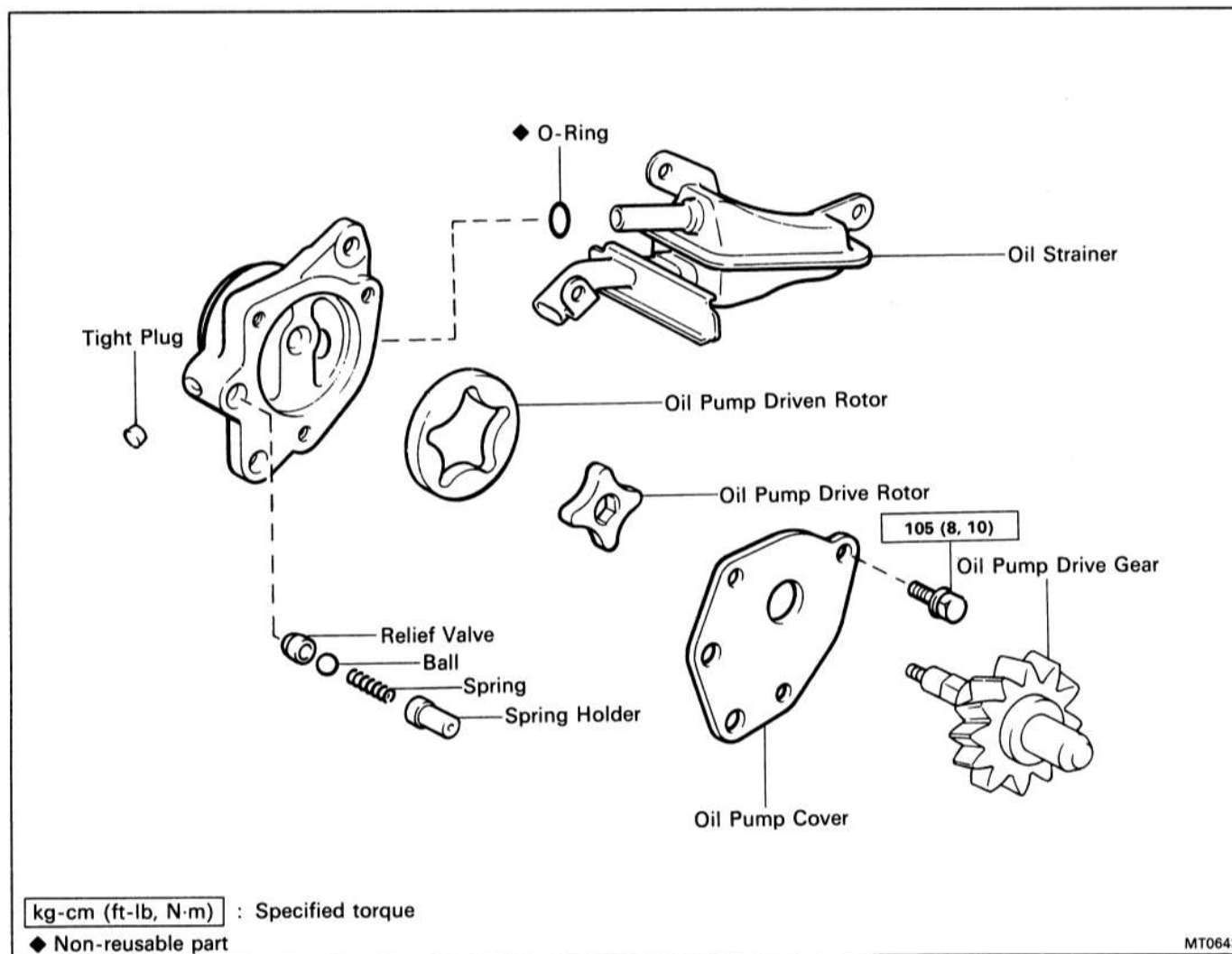
Using SST and a press, install the bearing.
SST 09506-30012



9. INSTALL OUTPUT SHAFT FRONT BEARING

Using SST and a press, install the bearing.
SST 09316-60010 (09316-00070)

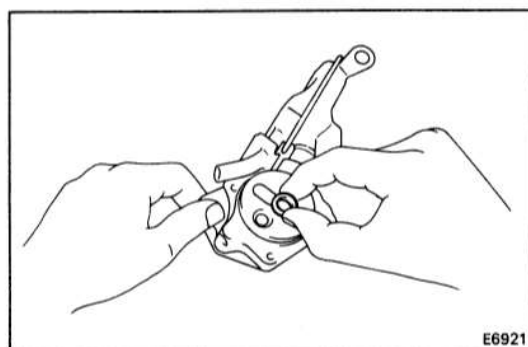
Oil Pump Assembly



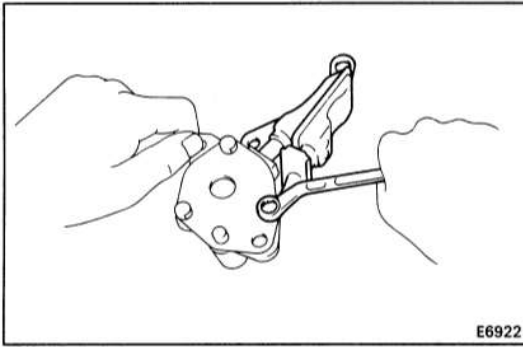
DISASSEMBLY OF OIL PUMP

1. CHECK OPERATION OF OIL PUMP

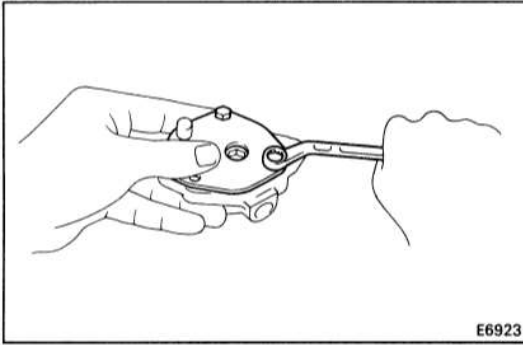
Install the oil pump drive gear to the drive rotor, check that the drive rotor turn smoothly.



2. REMOVE GASKET TO OIL PUMP CASE

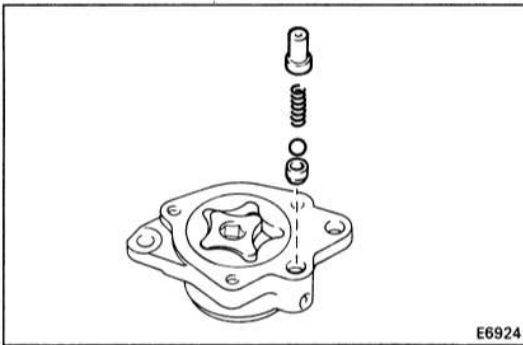


3. REMOVE BOLT AND OIL STRAINER

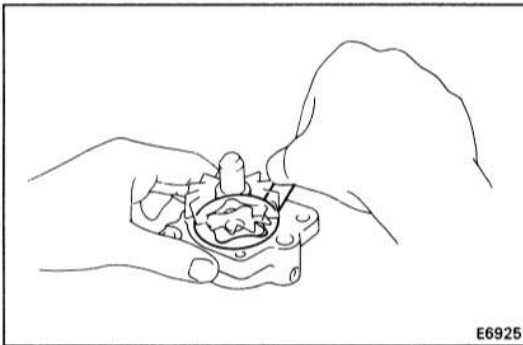


4. REMOVE OIL PUMP COVER

- (a) Hold the oil pump cover, remove the two bolts and a cover.



- (b) Remove the spring holder, spring, ball and relief valve seat.

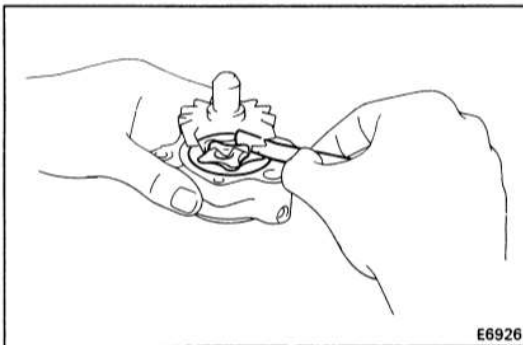


5. CHECK ROTOR BODY CLEARANCE

- (a) Install the oil pump drive gear to the drive rotor.
 (b) Using a feeler gauge, measure the body clearance between the drive rotor and oil pump case.

Standard clearance: 0.10 – 0.16 mm
 (0.004 – 0.006 in.)

Maximum clearance: 0.30 mm (0.012 in.)

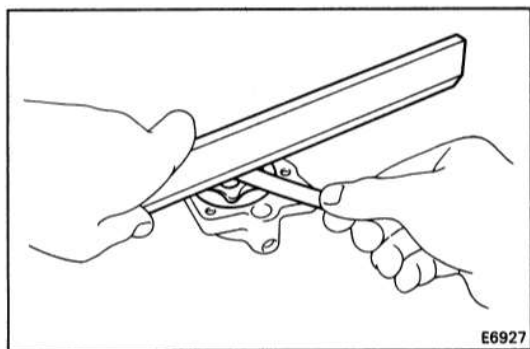


6. CHECK ROTOR TIP CLEARANCE

- (a) Install the oil pump drive gear to the drive rotor.
 (b) Using a feeler gauge, measure the tip clearance between the drive and driven rotors.

Standard clearance: 0.08 – 0.15 mm
 (0.003 – 0.006 in.)

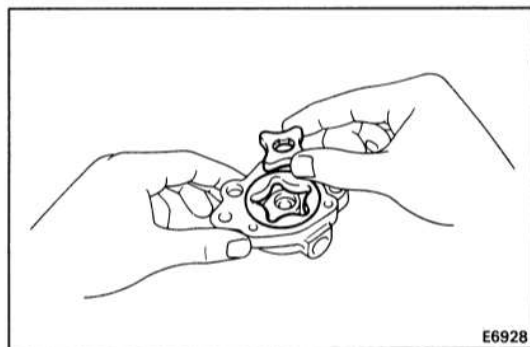
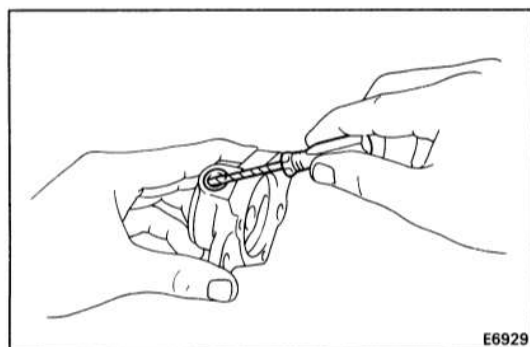
Maximum clearance: 0.30 mm (0.012 in.)

**7. CHECK SIDE CLEARANCE**

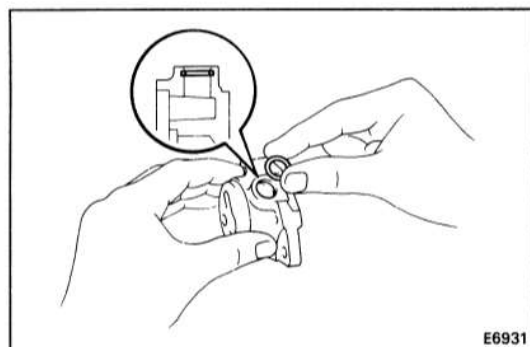
Using a precision straight edge and feeler gauge, measure the side clearance of both rotors.

Standard clearance: 0.03 – 0.08 mm
(0.001 – 0.003 in.)

Maximum clearance: 0.15 mm (0.006 in.)

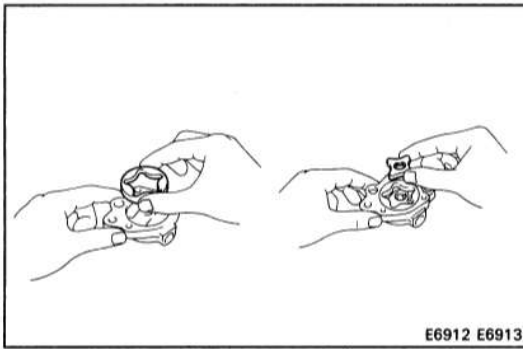
**8. REMOVE OIL PUMP DRIVE ROTOR AND DRIVEN ROTOR****9. IF NECESSARY, REPLACE O-RING**

(a) Using a screwdriver, remove the o-ring.



(b) Apply gear oil to the o-ring.

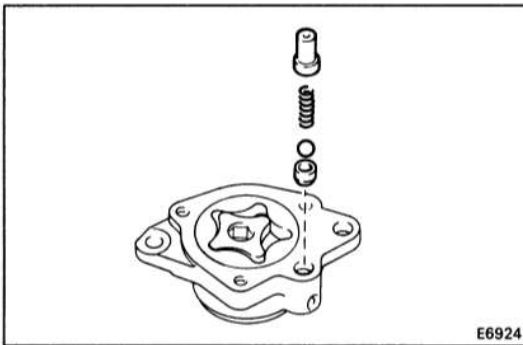
(c) Install the o-ring.



ASSEMBLY OF OIL PUMP

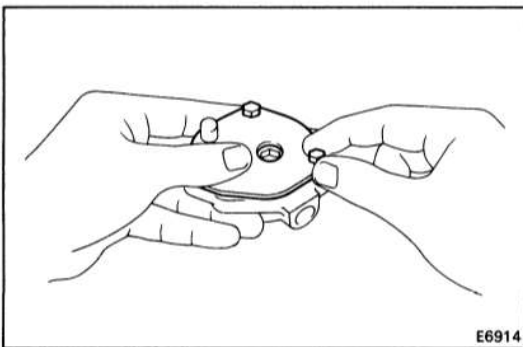
(See page MT-85)

1. INSTALL DRIVEN ROTOR AND DRIVE ROTOR

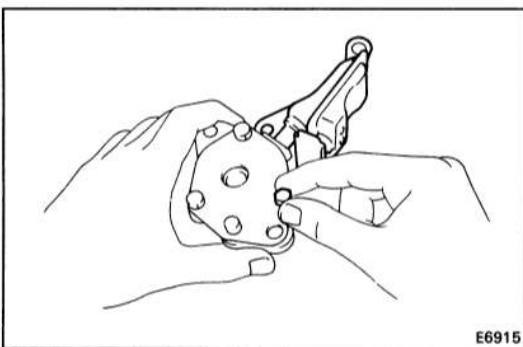


2. INSTALL OIL PUMP COVER

(a) Install the relief valve, ball, spring and spring holder to the oil pump case.

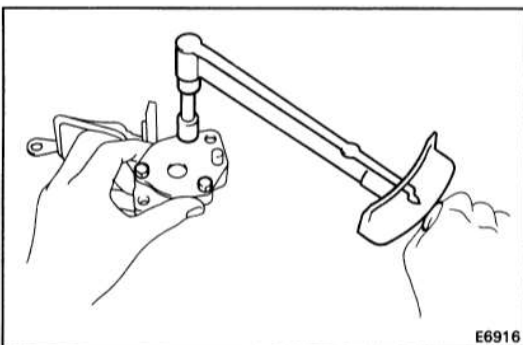


(b) Hold the oil pump cover, temporarily install the two bolts.



3. INSTALL OIL STRAINER

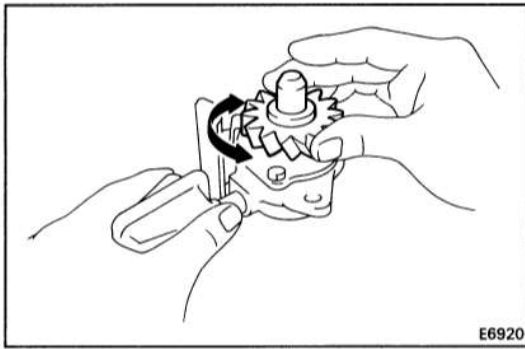
Install the oil strainer to the oil pump case, temporarily install the bolt.



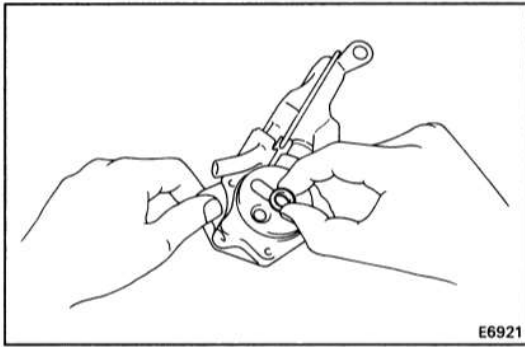
4. TORQUE OIL PUMP COVER BOLTS

Torque the three bolts evenly.

Torque: 105 kg-cm (8 ft-lb, 10 N·m)

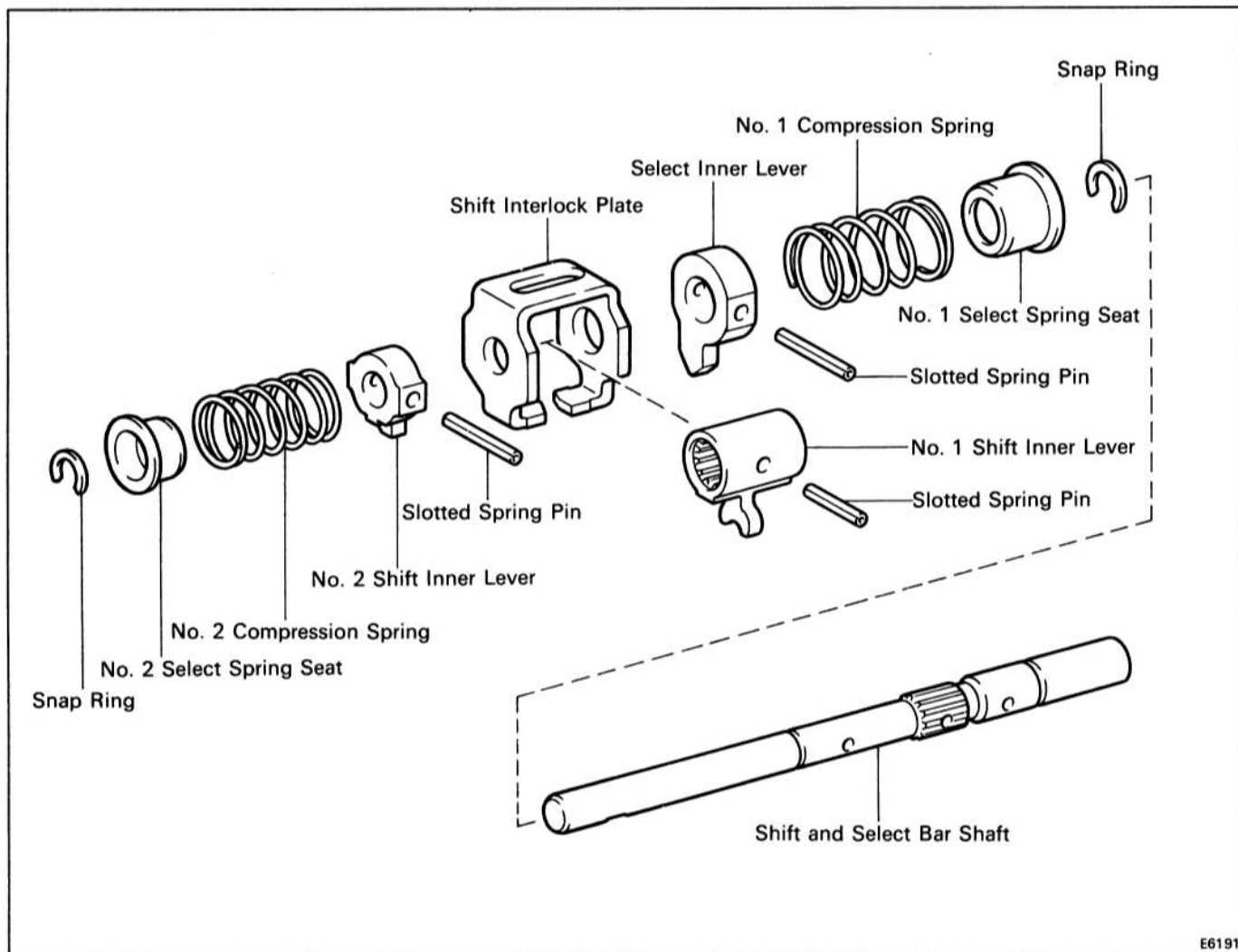
**5. CHECK OPERATION OF OIL PUMP**

Insert the oil pump drive gear to the drive rotor, check that the drive rotor turn smoothly.

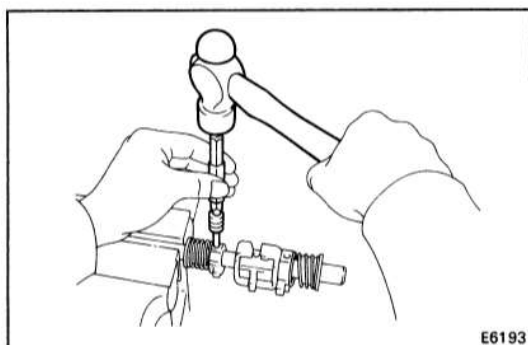
**6. INSTALL GASKET**

Install the new gasket to the oil pump case.

Shift and Select Lever Assembly



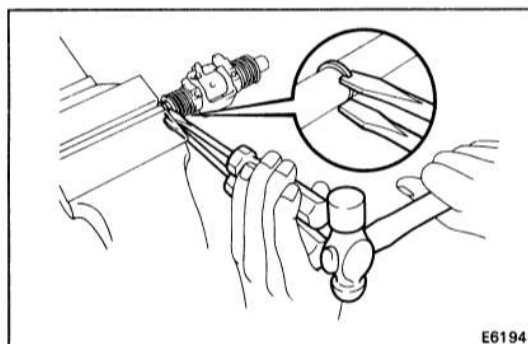
E6191



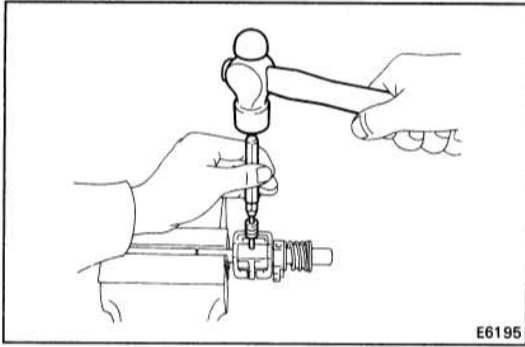
DISASSEMBLY OF SHIFT AND SELECT LEVER ASSEMBLY

1. REMOVE NO. 2 SHIFT INNER LEVER

- Using a pin punch and hammer, drive out the slotted spring pin.

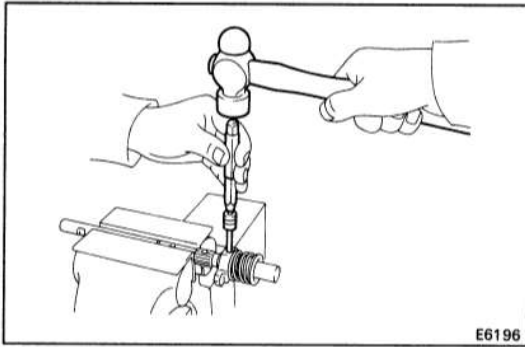


- Using two screwdrivers and a hammer, remove the snap ring.
- Remove the No. 2 select spring seat, No. 2 compression spring and No. 2 shift inner lever.



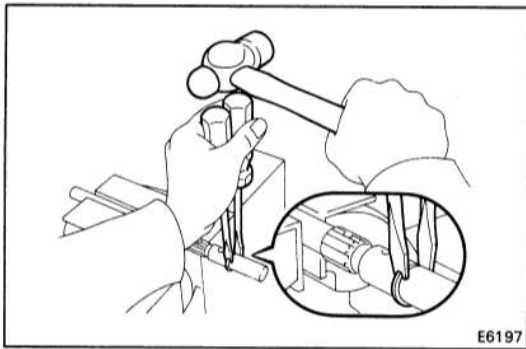
2. REMOVE SHIFT INTER PLATE AND NO. 1 SHIFT INNER LEVER

- (a) Using a pin punch and hammer, drive out the slotted spring pin.
- (b) Remove the shift inter plate and No. 1 shift inner lever.



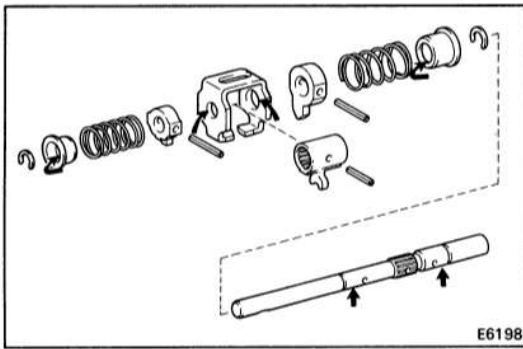
3. REMOVE SELECT INNER LEVER

- (a) Using a pin punch and hammer, drive out the slotted spring pin.
- (b) Remove the select inner lever, No. 1 compression spring and No. 1 select spring seat.



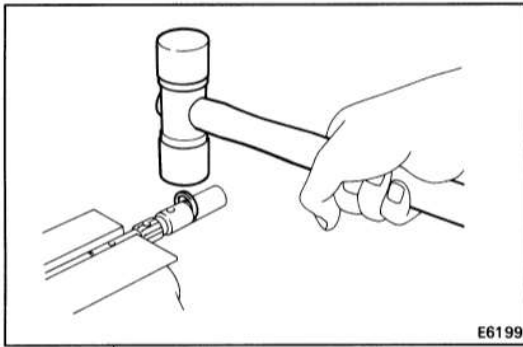
4. REMOVE SNAP RING

Using two screwdrivers and a hammer, remove the snap ring.



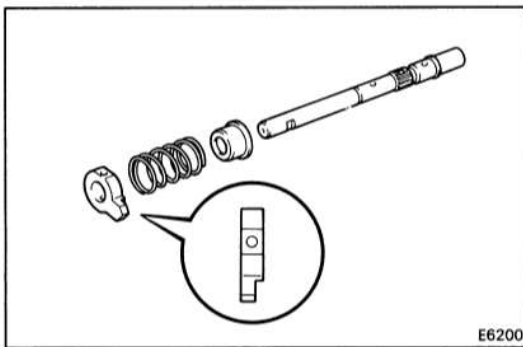
ASSEMBLY OF SHIFT AND SELECT LEVER ASSEMBLY

1. COAT SHAFT WITH MP GREASE, AS SHOWN



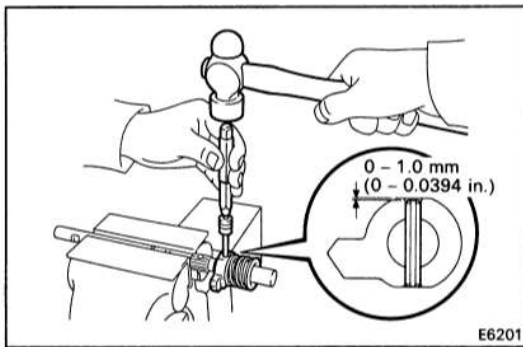
2. INSTALL SNAP RING

Using a plastic hammer, install the snap ring.

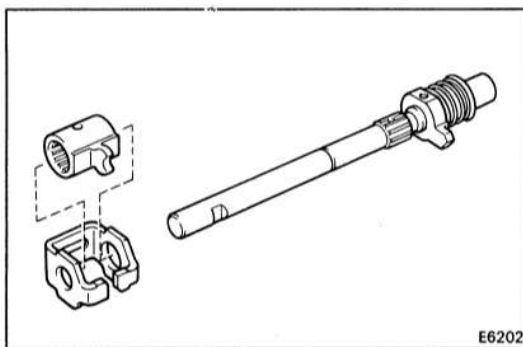


3. INSTALL SELECT INNER LEVER

- (a) Install the No. 1 select spring seat, No. 1 compression spring and select inner lever.

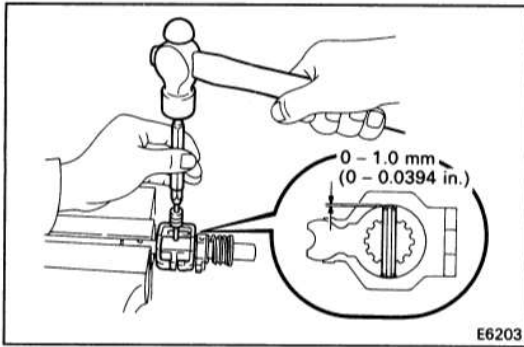


- (b) Using a pin punch hammer, drive in the slotted spring pin.

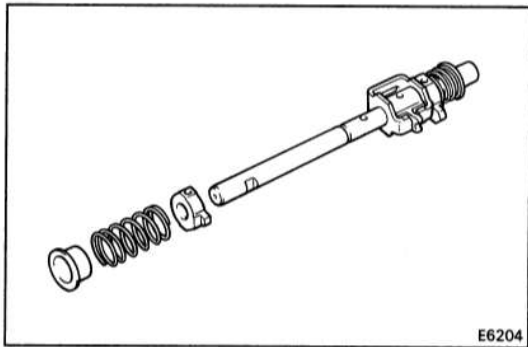


4. INSTALL SHIFT INTERLOCK PLATE AND NO. 1 SHIFT INNER LEVER

- (a) Install the shift interlock plate No. 1 shift inner lever.

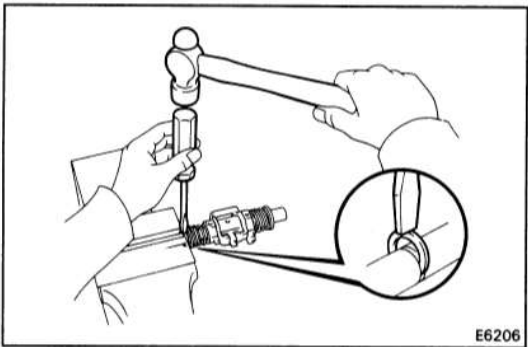


- (b) Using a pin punch and hammer, drive in the slotted spring pin.
- (c) Check that the shift interlock plate turn smoothly.

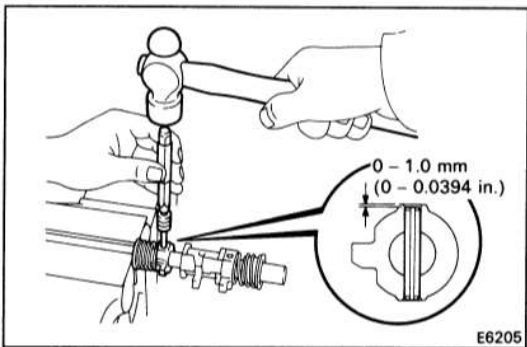


5. INSTALL NO. 2 SHIFT INNER LEVER

- (a) Install the No. 2 shift inner lever, No. 2 compression spring and No. 2 select spring seat.

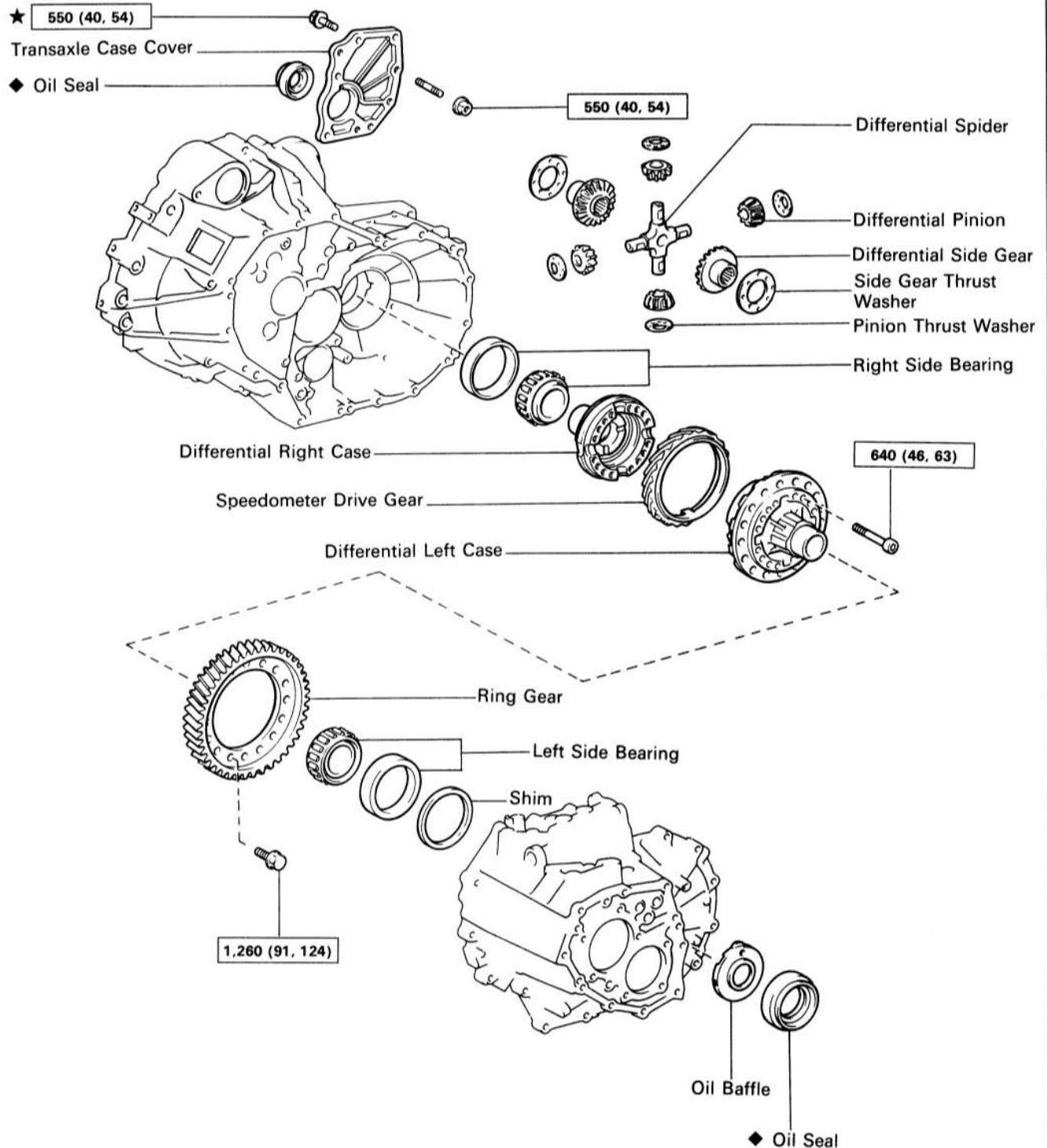


- (b) Using a screwdriver and hammer, install the snap ring.



- (c) Using a pin punch and hammer, drive in the slotted spring pin.

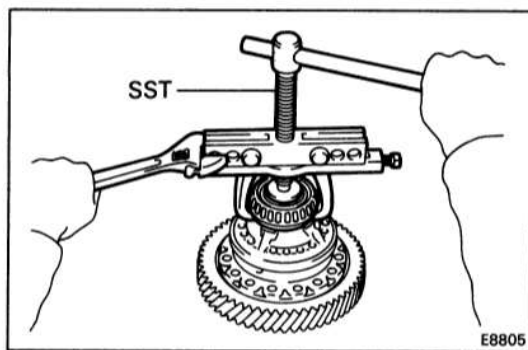
Differential



kg-cm (ft-lb, N·m) : Specified torque

◆ Non-reusable part

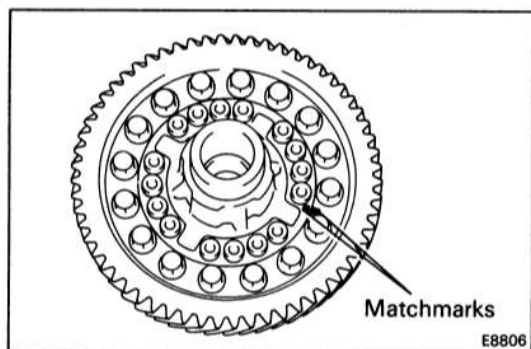
★ Precoated part



DISASSEMBLY OF DIFFERENTIAL CASE

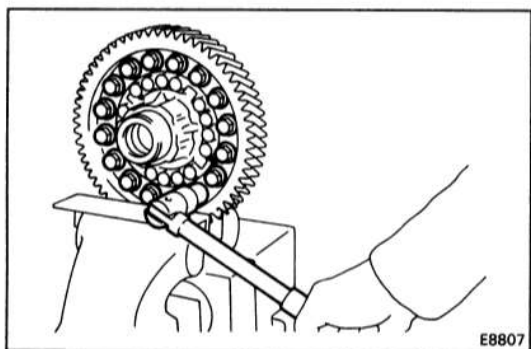
1. REMOVE SIDE BEARING

Using SST, remove the two side bearings.
SST 09950-20017

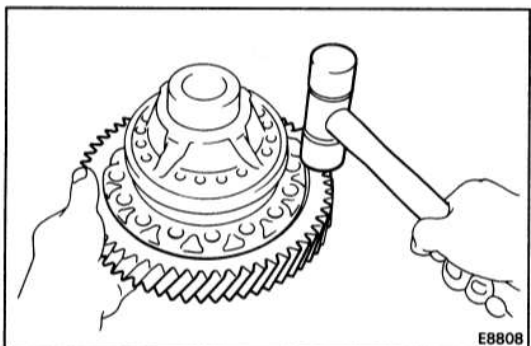


2. REMOVE RING GEAR

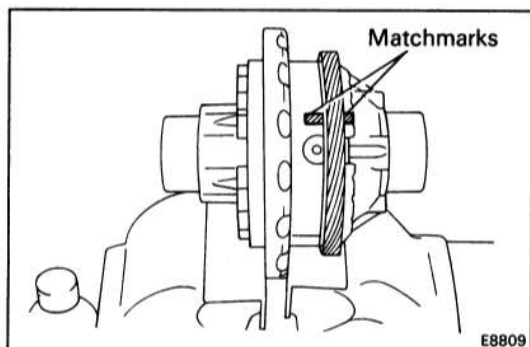
(a) Place the matchmarks on both the differential case and ring gear.



(b) Remove the sixteen bolts.

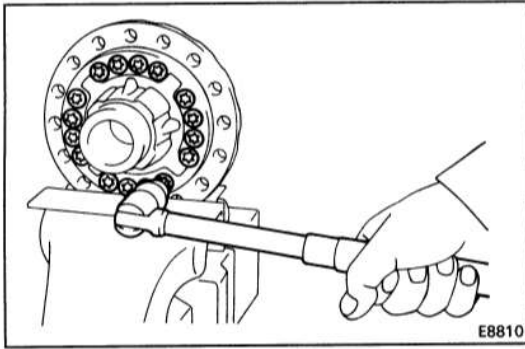


(c) Using a plastic hammer, tap out the ring gear.



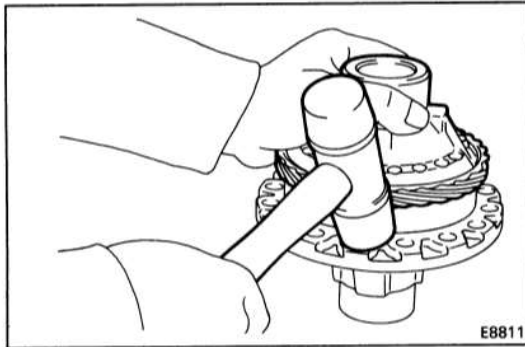
3. DISASSEMBLE OF DIFFERENTIAL CASE

(a) Place the matchmarks on the differential right and left case.



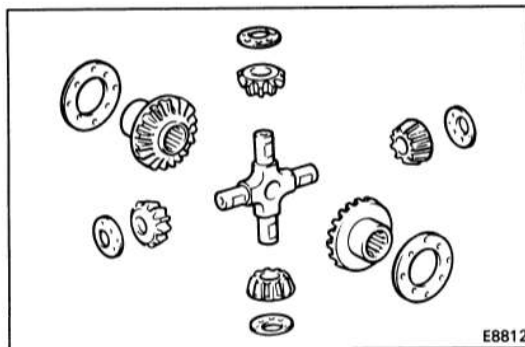
- (b) Using a torx wrench, remove the sixteen torx screws.

Torx wrench T50 09042-00040

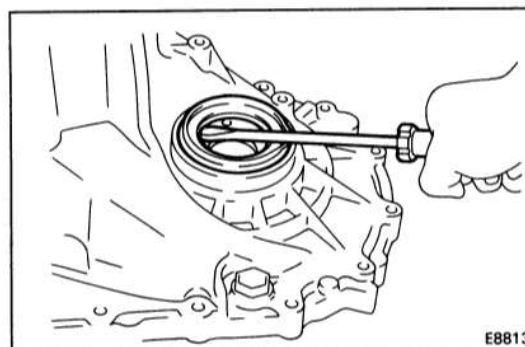


- (c) Using a plastic hammer, tap out the differential left case.

- (d) Remove the speedometer drive gear from the differential right case.

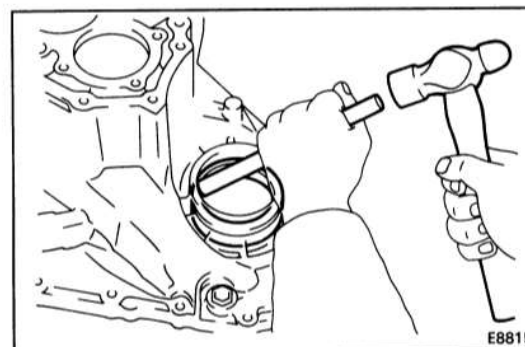


- (e) Remove the two differential side gears, two side thrust washers, differential spider, four differential pinions and four pinion washers from the differential left case.

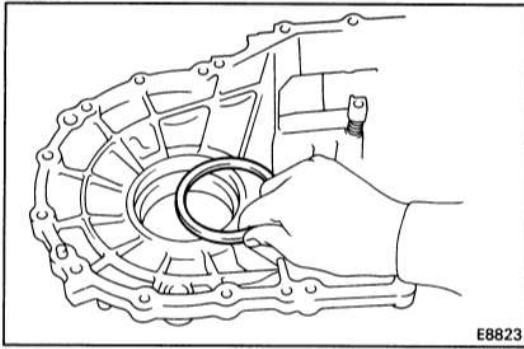


**4. (Transmission Case Side)
IF NECESSARY, REPLACE OIL SEAL AND TAPER
ROLLER BEARING OUTER RACE**

- (a) Using a screwdriver, remove the oil seal.
(b) Remove the transmission oil baffle.

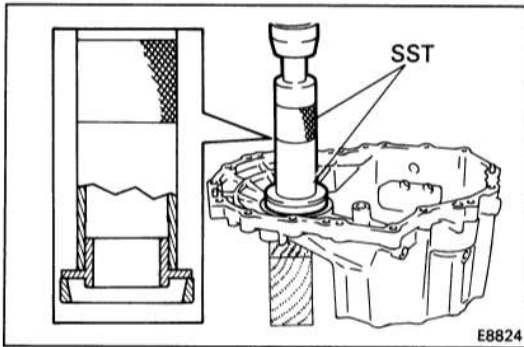


- (c) Using a brass bar and hammer, drive out the bearing outer race lightly and evenly.
(d) Remove the shim.



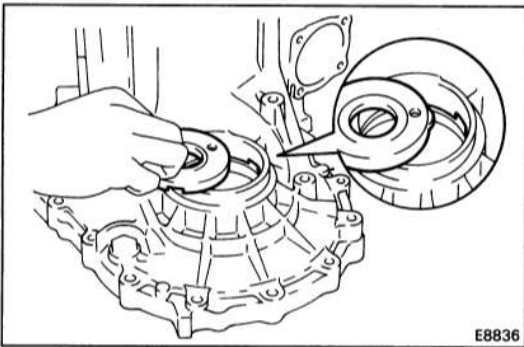
- (e) Install the shim.
(See page MT-94)

HINT: First select and install a shim of lesser thickness than before.



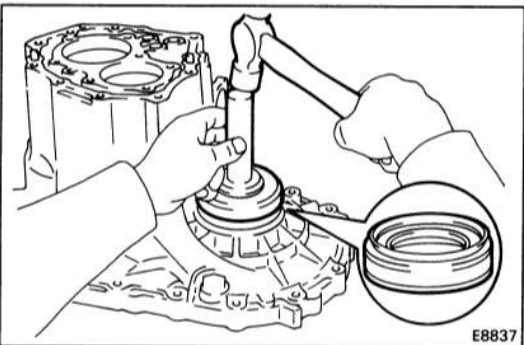
- (f) Using SST and a press, install the taper roller bearing outer race.

SST 09316-60010 (09316-00010, 09316-00040)



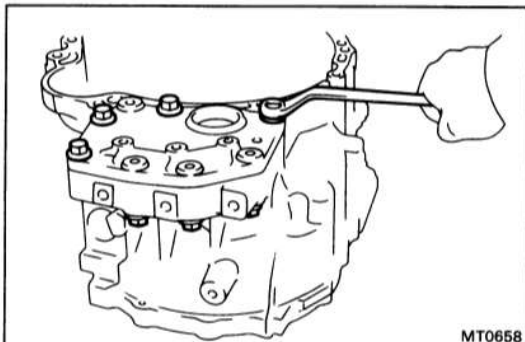
- (g) Install the transmission oil baffle.

HINT: Install the transmission oil baffle projection into the case side cutout.



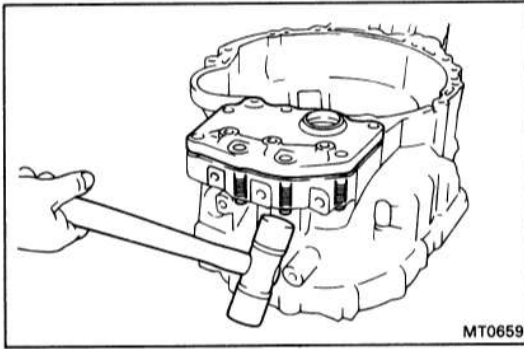
- (h) Using SST and a hammer, drive in a new oil seal.
SST 09223-15010

- (i) Coat the lip of oil seal with MP grease.

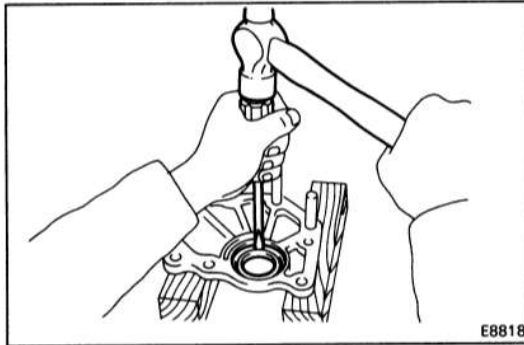


**5. (Transaxle Case Side)
IF NECESSARY, REPLACE OIL SEAL AND TAPER
ROLLER BEARING OUTER RACE**

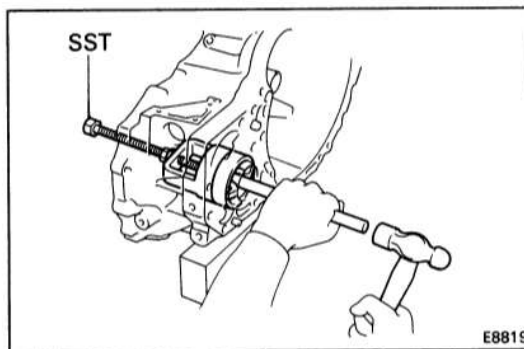
- (a) Remove the four bolts and three nuts.



- (b) Using a plastic hammer, tap the stud bolts and remove the transaxle case cover.

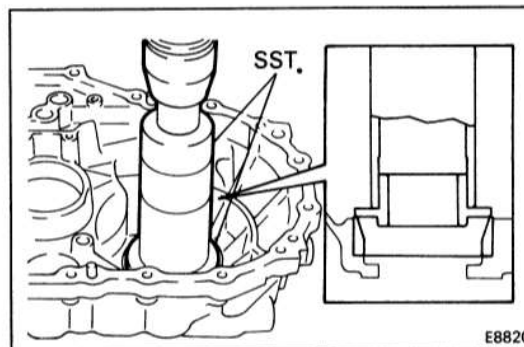


- (c) Using a screwdriver and hammer, drive out the oil seal.



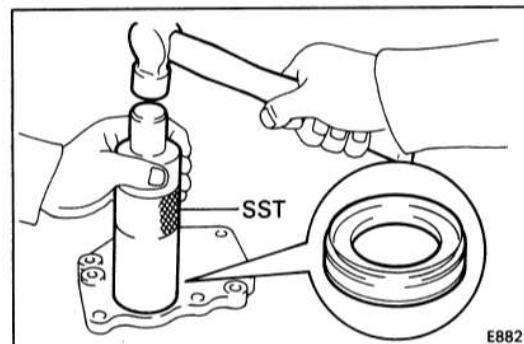
- (d) Using SST, brass bar and hammer, remove the taper roller bearing outer race.

SST 09612-65014 (09612-01020)



- (e) Using SST and a hammer, install the taper roller bearing.

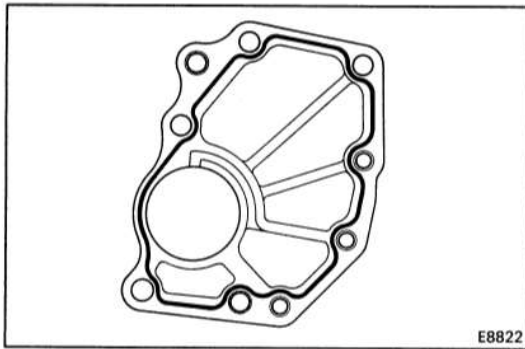
SST 09316-60010 (09316-00010, 09316-00040)



- (f) Using SST and a hammer, drive in a new oil seal.

SST 09316-60010 (09316-00010)

- (g) Coat the lip of oil seal with MP grease.



- (h) Remove any packing material and be careful not to drop oil on the contacting surfaces of the transaxle case or case cover.
- (i) Apply seal packing to the transaxle case cover as shown in the figure.

Seal packing: Part No. 08826-00090, THREE BOND 1281 or equivalent

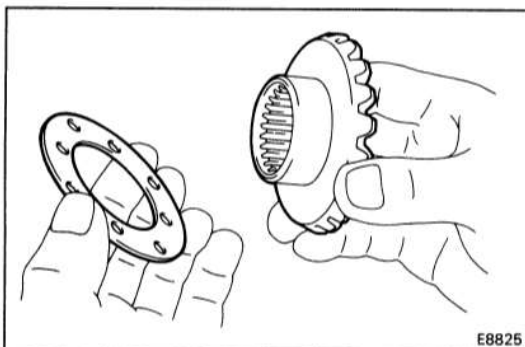
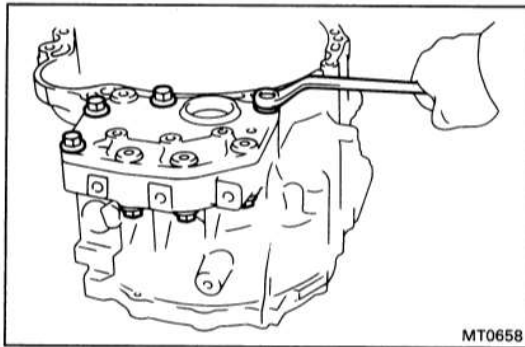
HINT: Install the transaxle case cover as soon as the seal packing is applied.

- (j) Apply liquid sealant to the bolt threads.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

- (k) Install and torque the four bolts and three nuts.

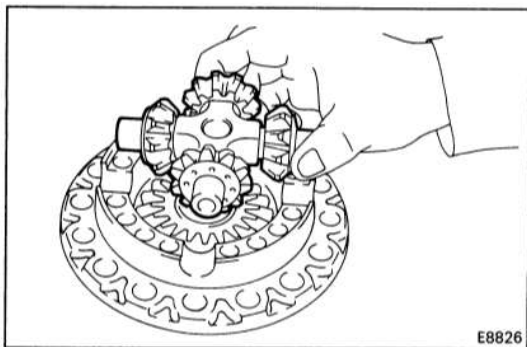
Torque: 550 kg-cm (40 ft-lb, 54 N·m)



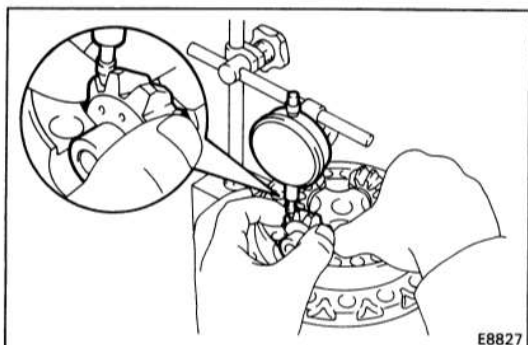
6. ASSEMBLE OF DIFFERENTIAL CASE

HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

- (a) Install the thrust washer to the side gear.



- (b) Install the four pinions and thrust washers to the spider.
- (c) Install the side gear and spider with four pinions to the differential left case.



- (d) Using a dial indicator, measure the backlash of one pinion gear while holding the No. 2 differential case.

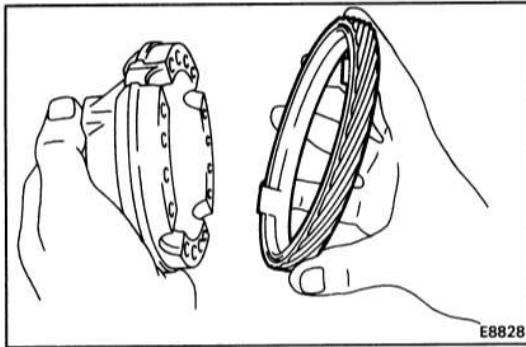
**Standard backlash: 0.05 – 0.20 mm
(0.0020 – 0.0079 in.)**

HINT: Push the pinion gear of the left side of the differential case.

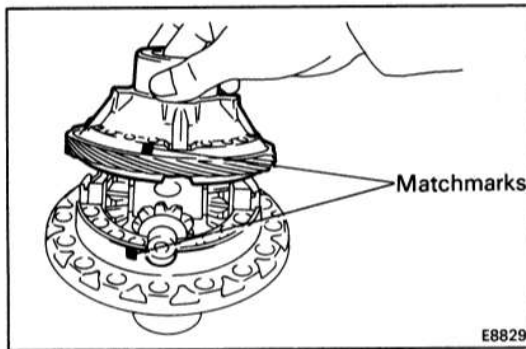
- (e) Install the side gear and spider with four pinions to the right side of the differential case. And check the side gear backlash.

- (f) Referring to the table below, select the thrust washer which will ensure that the backlash is within specification. Try to select a washer of the same size.

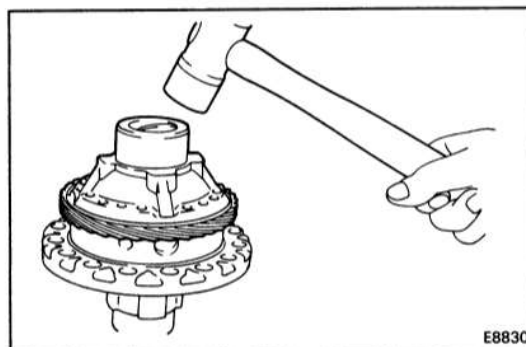
Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
–	0.80 (0.0315)	–	1.20 (0.0472)
–	0.90 (0.0354)	–	1.30 (0.0512)
–	1.00 (0.0394)	–	1.40 (0.0551)
–	1.10 (0.0433)		



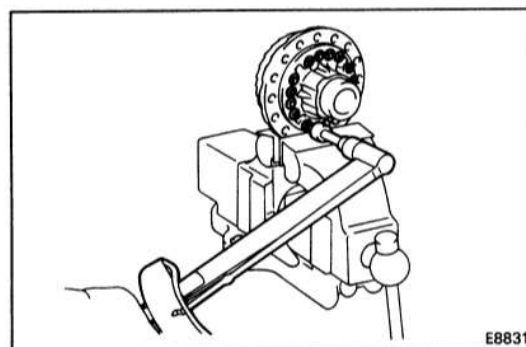
- (g) Install the speedometer driven gear.



- (h) Align the matchmarks on the differential cases.



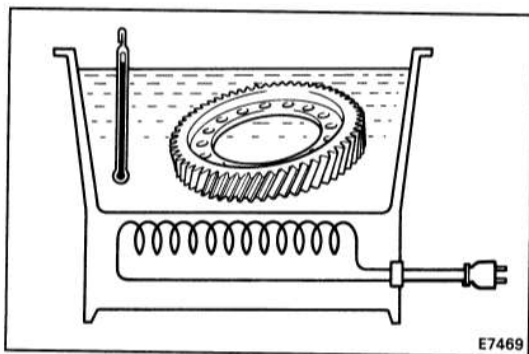
- (i) Using plastic hammer, carefully tap the differential case.



- (j) Using a torx wrench, install and torque the sixteen torx screws.

Torx wrench T50 09042-00040

Torque: 640 kg-cm (46 ft-lb, 63 N·m)

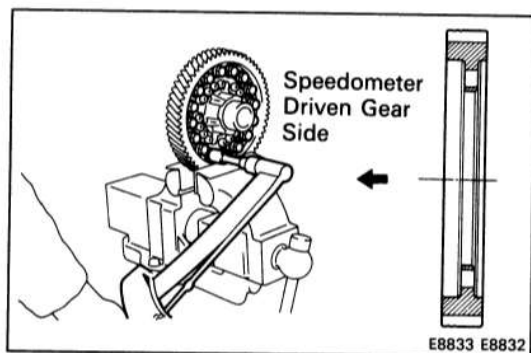


7. INSTALL RING GEAR

- (a) Clean the contact surface of the differential case.
- (b) Heat the ring gear to about 100°C (212°F) in an oil bath.

NOTICE: Do not heat the ring gear above 110°C (230°F)

- (c) Clean the contact surface of the ring gear with cleaning solvent.

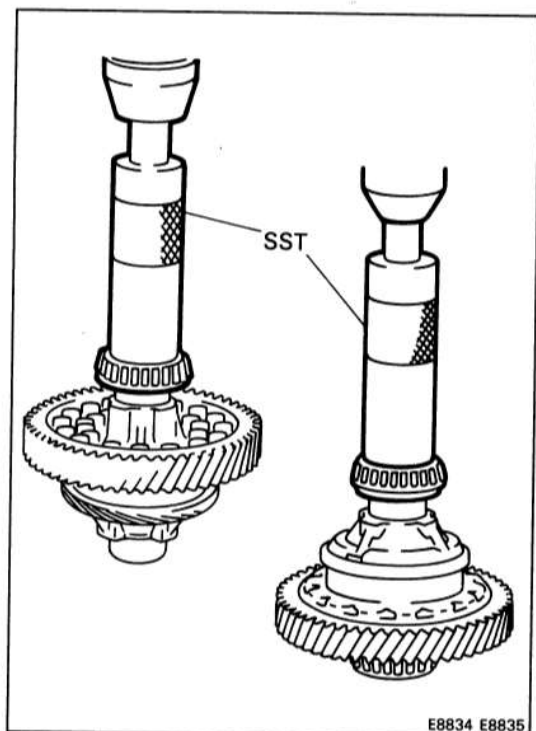


- (d) Quickly install the ring gear on the differential case. Install the sixteen bolts.

HINT: Align the matchmarks on the differential left case and contact the ring gear.

- (e) Tighten the set bolts uniformly and a little at a time. Torque the bolts.

Torque: 1,260 kg-cm (91 ft-lb, 124 N·m)



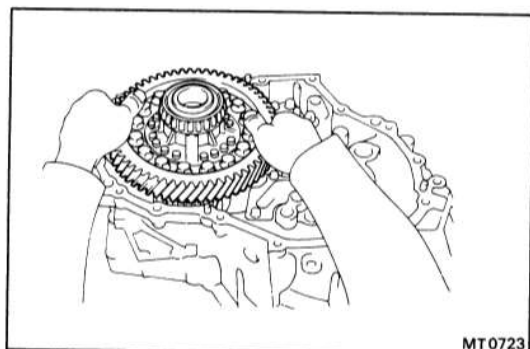
8. INSTALL SIDE BEARING

Using SST and a press, install the side bearings onto the differential case.

SST 09316-60010 (09316-00010)

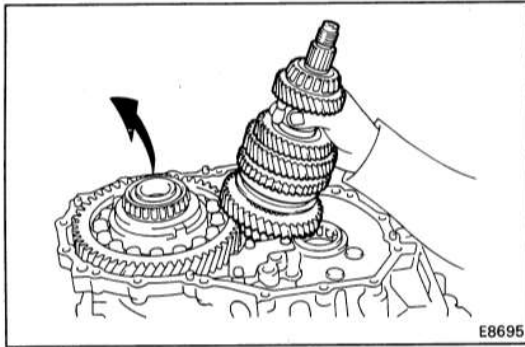
HINT: Press the bearing on the ring gear side first.

9. ADJUST OUTPUT SHAFT ASSEMBLY PRELOAD (See pages MT-104 and 105)

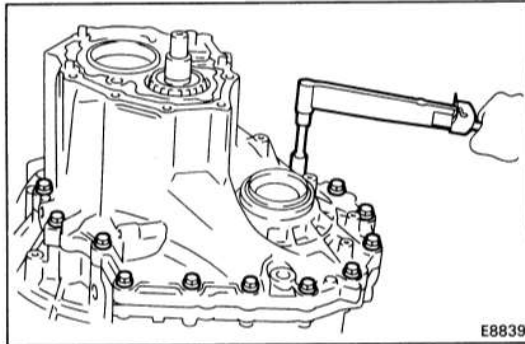


10. INSTALL DIFFERENTIAL CASE ASSEMBLY

Install the differential case assembly to the transaxle case.

**11. INSTALL OUTPUT SHAFT ASSEMBLY**

Lift up the differential case, install the input shaft assembly.

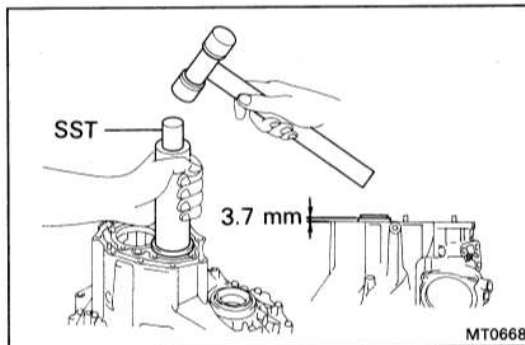
**12. INSTALL TRANSMISSION CASE**

(a) Install the transmission case.

HINT: If necessary, tap on the case with a plastic hammer.

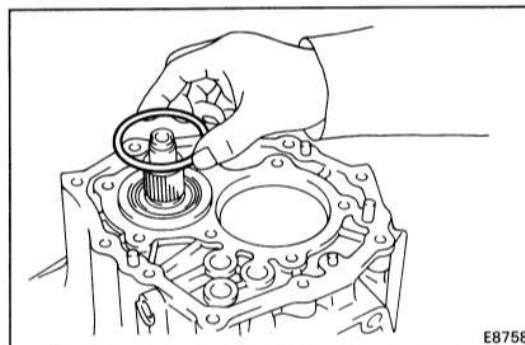
(b) Install and torque the seventeen bolts.

Torque: 300 kg-cm (22 ft-lb, 29 N·m)

**13. INSTALL OUTPUT SHAFT REAR TAPERED ROLLER BEARING OUTER RACE**

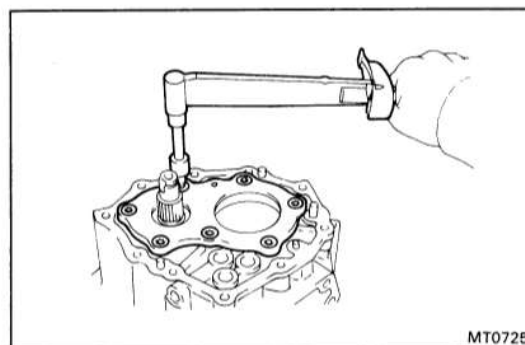
Using SST and a hammer, install the output shaft rear tapered roller bearing outer race.

SST 09316-60010 (09316-00010)

**14. INSTALL SHIM**

(See page MT-105)

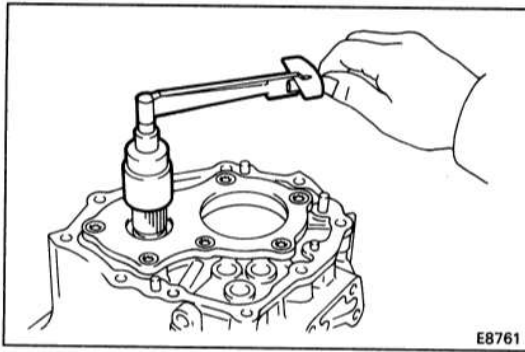
HINT: Install the previously selected shim.

**15. INSTALL REAR BEARING RETAINER**

Using a torx wrench, install and torque the seven torx screws.

Torx wrench T45 09042-00050

Torque: 430 kg-cm (31 ft-lb, 42 N·m)

**16. ADJUST DIFFERENTIAL CASE PRELOAD**

- (a) Install the new lock nut to the output shaft.
- (b) Turn the output shaft right and left two or three times to allow the bearings to settle.
- (c) Using a torque wrench, measure the preload.

Preload (at starting):

New bearing

Add output shaft preload

1.9 – 3.7 kg-cm (1.6 – 3.2 in.-lb, 0.2 – 0.4 N·m)

Reused bearing

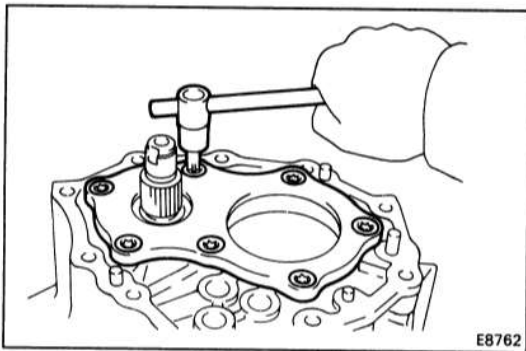
Add output shaft preload

1.2 – 2.3 kg-cm (1.0 – 2.0 in.-lb, 0.1 – 0.2 N·m)

If the preload is not within specification, select the thrust washers.

HINT: The total preload will change about 1 – 2 kg-cm (0.9 – 1.7 in.-lb, 0.1 – 0.2 N·m) with each shim thickness.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
0	2.00 (0.0787)	9	2.45 (0.0965)
1	2.05 (0.0807)	A	2.50 (0.0984)
2	2.10 (0.0827)	B	2.55 (0.1004)
3	2.15 (0.0846)	C	2.60 (0.1024)
4	2.20 (0.0866)	D	2.65 (0.1043)
5	2.25 (0.0886)	E	2.70 (0.1063)
6	2.30 (0.0906)	F	2.75 (0.1083)
7	2.35 (0.0925)	G	2.80 (0.1102)
8	2.40 (0.0945)	H	2.85 (0.1122)

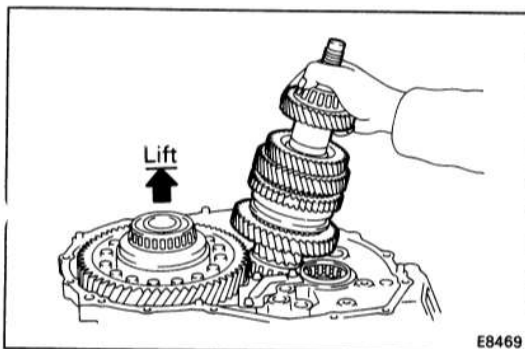
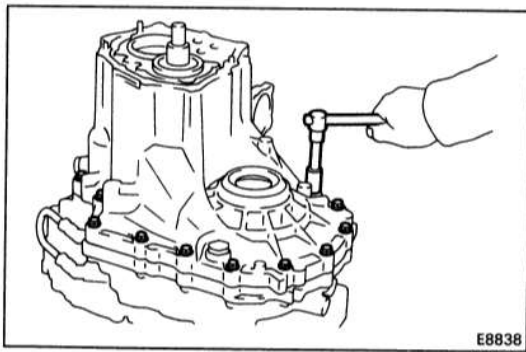
**17. REMOVE REAR BEARING RETAINER**

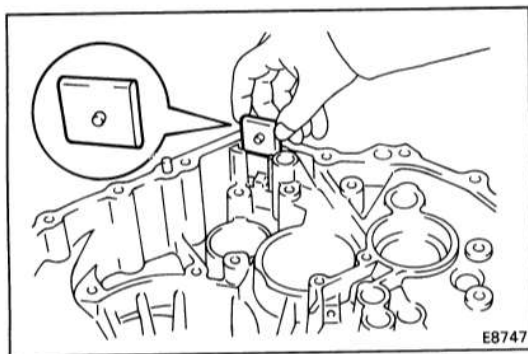
Using torx wrench, remove the seven torx screws and rear bearing retainer.

Torx wrench T45 09042 -00050

18. REMOVE SHIM**19. REMOVE TRANSMISSION CASE**

Remove the seventeen bolts and tap off the case with a plastic hammer.

**20. REMOVE OUTPUT SHAFT ASSEMBLY****21. REMOVE DIFFERENTIAL CASE ASSEMBLY**

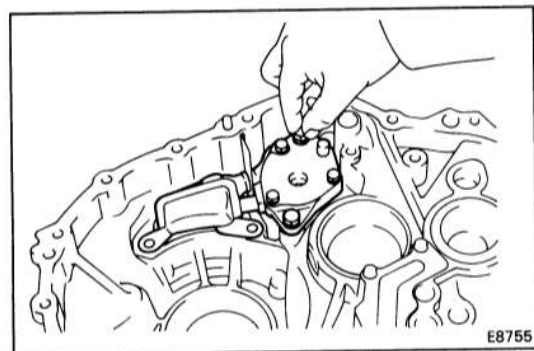


INSTALLATION OF COMPONENT PARTS

(See pages MT-57 to 59)

HINT: Coat all of the sliding and rotating surface with gear oil before assembly.

1. INSTALL MAGNET TO TRANSAXLE CASE

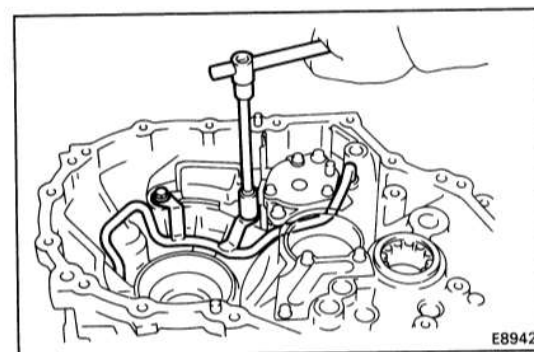


2. INSTAL OIL PUMP ASSEMBLY AND OIL PIPE

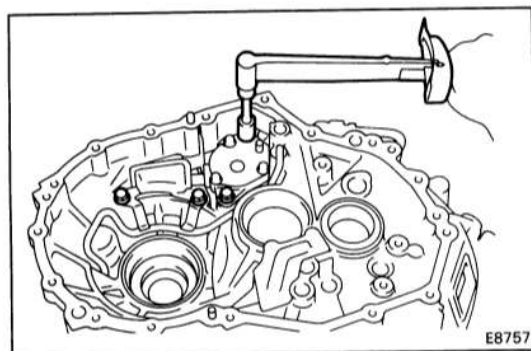
(a) Install the oil pump assembly.

(b) Install the two bolts.

HINT: Be careful not to drop the oil pump gasket.

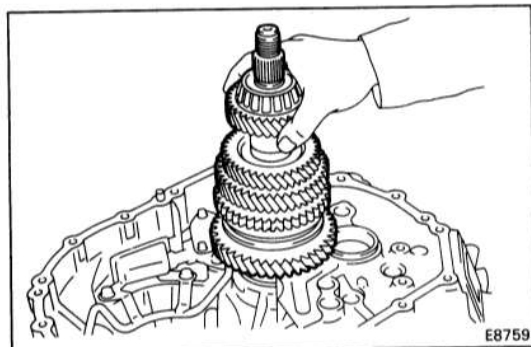


(c) Install the oil pipe and two bolts.



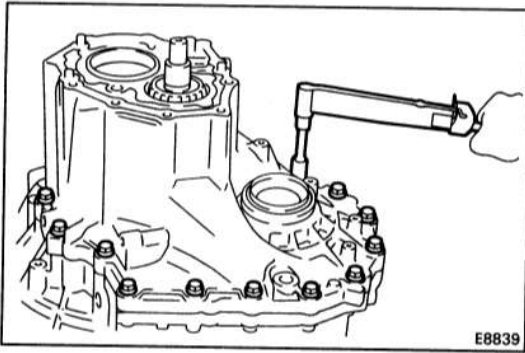
(d) Torque the four bolts.

Torque: 175kg-cm (13 ft-lb, 17 N·m)



3. ADJUST OUTPUT SHAFT PRELOAD

(a) Install the output shaft assembly.



E8839

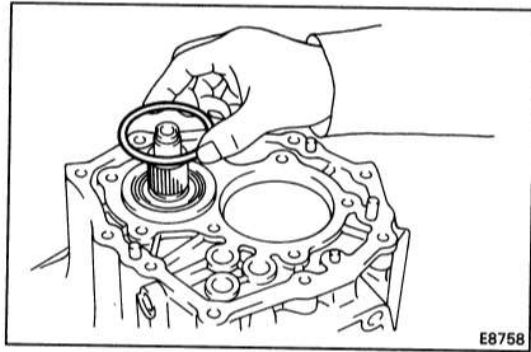
(b) Install the transmission case.

HINT: If necessary, tap on the case with a plastic hammer.

(c) Install and torque the seventeen bolts.

Torque: 300 kg-cm (22 ft-lb, 29 N·m)

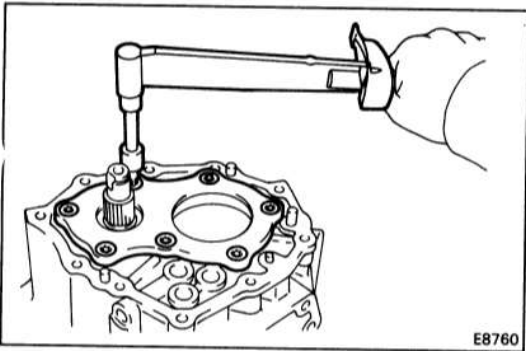
(d) Install the output shaft rear taper roller bearing outer race.



E8758

(e) Install the adjust shim.

HINT: When re-using the output shaft bearing, first install a shim of the same thickness as before. If installing a new tapered roller bearing, first select and install a shim of lesser thickness than before.



E8760

(f) Install the bearing retainer.

(g) Using a torx wrench, install and torque the seven bolts.

Torx wrench T45 09042-00050

Torque: 430kg-cm (31 ft-lb, 42 N·m)

(h) Install the new lock nut to the output shaft.

(i) Turn the output shaft right and left two or three times to allow the bearings to settle.

(j) Using a torque wrench, measure the preload.

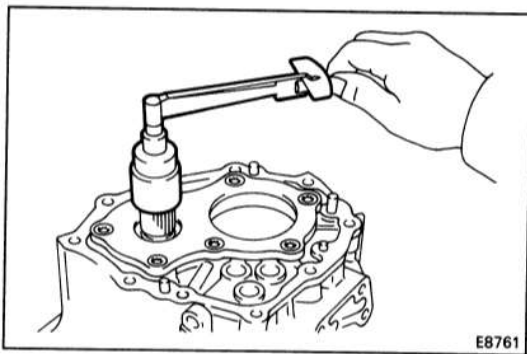
Preload (at starting):

**New bearing 8 – 16 kg-cm
(6.9 – 13.9 in.-lb, 0.8 – 1.6 N·m)**

**Reused bearing 5 – 10 kg-cm
(4.3 – 8.7 in.-lb, 0.1 – 0.2 N·m)**

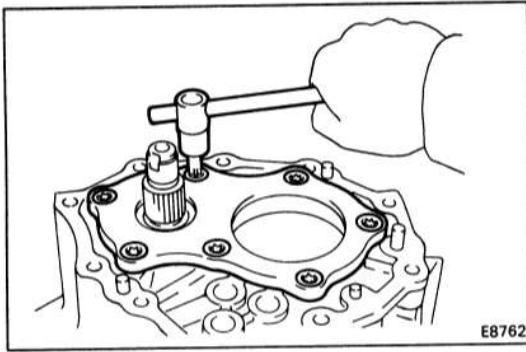
If the preload is not within specification, select the thrust washers.

HINT: The preload will change about 4 – 5 kg-cm (3.5 – 4.3 in.-lb, 0.4 – 0.5 N·m) with each shim thickness.

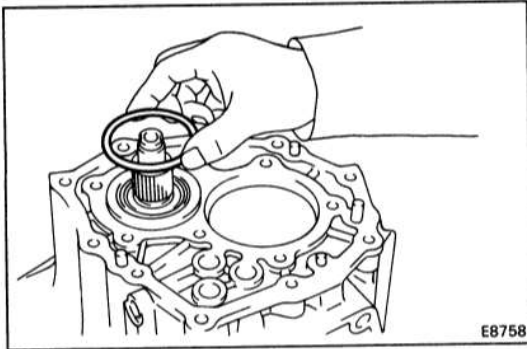


E8761

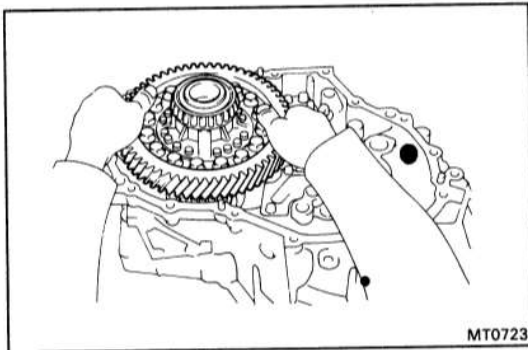
Mark	Thickness mm (in.)	Mark	Thickness mm (in.)	Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
0	1.30 (0.0512)	7	1.65 (0.0650)	E	2.00 (0.0787)	M	2.35 (0.0925)
1	1.35 (0.0513)	8	1.70 (0.0669)	F	2.05 (0.0807)	N	2.40 (0.0945)
2	1.40 (0.0551)	9	1.75 (0.0689)	G	2.10 (0.0827)	P	2.45 (0.0965)
3	1.45 (0.0571)	A	1.80 (0.0709)	H	2.15 (0.0846)	Q	2.50 (0.0984)
4	1.50 (0.0591)	B	1.85 (0.0728)	J	2.20 (0.0866)		
5	1.55 (0.0610)	C	1.90 (0.0748)	K	2.25 (0.0886)		
6	1.60 (0.0630)	D	1.95 (0.0768)	L	2.30 (0.0906)		



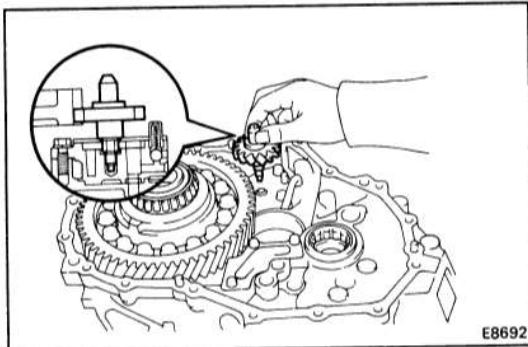
- (k) Remove the lock nut.
 - (i) Using a torx wrench, remove the seven torx screws and rear bearing retainer.
- Torx wrench T45 09042-00050



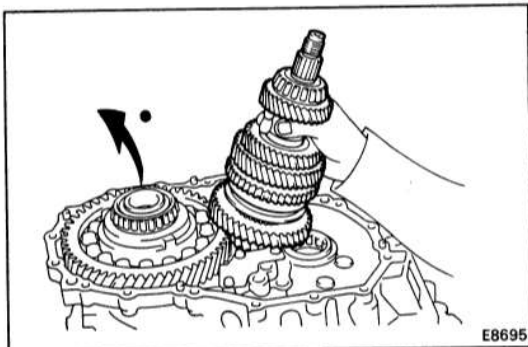
- (m) Remove the shim.
- (n) Remove the seventeen bolts and transmission case.
- (o) Remove the output shaft assembly.



4. INSTALL DIFFERENTIAL CASE ASSEMBLY

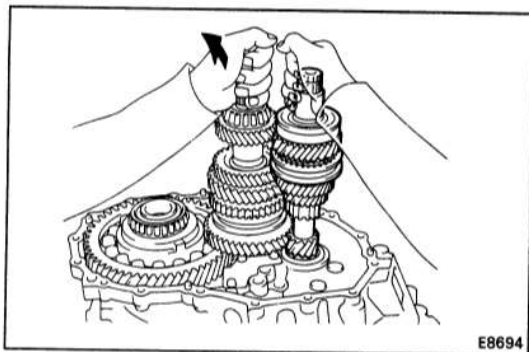


5. INSTALL OIL PUMP DRIVE GEAR

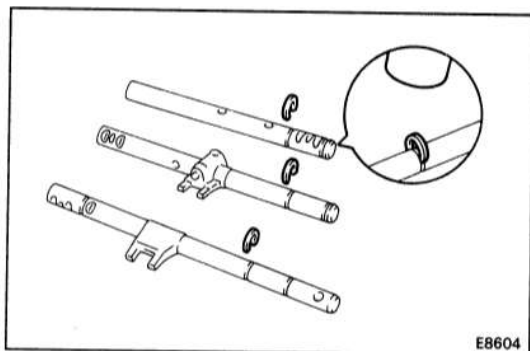


6. INSTALL OUTPUT SHAFT ASSEMBLY

- (a) Lift up the differential case, install the input shaft assembly.

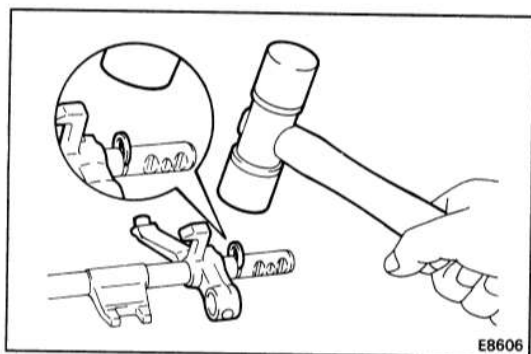


- (b) Leaning the output shaft to the differential side, install the input shaft assembly.

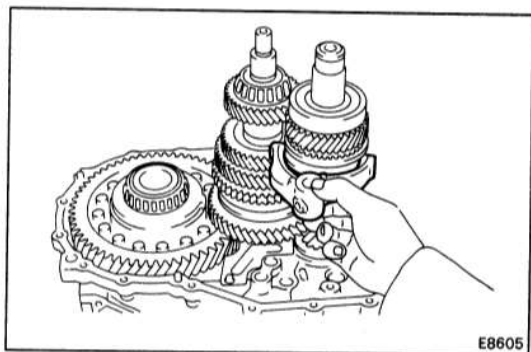


7. INSTALL SNAP RINGS

- (a) Using a plastic hammer, install the snap rings to the No. 1, No. 2 and No. 3 shift fork shafts.

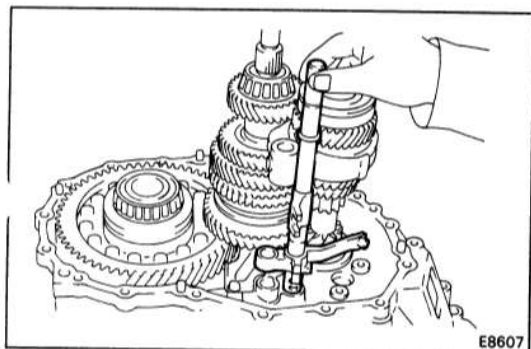


- (b) Using a plastic hammer, install the reverse shift fork and snap ring to the No. 3 shift fork shaft.

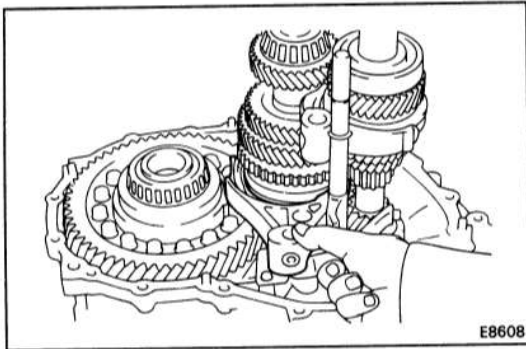


8. INSTALL NO. 2 SHIFT FORK AND NO. 3 SHIFT FORK SHAFT WITH REVERSE SHIFT FORK

- (a) Install the No. 2 shift fork to the No. 2 hub sleeve.

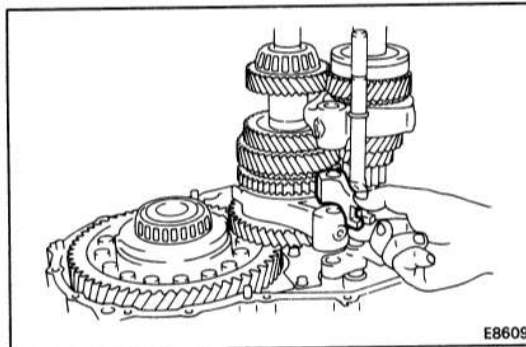


- (b) Install the No. 3 shift fork shaft with reverse shift fork.

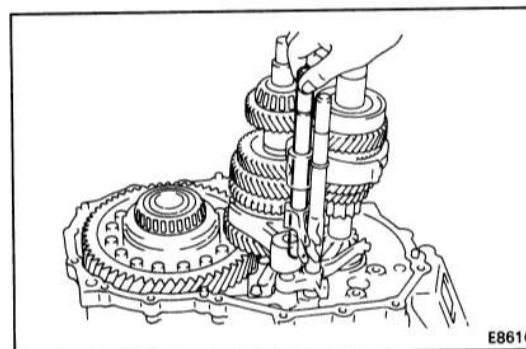


9. INSTALL NO. 1 SHIFT FORK, SHIFT HEAD AND NO. 2 SHIFT FORK SHAFT

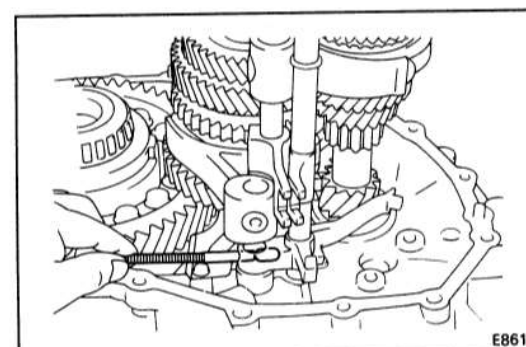
(a) Install the No. 1 shift fork to the No. 1 hub sleeve.



(b) Put shift head onto the No. 1 shift fork.

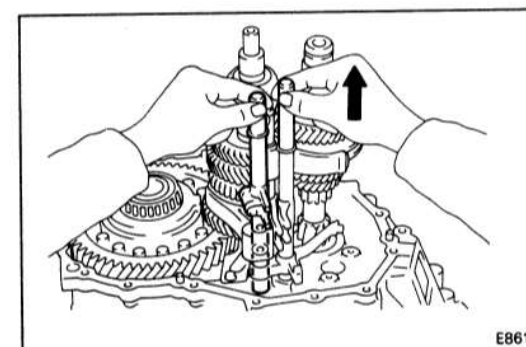


(c) Install the No. 2 shift fork shaft to the transaxle case, through the shift head and No. 1 shift fork.



10. INSTALL INTERLOCK ROLLER

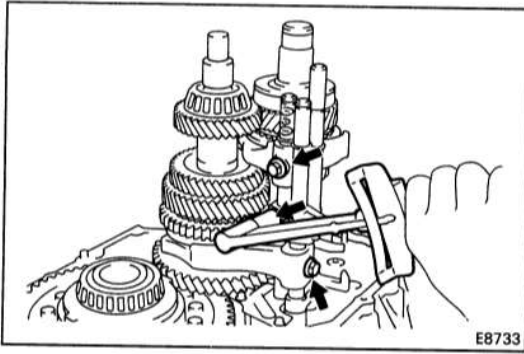
Using a magnetic finger, install the interlock roller to the reverse shift fork.



11. INSTALL NO. 1 SHIFT FORK SHAFT

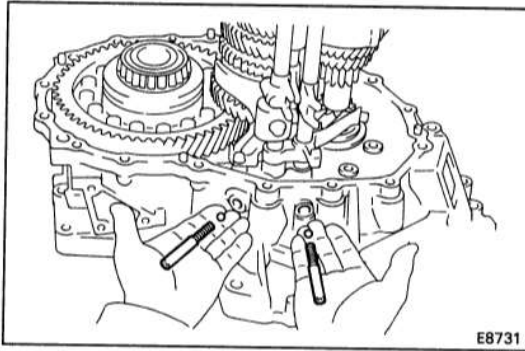
Install the No. 1 shift fork shaft to the case, through the No. 1 shift fork and reverse shift fork.

HINT: When it is difficult to install the fork shaft through the reverse shift fork, pull up the No. 3 shift fork shaft.

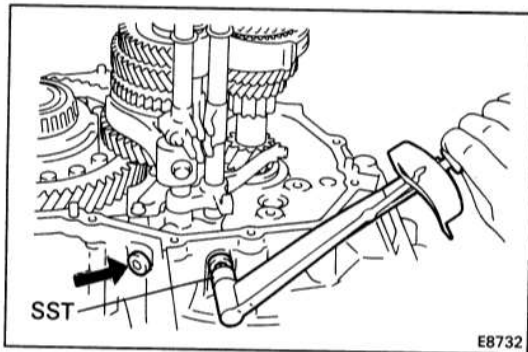
**12. INSTALL SET BOLTS**

Install and torque the three set bolts.

Torque: 240 kg-cm (17 ft-lb, 24 N·m)

**13. INSTALL LOCKING BALLS, SPRINGS, SEATS AND PLUGS**

(a) Install the two locking balls, springs and seats.



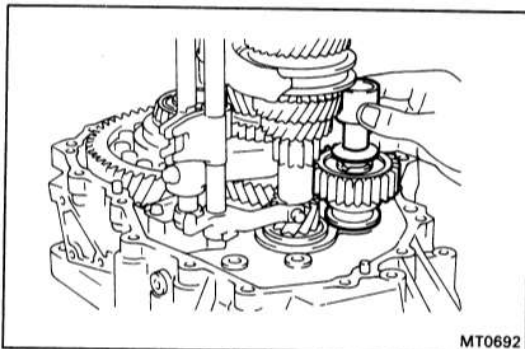
(b) Apply liquid sealant to the two plugs.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

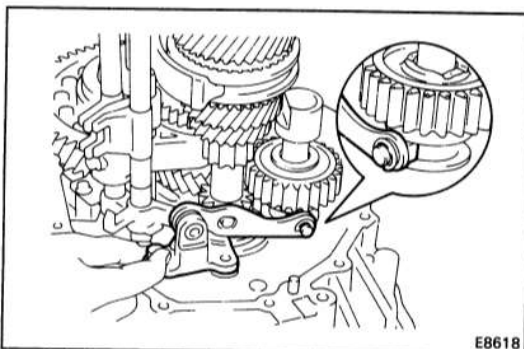
(c) Using SST, install and torque two plugs.

SST 09313-30021

Torque: 250 kg-cm (18 ft-lb, 25 N·m)

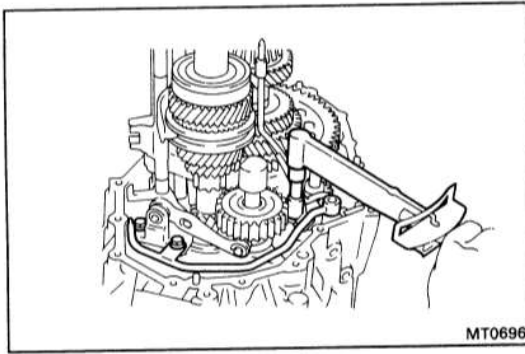
**14. INSTALL REVERSE IDLER GEAR AND SHAFT**

Install the reverse idler gear and shaft as shown.

**15. INSTALL REVERSE SHIFT ARM BRACKET AND NO. 2 OIL PIPE**

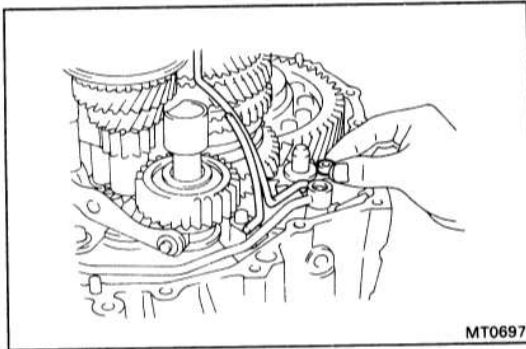
(a) Put the reverse shift fork pivot into the reverse shift arm and install the reverse shift arm bracket to the transaxle case.

(b) Install the bolt.

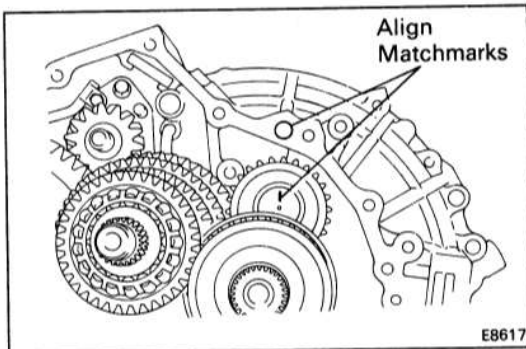


- (c) Install the No. 2 oil pipe and two bolts.
- (d) Torque the reverse shift arm bracket and oil pipe bolts.

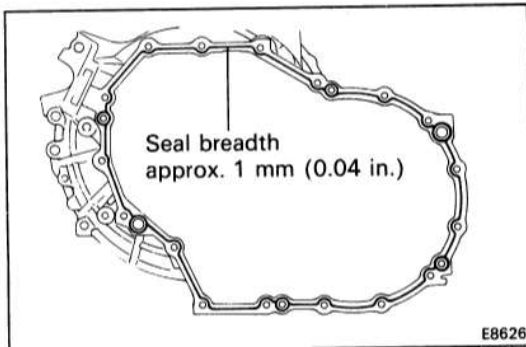
Torque: 175 kg-cm (13 ft-lb, 17 N·m)



- (e) Install the new gasket to the No. 2 oil pipe.



16. ALIGN MATCHMARKS



17. INSTALL TRANSMISSION CASE

- (a) Remove any packing material and be careful not to drop oil on the contacting surfaces of the transmission case or transaxle case.
- (b) Apply seal packing to the transmission case as shown in the figure.

Seal packing: Part No. 08826-00090, THREE BOND 1281 or equivalent

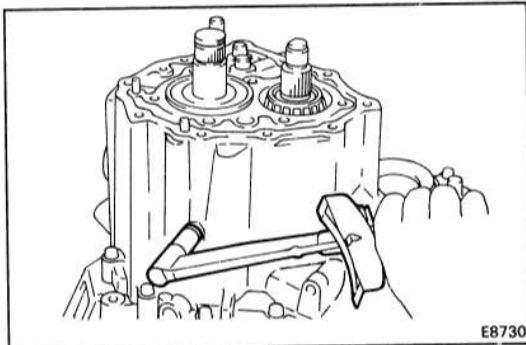
HINT: Install the transmission case as shown as the seal packing is applied.

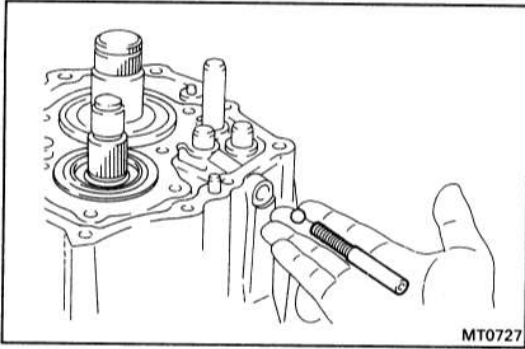
- (c) Install and torque the seventeen bolts.

Torque: 300 kg-cm (22 ft-lb, 29 N·m)

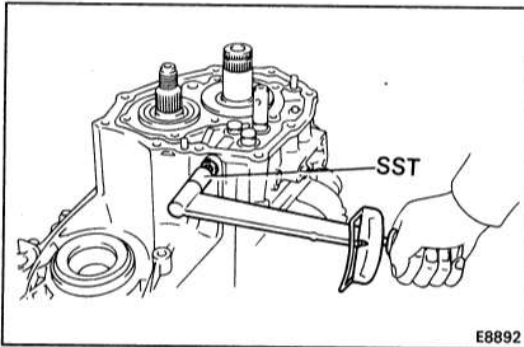
18. INSTALL AND TORQUE REVERS IDLER GEAR SHAFT RETAINING BOLT

Torque: 300 kg-cm (22 ft-lb, 29 N·m)



**19. INSTALL LOCKING BALL, SPRING, SEAT AND PLUG**

(a) Install the locking ball, spring and seat.



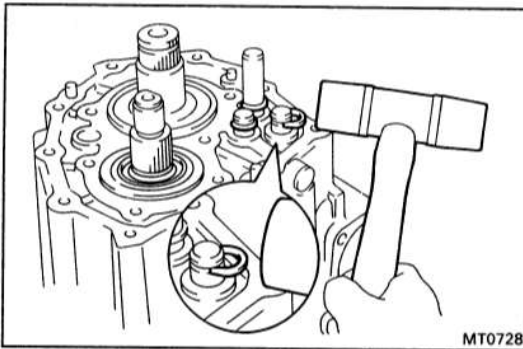
(b) Apply liquid sealant to the plug.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

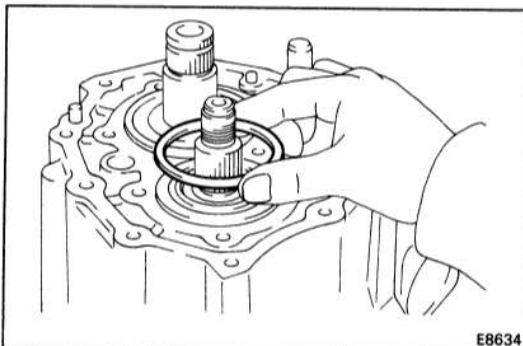
(c) Using SST, install and torque the plug.

SST 09313-30021

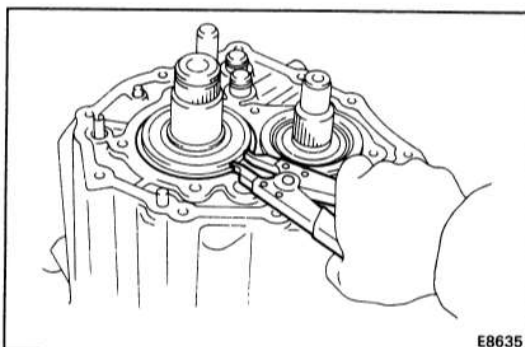
Torque: 250 kg-cm (18 ft-lb, 25 N·m)

**20. INSTALL SNAP RINGS**

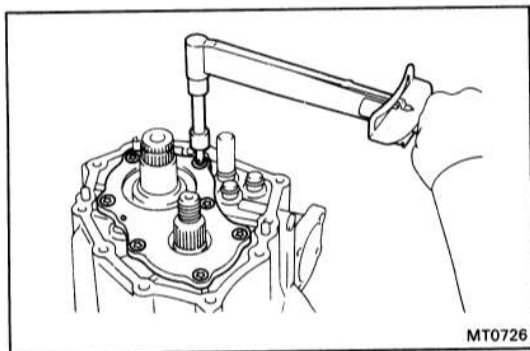
Using a plastic hammer, install the three snap rings.

**21. INSTALL SHIM**

HINT: Install the previously selected shim.
(See page MT-105)

**22. INSTALL SNAP RING**

Using a snap ring pliers, install the snap ring to the input shaft rear bearing.



MT0726

23. INSTALL REAR BEARING RETAINER

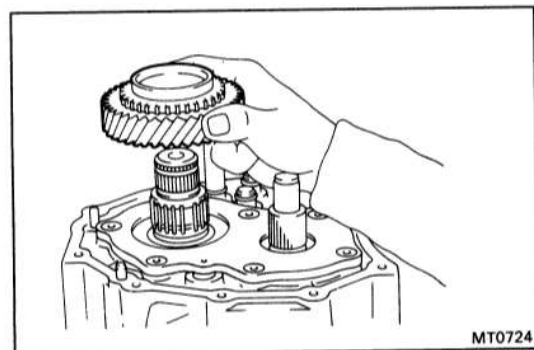
- (a) Clean the threads of the torx screws.
- (b) Apply liquid sealant to the screw threads.

Sealant: Part No. 08833-00070, THREE BOND 1324, LOCTITE 242 or equivalent

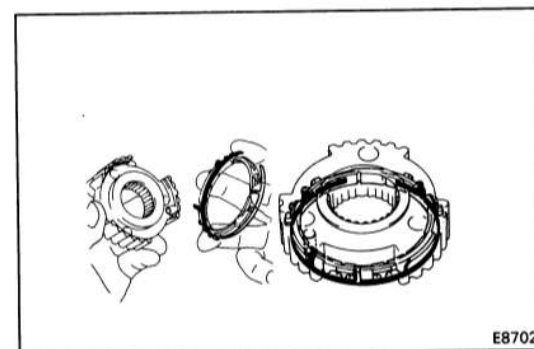
- (c) Using a torx wrench, install and torque the seven torx screws.

Torx wrench T45 09042-00050

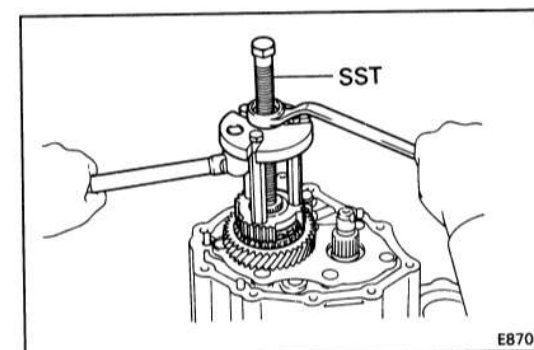
Torque: 430 kg-cm (31 ft-lb, 42 N·m)



MT0724

24. INSTALL SPACER, NEEDLE ROLLER BEARING AND FIFTH GEAR

E8702

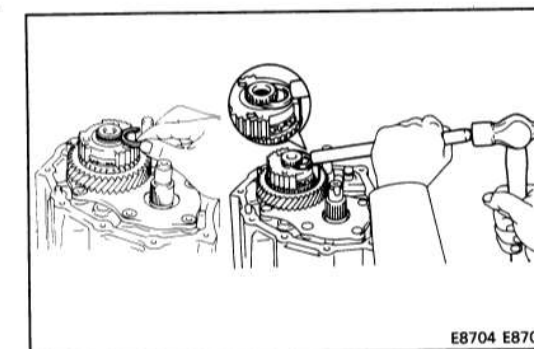
25. INSTALL SYNCHRONIZER RING WITH KEY SPRING TO NO. 3 CLUTCH HUB

E8703

26. INSTALL NO. 3 CLUTCH HUB

Using SST, install the No. 3 clutch hub with synchronizer ring and key spring.

SST 09310-17010 (09310-07010, 09310-07020, 09310-07030)

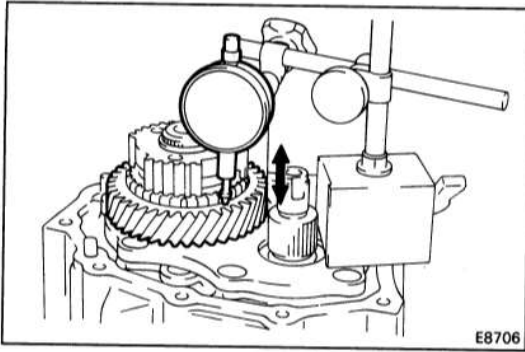


E8704 E8705

27. INSTALL SNAP RING

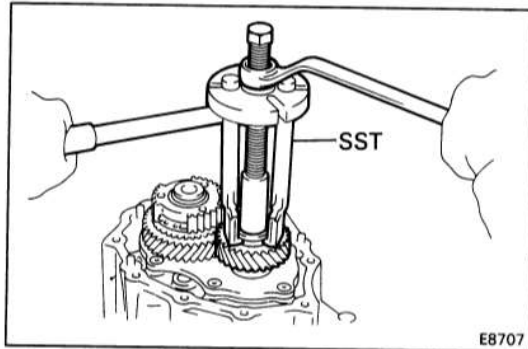
Select a snap ring that will allow minimum axial play and install it on the shaft.

Mark	Thickness mm (in.)	Mark	Thickness mm (in.)
Q	2.25 (0.0886)	V	2.50 (0.0984)
R	2.30 (0.0906)	W	2.55 (0.1004)
S	2.35 (0.0925)	X	2.60 (0.1024)
T	2.40 (0.0945)	Y	2.65 (0.1043)
U	2.45 (0.0965)		

**28. MEASURE FIFTH GEAR THRUST CLEARANCE**

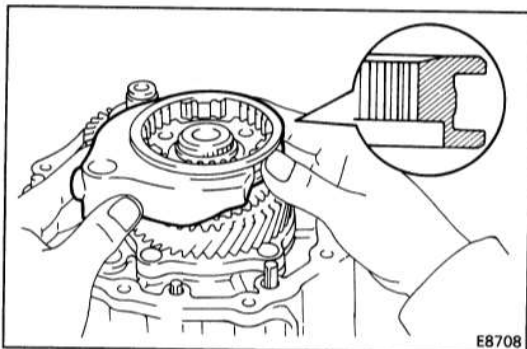
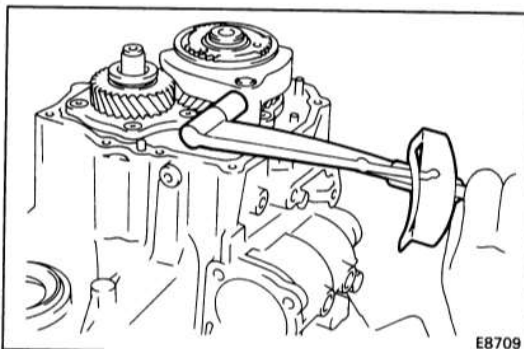
Using a dial indicator measure the 5th gear thrust clearance.

Standard clearance: 0.10 – 0.57 mm
(0.0039 – 0.0224 in.)

**29. INSTALL FIFTH DRIVEN GEAR**

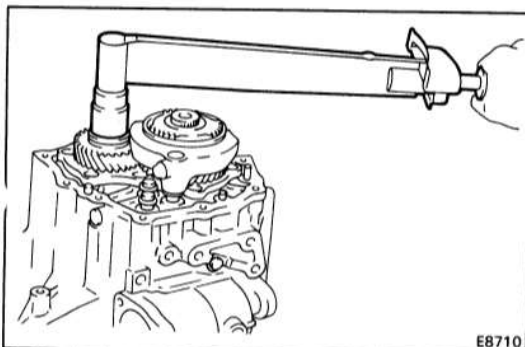
Using SST, install the 5th driven gear.

SST 09310-17010 (09310-07010, 09310-07020,
09310-07040, 09310-07050)

**30. INSTALL NO. 3 HUB SLEEVE WITH NO. 3 SHIFT FORK****31. INSTALL SET BOLT**

Install and torque the set bolt.

Torque: 240 kg-cm (17 ft-lb, 24 N·m)

**32. INSTALL LOCK NUT**

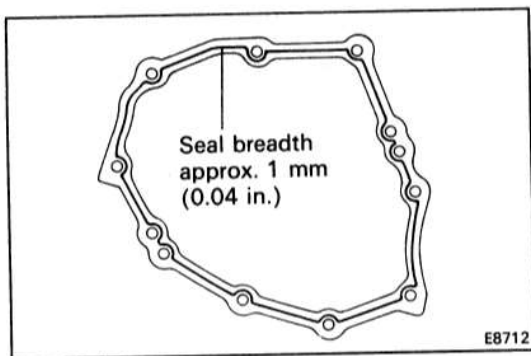
(a) Engage the gear double meshing.

(b) Install and torque the lock nut.

Torque: 1,250 kg-cm (90 ft-lb, 123 N·m)

(c) Disengage the gear double meshing.

(d) Stake the lock nut.



33. INSTALL TRANSMISSION CASE COVER

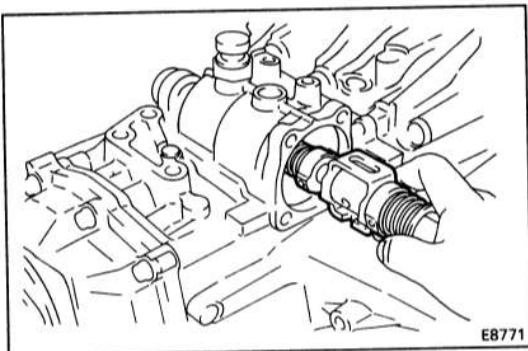
- Remove any packing material and be careful not to drop oil on the contacting surfaces of the transmission case cover.
- Apply seal packing to the transmission case as shown in the figure.

Seal packing: Part No. 08826-00090, THREE BOND 1281 or equivalent

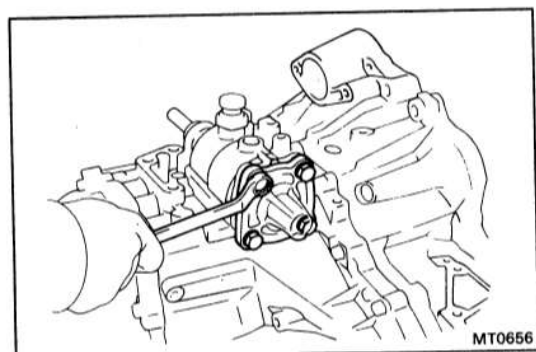
HINT: Install the transmission case cover as soon as the seal packing is applied.

- Install and torque the ten bolts.

Torque: 300 kg-cm (22 ft-lb, 29 N·m)



34. INSTALL SHIFT AND SELECT LEVER SHAFT ASSEMBLY



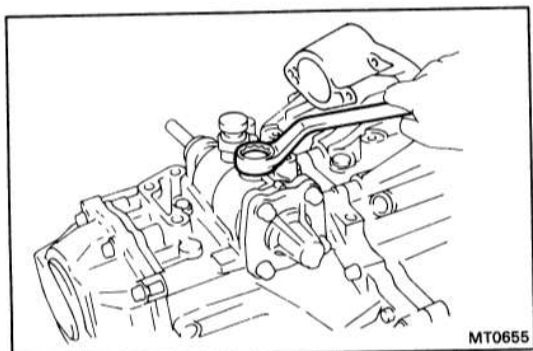
35. INSTALL CONTROL SHAFT COVER

- Place a new gasket in position on the control shaft cover.
- Install the control shaft cover.
- Apply liquid sealant to the bolt threads.

Sealant: Part No. 08833-00080, THREE BOND 1344, LOCTITE 242 or equivalent

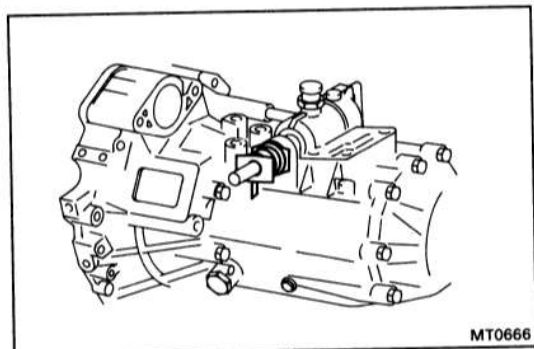
- Install and torque the bolts.

Torque: 200 kg-cm (14 ft-lb, 20 N·m)



36. INSTALL AND TORQUE LOCK BOLT

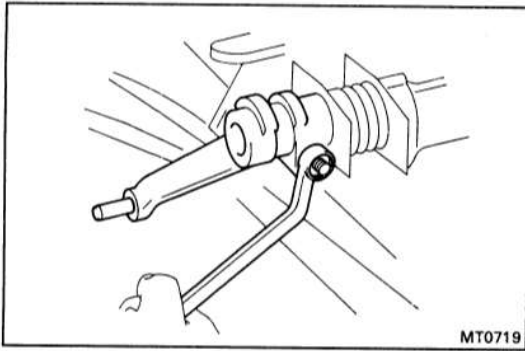
Torque: 500 kg-cm (36 ft-lb, 49 N·m)



37. INSTALL SHIFT LEVER

- Install the boot to the control shaft oil seal.

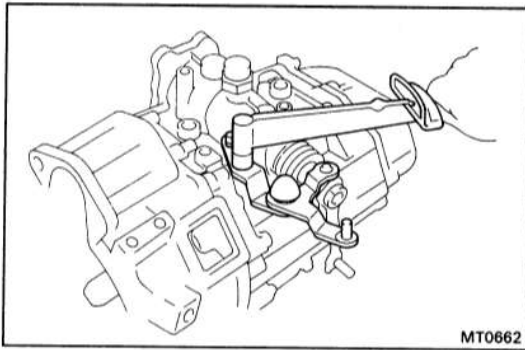
HINT: Make sure to install the boot in the correct direction. Position the air bleed of the boot downward.



(b) Fit the pin's groove into the shaft's notch and tap on with a hammer.

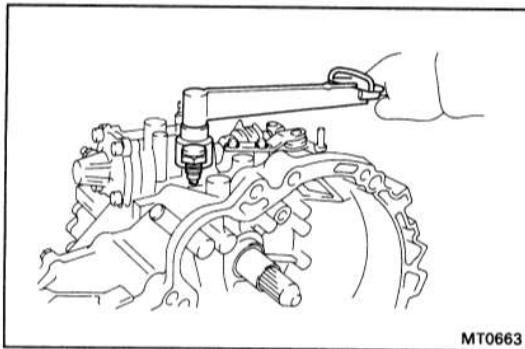
(c) Install and torque the nut.

Torque: 120 kg-cm (9 ft-lb, 12 N·m)



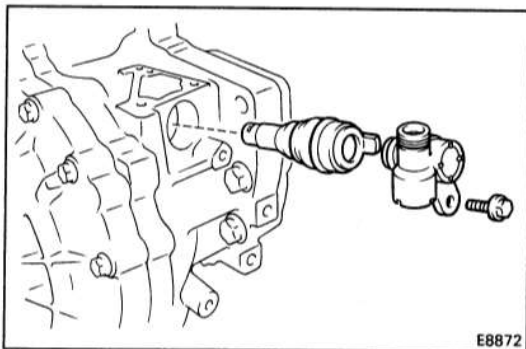
38. INSTALL AND TORQUE SELECTING BELLCRANK ASSEMBLY

Torque: 200 kg-cm (14 ft-lb, 20 N·m)

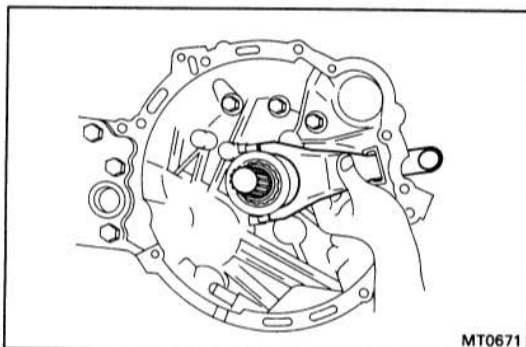


39. INSTALL BACK-UP LIGHT SWITCH WITH GASKET

Torque: 410 kg-cm (30 ft-lb, 40 N·m)



40. INSTALL SPEEDOMETER DRIVEN GEAR

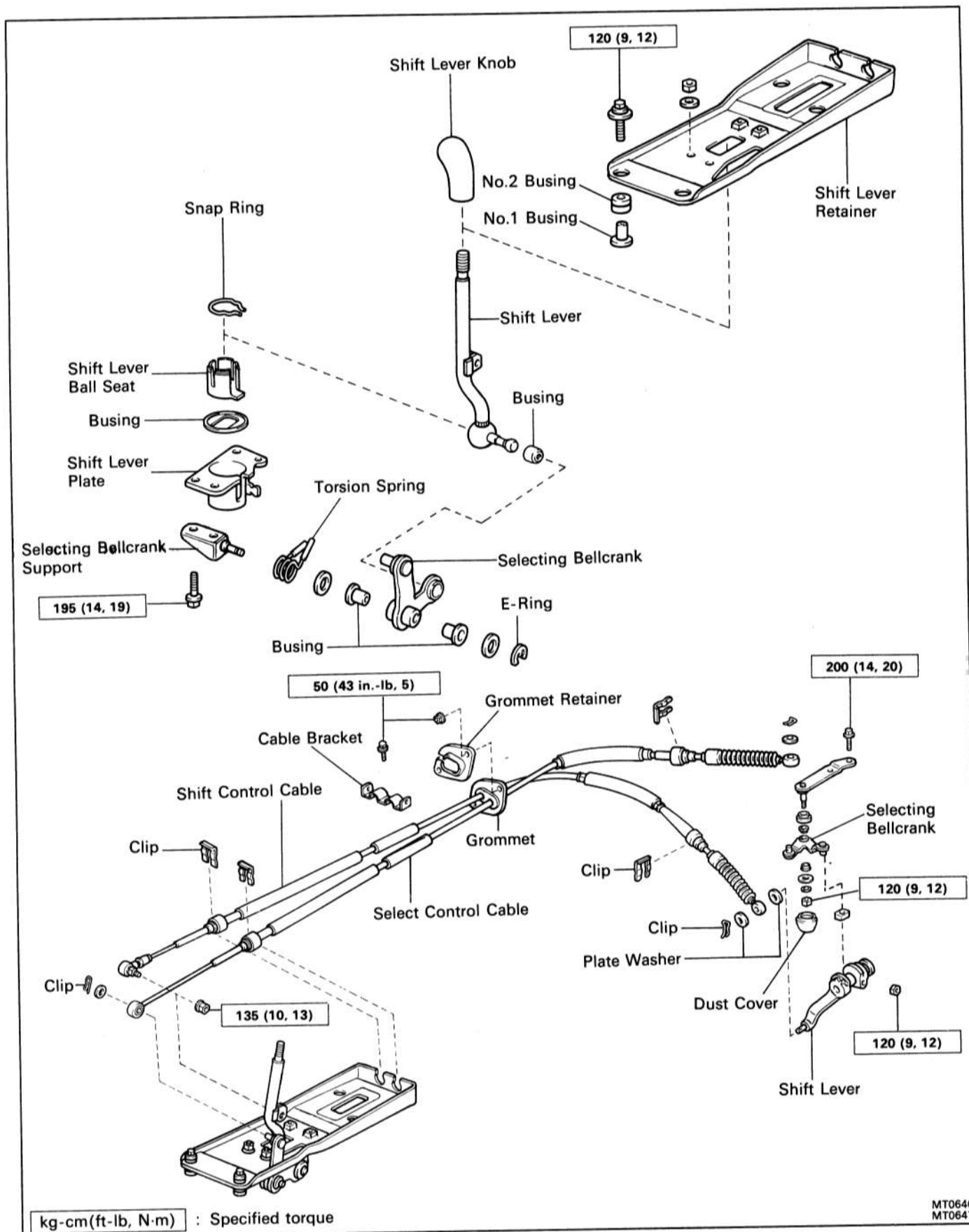


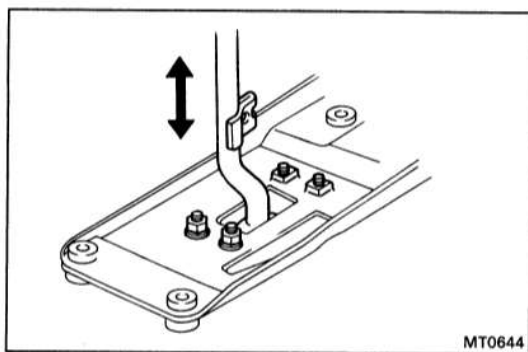
41. INSTALL RELEASE FORK AND BEARING

Apply molybdenum disulphide lithium base grease to the following parts:

- Input shaft spline
- Release fork contact surface

SHIFT LEVER AND CONTROL CABLE COMPONENTS





INSPECTION OF SHIFT LEVER

INSPECT SHIFT LEVER PLAY

Check that there is no vertical play in the shift lever.
If there is any play, replace bushing.

